

# DELAWARE

# *Outdoors*

2008



# The State of Delaware Statewide Comprehensive Outdoor Recreation Plan

2003 to 2008

## Table of Contents

Acknowledgements

Letter from Governor Ruth Ann Minner

Chapter 1 Introduction  
Statewide Comprehensive Outdoor Recreation Plan (SCORP)  
Planning Regions

Chapter 2 Background  
Population and Growth Trends  
Livable Delaware  
Benefits of Outdoor Recreation and Green Spaces

Chapter 3 Outdoor Recreation Trends and Demand  
Importance of Outdoor Recreation  
Reasons for Participation in Outdoor Recreation  
Preferences for Activity Participation  
Local Official Responses  
Nationwide Trends  
Regional Analysis of Outdoor Recreation Demand

Chapter 4 Outdoor Recreation Supply  
Inventory and Public Access  
Delaware Environmental Navigator  
Resources for Water-based Recreation

Chapter 5 Outdoor Recreation Needs  
Public Survey of Outdoor Recreation Preferences  
Priority Outdoor Recreation Facility Needs  
Regional Perspective on Outdoor Recreation Needs  
Spatial Analysis of Needs and Public Supply of Recreational Facilities  
Spatial Analysis Case Study: City of Dover

Chapter 6 Outdoor Recreation and Conservation Issues  
Issues Affecting Outdoor Recreation  
Issues Regarding Conservation and the Environment

Appendix Appendices A Through H

Park Resource Office  
Susan Moerschel, Program Manager  
Robert Ehemann, Outdoor Recreation Planner

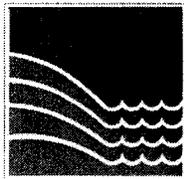
Division of Parks & Recreation  
Charles A. Salkin, Director  
Mark Chura, Administrator, Planning, Preservation and Development Section

Department of Natural Resources & Environmental Control  
John A. Hughes, Secretary



This plan was prepared by the Park Resource Office, Division of Parks & Recreation, Department of Natural Resources and Environmental Control. It was financed in part by a planning grant from the National Park Service, US Department of Interior, under the Land & Water Conservation Fund Program.

DELAWARE



LAND & WATER  
CONSERVATION  
TRUST FUND



## Acknowledgements

The research, writing and management of the 2003 State Comprehensive Outdoor Recreation Plan has been administered by the Park Resource Office, Division of Parks and Recreation, Department of Natural Resources & Environmental Control. Robert Ehemann, Division Planner, conducted the research and is the primary author of this plan. Ann Marie Townshend, former Planner with the Division of Parks and Recreation, began the development of the 2003 SCORP before she left our Division. She continued to be a resource in SCORP development with her employment at the State Planning Office. Miriam Pomilio, Geographic Information Specialist, has provided all the mapping and conducted the spatial analysis portion of this document. Susan Moerschel, Manager of the Park Resource Office, provided direction and editorial functions for this project and the grant.

We are very grateful to the members of the Technical Advisory Committee (TAC) who provided direction in the development of this plan. Members of the committee represent municipalities, counties, planning agencies, park and recreation departments and state agencies contributing their time and talents to the development of this Plan.

Zachery Carter	City of Dover Department of Parks and Recreation
Charles Emerson	City of Newark Department of Parks and Recreation
Ronald Breeding	City of Seaford
Paul Morrill	City of Delaware City ✓
Robert Hudson	Town of Middletown, Public Works Department
Robert Martin	City of New Castle
James Ippolito	City of Lewes
Romain Alexander	City of Wilmington
Gregory Ferrese	City of Rehoboth Beach
Mary Betts	Milford Department of Parks and Recreation
David Baird	Town of Georgetown
Joshua Mastrangelo	New Castle County, Department of Land Use
Wayne Zoski	New Castle County, Special Services
Sarah Keifer	Kent County, Department of Planning Services
Carl Solberg	Kent County, Division of Parks
Lawrence Lank	Sussex County, Planning and Zoning Office
Constance Holland	Office of State Planning Coordination
Diane Jackewicz	Office of State Planning Coordination
Ann Marie Townshend	Office of State Planning Coordination
Austin Short	Department of Agriculture, Forestry Division
Janet Wurtzel	Department of Economic Development, Tourism Office
Dennis Rubino	Department of Health & Social Services
Joseph Cantalupo	Department of Transportation, Division of Planning
Anne McCleave	Division of Historic and Cultural Affairs, State Historic Preservation Office
James Falk	University of Delaware Sea Grant Program
Michael Roscoe	Smyrna Clayton Boys & Girls Club
Mayor Cordelia Bennett	League of Local Governments
Tina Watson	Bombay Hook National Wildlife Refuge
Kevin Coyle	DNREC, Office of the Secretary, Planning Office
Robert Henry	DNREC, Division of Soil and Water Conservation
Lynn Herman	DNREC, Division of Fish and Wildlife
Cara Blume	DNREC, Division of Parks & Recreation
Mary Voshell	DNREC, Division of Parks & Recreation

Laura Herr  
Stephen Williams

DNREC, Division of Water Resources, Wetlands Section  
DNREC, Office of the Secretary, Whole Basin Management

We thank the 1,809 citizens from around the state who responded thoughtfully to research questions from the Outdoor Recreation Preference Survey. We would also like to thank the many people who participated in the fourteen workshops held throughout the state as well as those who provided input via telephone, letters and email. Public participation was a core component in the development of this plan.

Responsive Management, Inc. was contracted by the Division of Parks and Recreation to conduct the 2002 phone survey and report. Mark Damian Duda, Executive Director, and his staff provided thoughtful direction to the Technical Advisory Committee in designing the survey and insightful guidance to Division staff in developing the Plan far beyond their contractual obligation.

Michael J. Riley, a designer from Wilmington, was commissioned to work with Division staff to design the SCORP cover. The concept for the cover art evolved from Mr. Riley's original art form, Anglism. Michael also designed the layout format and all graphics for this SCORP document. All photographs for the SCORP document were taken by photographer Keith Clancy.





State of Delaware  
Office of the Governor

Ruth Ann Minner  
Governor

Mr. Jack W. Howard  
National Park Service  
Recreation and Conservation Grants Assistance  
200 Chestnut Street  
Philadelphia, Pennsylvania 19106

Dear Mr. Howard,

Delaware is blessed with spectacular beaches, rolling Piedmont hills, verdant forests, vast waters of the Inland Bays, quiet rivers and productive wetlands. These resources are a legacy that Delaware treasures and is proud to leave protected to future generations. Delaware's legacy encompasses parks, wildlife areas, open spaces and natural and historic resources. These resources are protected today because of a partnership of state, federal, local and county agencies and private land protection allies committed to enlarging our outdoor estate. Together, we must protect our natural heritage, valuable waterways and vital open spaces expanding Delaware's network of green infrastructure.

This statewide system of protected lands is the foundation on which outdoor recreation opportunities are built. We know Delawareans are active and want more places to walk, hike, bicycle, play and climb, fish, camp, swim and participate in active sports. Our State Comprehensive Outdoor Recreation Plan assesses the public need for outdoor recreation and proposes investments that will meet public outdoor recreational needs, both now and in the near future. I believe that it will take the combined effort of all partners to provide these and other recreation facilities that meet the public's appetite and demand for outdoor opportunities. The 2003 State Comprehensive Outdoor Recreation Plan is a five-year plan that will guide outdoor recreation facility investments into 2008. I am pleased to endorse this Plan that had extensive public involvement through surveys, public workshops and technical advisory groups that provided both input and direction for the Plan's development.

Parks and open spaces are invaluable to people and to our communities – a value that is difficult to measure in dollars. Parks are places to improve physical fitness, relax or observe nature. They are places for families to gather and communities to connect, and places to retreat from the daily stresses of working and raising families. Parks and recreational facilities are vital in our continuing campaign for better health. We know that increasing daily physical activity can decrease incidences of serious diseases. By visiting a local park and engaging in some type of moderate physical activity – like walking regularly – Delawareans will not only reduce their chances of developing chronic disease but will also feel healthier.

As a General Assembly member and now as Governor of Delaware, I have been dedicated to improving our state in many ways including the protections of open space and making our communities better places to live. My Livable Delaware initiative strives to curb sprawl asking counties and towns to plan where they build and build where they plan. As our state grows, implementing Livable Delaware will become increasingly important. We must put outdoor recreation close to where people live and work and we must preserve the best of Delaware's natural and cultural resources.

Sincerely,

A handwritten signature in black ink that reads "Ruth Ann Minner".

Ruth Ann Minner  
Governor

# Introduction

People look to nature and open spaces for wildlife habitat, food and medicinal plants but also, as psychologist Carl J. Jung put it, for “the nourishing soil of the soul.” Frederick Law Olmsted, the visionary 19th-century landscape architect who designed many renowned urban parks, did not need studies to put forward his own landscape aesthetic. He wrote, “What we most want is a simple, broad, open space, the beauty of the fields, the meadow, the prairie...” Olmsted spoke of the human need for parks and of a park’s chief importance as being “its effect on the human organism...like that of music...a kind that goes back of thought and cannot be fully given the form of words.”<sup>1</sup>

In the mid-20<sup>th</sup> century, due to the national concern Americans had for outdoor recreation and open space, Congress established a commission to document “the increasing need Americans felt towards quality and accessible outdoor recreation as well as threats to the open space and natural resources most appropriate to provide that recreational experience”. One of the commission’s recommendations

was to create a funding source “to safeguard important natural areas and provide outdoor recreation”. As a result, the Land and Water Conservation Fund Act (LWCF), a visionary and bipartisan program established by Congress in 1964, assists states, local and federal agencies in creating parks and open spaces, protecting wilderness, wetlands, wildlife habitat and refuges, and enhancing recreational opportunities. Not only is the LWCF a landmark conservation program,

so too is its source of funding. LWCF receives its financial backing from off shore oil and gas drilling revenues. The vision behind the law is to reinvest money generated from the depletion of a natural resource into the protection of America’s remaining natural resources.

During the last few years, the Centers for Disease Control and Prevention has begun to rally support for parks and open space, seeing them as a way to encourage a physically active lifestyle and stem the national tide of obesity. Richard Killingsworth, national head of the Robert Wood Johnson Active

Living by Design program, noted, “Unfortunately, physical activity has been engineered out of our daily lives, because communities have been designed without enough access to parks and natural areas. The public-health community is realizing that the presence of nature and parks is a good way to ensure regular physical activity, which can reduce the risk of” many serious diseases.<sup>2</sup>

**Table 1.1 LWCF Project Summary in Delaware**

<b>Project Types</b>	<b>Number</b>
Planning	9
Acquisition	81
Development	96
Combination (acquisition and development)	13
<b>Total</b>	<b>199</b>
<b>Acres Acquired</b>	<b>Acres</b>
State	17,303
Local and County	1,314
<b>Total</b>	<b>18,617</b>
<b>LWCF Dollars</b>	<b>Dollars</b>
Acquisition	\$17,933,052
Development	\$13,569,904
<b>Total</b>	<b>\$31,502,956</b>

Being physical active not only reduces stress, health care costs and the risk of heart disease and diabetes but it also increases energy levels, productivity, and quality time with family and friends. Sedentary lifestyles are becoming the norm and a serious health issue that is receiving attention. The Lt. Governor’s Challenge is a program addressing the health issue by promoting physical activity for all Delawareans. The Challenge logbook is an incentive to incorporate physical fitness into

our daily lives. Ultimately, our quality of life is better when we are healthy.

Providing convenient and safe places to recreate is a key component in keeping people physically active. The LWCF program's intent is to create quality recreation areas and facilities and to stimulate non-federal investments in the protection and maintenance of recreation resources. Nationwide, "Of the total number of projects, about 10,000 have helped states and localities to acquire some 2.3 million acres of park land, including combination projects where donated land values matched the cost of development. Almost 27,000 of these projects have implemented the development of outdoor recreation facilities. Seventy-five percent of the total funds obligated have been given to locally sponsored projects to provide close-to-home recreation opportunities that are readily accessible to America's youth, adults, senior citizens and the physically or mentally challenged.<sup>3</sup> In Delaware, LWCF assistance has funded 199 projects. The number of projects and the funding associated with them are highlighted in Table 1.1.

The availability of LWCF has given rise to partnerships that resulted in local and state investments in park land preservation and recreational facilities for public use. It is this partnership that has created the foundation of Delaware's outdoor recreation estate.

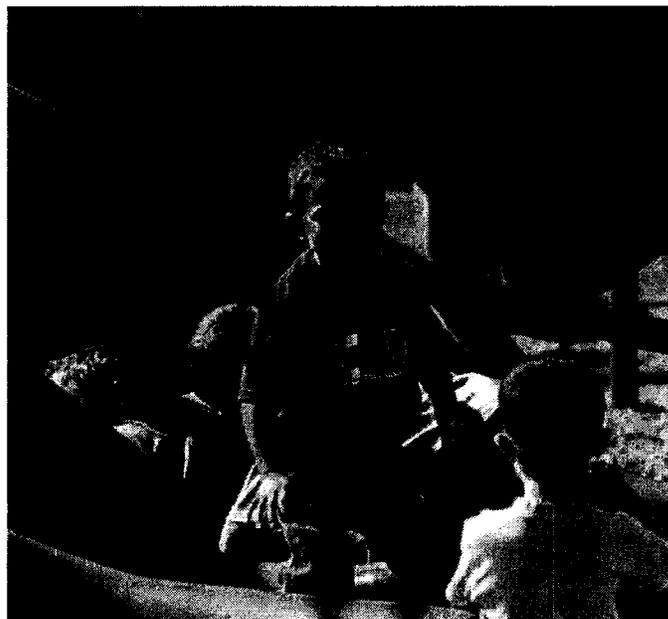
Since the creation of LWCF nearly 40 years ago, Delaware has made use of many innovative solutions to create parks and preserve natural areas. In 1986, the state enacted the Delaware Land and Water Conservation Trust Fund Act (DTF) – a law that mirrors the federal LWCF program. DTF annually makes grants to towns, cities, and counties for park land acquisition and outdoor recreation facility development. To date, the DTF has assisted in over 100 completed projects. About two thirds of the projects were for park development, while the other third acquired land.

In other state landmark legislation, Delaware enacted the Land Protection Act (LPA) in 1990. This Act has provided a reliable and continuous funding stream that drives the state's land protection endeavors. LPA

funds have made the most important contribution to permanent natural and cultural resource land protection in Delaware.

## Statewide Comprehensive Outdoor Recreation Plan

During the development of this Statewide Comprehensive Outdoor Recreation Plan (SCORP), citizens, interests groups, local, county and state agencies were asked to identify Delaware's outdoor recreation needs and issues and provide recommendations to meet those needs. The SCORP not only maintains Delaware's eligibility to receive federal Land and Water Conservation Fund (LWCF) grants, but is required by the Delaware Land and Conservation Fund (DTF) Act. The Plan directs funding for both LWCF and DTF grant sources into facilities that best meet the public's outdoor recreation needs. In order to remain eligible to receive LWCF grants, states are also required by the Department of Interior, National Park Service, to develop a SCORP every five years. Similarly, the Delaware Land and Water Conservation Trust Fund Act requires a plan to direct investments in outdoor recreation facilities. This 2003 to 2008 SCORP meets both the federal and state requirement for a statewide plan. Both funding sources are administered by the Division of Parks and Recreation, Department of Natural Resources and Environmental Control (DNREC).



In developing and researching the findings reported in the 2003 SCORP, the planning process identified changes in recreational and growth trends, community needs, and landscape preferences. Furthermore, the planning process prioritized facilities in order to effectively invest in quality recreation opportunities for residents and visitors alike. Because the focus of SCORP is at a regional level, specific locations for community parks are not addressed in the plan. However, further planning to secure park land at the local level is important for many reasons. Besides being essential for outdoor recreation, park land can revitalize urban and suburban centers and enhance the look and feel of emerging neighborhoods. The data and analysis presented in this plan at the regional level can be further developed and applied at the local level to assist municipalities with park land acquisition and facility enhancements.

Identifying the public demand for and supply of outdoor recreation resources and facilities in the state are the core components assessed in developing this Plan. Prioritizing Delaware's outdoor recreation facility needs and spatially comparing them to existing outdoor facilities, identifies gaps in facility locations and service, again providing useful tools for directing outdoor facility investments. This approach identifies areas in the state that are "less-served" with outdoor recreation. This data translates into strategies that direct the funding of outdoor recreation facilities.

## Planning Regions

Delaware was divided into five planning regions for the purpose of refining data and research findings. Development patterns, population and census tracts were used to formulate the regional boundaries. Map 1.1 shows the regions selected for this analysis and for the development of this SCORP: Regions 1 and 2 in densely populated New Castle County; Region 3 which includes all of Kent County; and Regions 4 and 5 in Sussex, the state's largest and southern-most county.

By size, Delaware ranks 49th in the nation with a total land area of just 1,954 square miles or 1.25 million acres. It is 96 miles long and varies from nine to 35

miles in width. Though small, the state offers a wide variety of recreational resources to meet the needs of residents and visitors alike.

Smallest in size at only 426 square miles or 22 percent of the state's land mass, New Castle County boasts nearly 64 percent of the state's population. Northern New Castle County, which is designated as Region 1, is developed, densely populated, and experiencing limited growth. Some areas around Wilmington, the state's largest city, have been losing populations since the 1970s and this trend is predicted to continue. The southern boundary of Region 1 runs south of Newark, home of the University of Delaware's main campus, to the Delaware River between historic New Castle and Delaware City.

Southern New Castle County, which is designated as Region 2, is one of the fastest growing areas in the state. From 1990 to 2000 the population grew by more than 40 percent, due mainly to the influx of home buyers who are discovering the relatively affordable housing costs, low property taxes and improved access to nearby metropolitan centers. It is predicted that the area between US 40 and the C&D Canal will be one of the fastest growing areas in the state over the next two decades.

Region 3 encompasses all of Kent County, location of the state's historic capitol, flat and fertile farmland and picturesque Delaware Bay communities. It is 590 square miles or 30 percent of the state's land area, but is home to only 16 percent of the state's population. Although most of the county's growth rate is currently east of Smyrna and west of Dover, much of the future growth is expected to occur close to the Route 1 corridor.

The only ocean-front county in Delaware, Sussex County is largest with 938 square miles or 48 percent of the state's land mass. It is home to 20 percent of the state's residents according to the latest census estimates which is changing rapidly. Today coastal Delaware is a fast-growing area in the state and one of the fastest-growing in the nation. The resort areas have attracted second-home buyers and retirees for years, but the buying frenzy has been moving rapidly westward.

Western Sussex County, designated as Region 4, the most rural area of the state. The area supports 8.2% of the state's population and includes the towns of Georgetown, Greenwood, Bridgeville, Seaford, Laurel and Bethel. This region, which is predominately in agricultural production, makes up twenty-two percent of the state's land area. The Nanticoke River and Broad Creek are two major water bodies that flow here, making this region part of the Chesapeake Bay drainage basin system.

Region 5 covers eastern Sussex County, including the Inland Bays area, the state's largest water-based recreational resource encompassing the Rehoboth, Indian River and Assawoman Bays. The Inland Bays have also been designated as an environmentally sensitive developing area indicating the need to protect this natural resource (see Map 2.2). An obvious conflict exists between developing highly valued land and protecting it. With development west and south of the Inland Bays threatening to overtake charming small towns of Lewes, Milton and Millsboro, managing growth and preserving the quality of life for residents will be a challenge.



**Table 1.2 Delaware Population by Region**

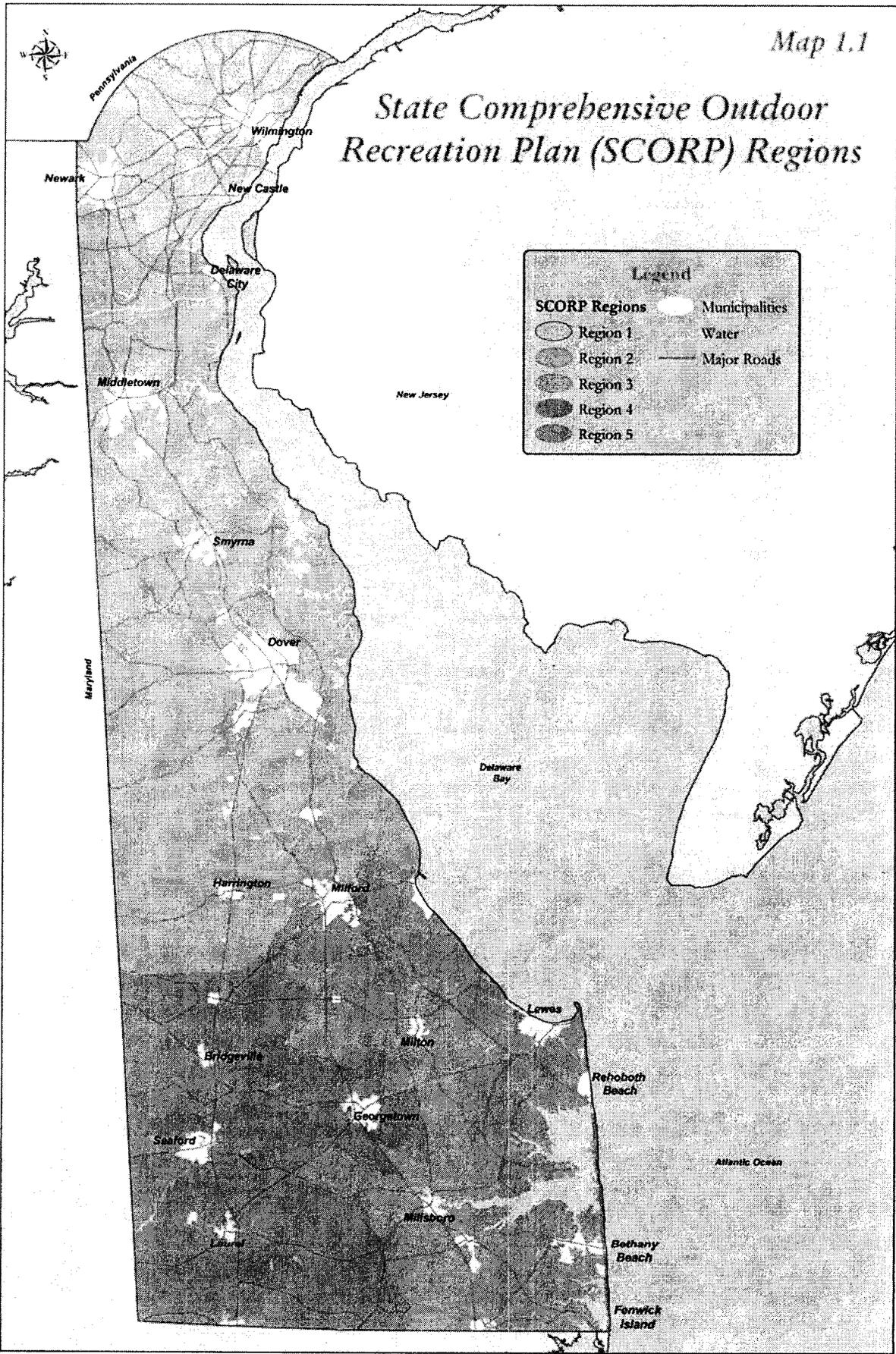
	<b>Population</b>	<b>Percent of Delaware's Population</b>
Region 1	432,766	55.3%
Region 2	67,348	8.6%
Region 3	126,469	16.2%
Region 4	63,973	8.2%
Region 5	92,291	11.8%

**(Footnotes)**

<sup>1</sup> [www.tpl.org](http://www.tpl.org)

<sup>2</sup> [www.rwjf.org/programs/physicalActivity.jsp](http://www.rwjf.org/programs/physicalActivity.jsp)

<sup>3</sup> [www.nps.gov/lwcf/history.html](http://www.nps.gov/lwcf/history.html)



## Background

### Population and Growth Trends

Like many other states along the Atlantic coastline, Delaware is becoming more suburbanized. Knowing the amount and likely location of future growth is critical in planning for future needs for outdoor recreation and land preservation. In the decade 1990 to 2000, Delaware's population increased faster than that of the nation - over 17% in Delaware and 13% nationwide. In that same decade, New Castle and Kent Counties experienced population increases of 13% and 14% respectively. These increases are similar to most Maryland and Pennsylvania counties bordering Delaware. One noticeable exception is Delaware County, Pennsylvania with almost zero growth (0.6% change). This county, on the fringe of Philadelphia, can be considered "built out" putting growth pressure on neighboring New Castle County. While the population in New Castle and Kent Counties continue to increase at the national average, Sussex County's population during the same decade - 1990 to 2000 - rose over 38%. Looking at Delaware more closely, Chart 2.1 shows the growth rates in Delaware by SCORP planning region. The fastest growing areas in the state between 1990 and 2000 are Eastern Sussex County (Region 5) and Southern New Castle County (Region 2). Using US Census data, Map 2.1 depicts population change by census tract, identifying specific growth areas in the decade 1990 to 2000.

Nationally, the rate of land development is outpacing population growth. Developing areas increased 40% in the 15 year period from 1982 to 1997 while the population increased by only 24% in the 20 year period from 1980 to 2000.<sup>1</sup> In the five-year period between 1992 and 1997, Delaware's residential area rose 18.4%. In view of the national trend that developed land grew nearly twice as fast as the population, it is not surprising that Delaware's land development growth is also faster than its population growth. Chart 2.2 shows the number of agricultural and forest land acres lost compared to the increase in residential land acres developed. By far, the greatest consumer of land is residential development.

Land use decisions affect everyone and require quality comprehensive plans, community design standards and land use ordinances to direct growth while minimizing

impacts to vital natural and environmental resources. New development planned and executed around existing development, 1) puts people where services are already located, 2) reduces costs of installing new infrastructure, keeping schools, parks, library, shopping and emergency services close to home and 3) decreases the fragmentation of agriculture and forests, while maintaining farm productivity and biological diversity.

Demographic characteristics help direct future recreation investments. Knowledge about the age distribution aids planners and decision makers in their recreation investments. Population growth estimates are available at the state and county level and are presented in the following charts.<sup>2</sup> Since the SCORP focuses on recreation needs in the 5-year horizon, the demographic population data chosen for this analysis are also 5-year estimates. Chart 2.3 shows the expected statewide population changes by age groups between 2003 and 2008. The growth during this planning period is expected to be in the older age groups.

Chart 2.4 shows the estimated 5-year change in population within each ethnic group. Chart 2.5 estimates the distribution of the 5-year growth among ethnic groups. Even though Caucasians make up nearly 75% of the state's population, the growth in the next five years will be more evenly distributed among all ethnic groups.

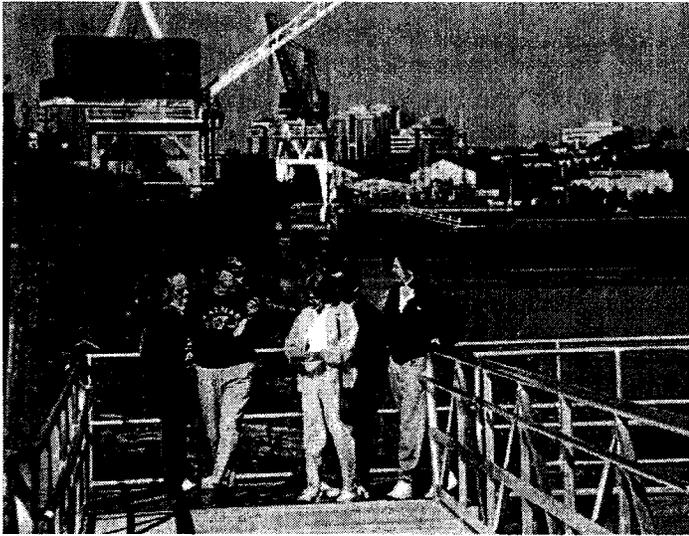
### Livable Delaware

The rapid growth of development that Delaware has experienced in the past two decades is termed "sprawl." Sprawl is defined as "low-density land-use patterns that are automobile-dependent, energy and land consumptive, and require a very high ratio of road service to development served."<sup>3</sup> In addition to its impact on the natural environment, sprawl is also more expensive to taxpayers than more dense, well-planned development patterns.

In response to uncontrolled growth and the cost of sprawl to the quality of life of Delawareans, Governor Ruth Ann Minner introduced her Livable Delaware agenda in 2001. According to Governor Minner, "Livable Delaware sends a clear message: We value

our quality of life here in Delaware, and we will no longer support sprawl with taxpayer's money."

According to Governor Minner, "Livable Delaware is a comprehensive strategy to get sprawl under control and direct intelligent growth to areas where the state, county and local governments are most prepared for new development in terms of infrastructure, services

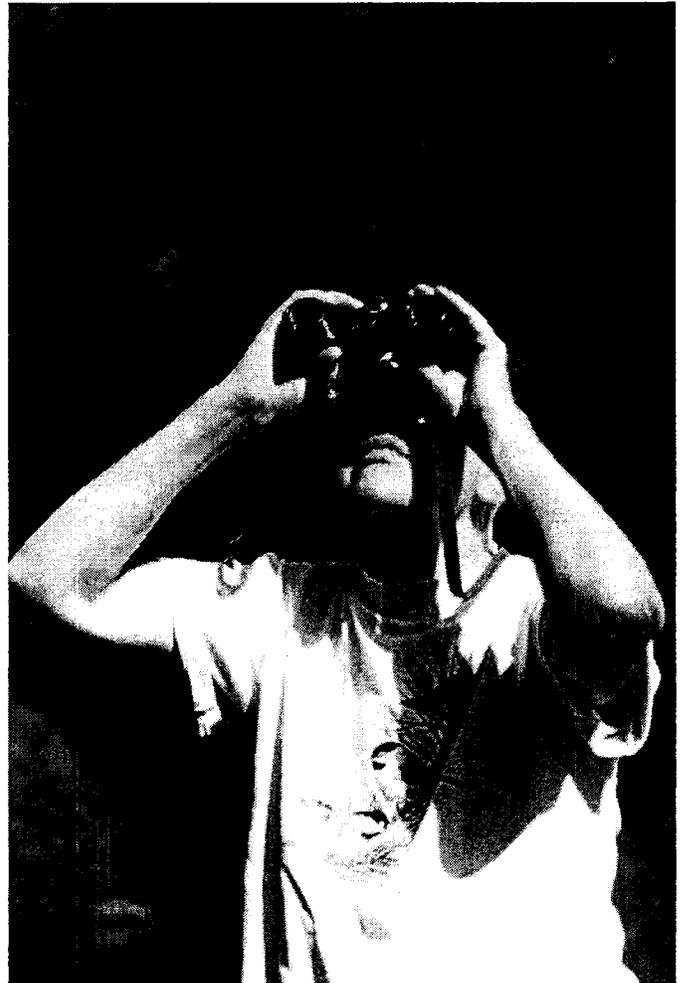


and thoughtful planning." Livable Delaware is a strategy plan directing new development to "where it makes the most economic, environmental and social sense." <sup>4</sup>

Livable Delaware is a positive, proactive strategy that seeks to curb sprawl and direct growth to areas where the state, county and local governments are most prepared for it in terms of infrastructure investment and thoughtful planning. It builds on the foundation laid by the Strategies for State Policies and Spending, which were adopted in 1999. Updating these Strategies began in 2003 and is expected to be complete in 2004. Current strategies for State Policies and Spending are laid out in Map 2.2.

Livable Delaware supports many of the concepts that are encouraged by the parks and recreation community, including preservation of open space, close-to-home recreation opportunities, and bicycle and pedestrian mobility. Implementation of the SCORP in a way that encourages investment for active recreation in areas identified as "developing areas" while preserving open space in rural and environmentally sensitive

areas will support the principles of Livable Delaware. Ultimately, Livable Delaware goals will maintain and enhance our quality of life.



## Benefits of Outdoor Recreation and Green Spaces

Whether you are actively engaged in a competitive sport or taking in a scenic view, outdoor recreation and open space provide physical, mental and spiritual benefits. Studies indicate that people who are actively engaged in outdoor recreation live longer and healthier lives than sedentary people. Exercise can be fun and healthy while providing weight control, higher energy levels, more restful sleep, and reduced anxiety and stress. More than ever, the public health community has become a partner with park and recreation providers in understanding that both parks and recreational facilities are vital components in our communities and vital to our health and well-being. Many different public health campaigns promote

the personal health benefits of being outdoors and physically active.

Beyond health factors, children benefit from outdoor recreation in other ways. It develops their motor and social skills and raises their self esteem and confidence. Playing outdoors, children learn life skills such as creativity, teamwork, independence and cooperation. Furthermore, it has been demonstrated in many cities that providing recreational opportunities reduces crime and vandalism in teenagers.

Nature and open spaces are also thought to have curative powers. According to a growing body of evidence in a variety of disciplines, from biology to environmental psychology to landscape architecture, natural surroundings may make us healthier, and maybe even happier and smarter.<sup>5</sup> Our need for greenery may be intensifying in reaction to the dense, urbanized, technological environments in which we live. Beyond the environmental concerns for safe drinking water, air pollution and harmful chemicals, there is a growing concern for the emotional affiliation of humans to their environment.

In an article in the American Journal of Health Promotion, Dr. Howard Frumkin MD, gathered various studies to show that we may benefit from our exposure to the natural world. He found a wide body of evidence linking the natural world with human health. People polled indicated that their enjoyment of recreational activities is influenced by greenery and color in their surroundings and that landscaped grounds and views of those grounds are important. Parks and homes located on open tree-studded land near water, may not only be aesthetic, but aid in personal restoration or stress recovery. Several studies show health benefits linked to physically interacting with wilderness, as opposed to just viewing it.<sup>6</sup>

Studies conducted by Dr. Roger Ulrich, Texas A&M University and Dr. Virginia Lohr, Washington State University (WSU), confirm that visual exposure to plant settings has produced significant recovery from stress and enhanced productivity by 12%.<sup>7</sup> Another study out of WSU verifies that once exposed to plant settings, test persons demonstrated more positive emotions such as happiness, friendliness,

and assertiveness and less negative emotions such as sadness and fear.<sup>8</sup>

While the Ulrich and Lohr studies have focused on indoor advantages associated with greenery, the advantage to outdoor exposure to greenery may be even greater. Green infrastructure makes urban and suburban areas more appealing places to live. It also enhances our environment by: adding visual enrichment; buffers around stream corridors; wildlife habitat; noise attenuation; flood control; and opportunities for outdoor recreation and environmental education. Furthermore, it has been demonstrated that green infrastructure can increase property values for nearby homes. Aside from the recreational and "green" benefits that parks and open spaces provide, our social and cultural fabric becomes stronger when families and communities recreate together.



#### (Footnotes)

- <sup>1</sup> Parks and Recreation Magazine, Feb. 2003
- <sup>2</sup> Delaware Population Consortium, October 8, 2002
- <sup>3</sup> Michigan State Planning Officials, Patterns on the Land, Trend Future Project, final report, September 1995
- <sup>4</sup> <http://www.state.de.us/planning/shape/strategy/summary.htm>
- <sup>5</sup> Rollins School of Public Health in Atlanta, Georgia
- <sup>6</sup> Center for the Advancement of Health, April 2001
- <sup>7</sup> <http://www.cusm.mcgill.ca/healing/english/Speakers/ulrich.html>
- <sup>8</sup> <http://www.wsu.edu/~lohr/hih/>

Chart 2.1 Percent Population Change (1990-2000)

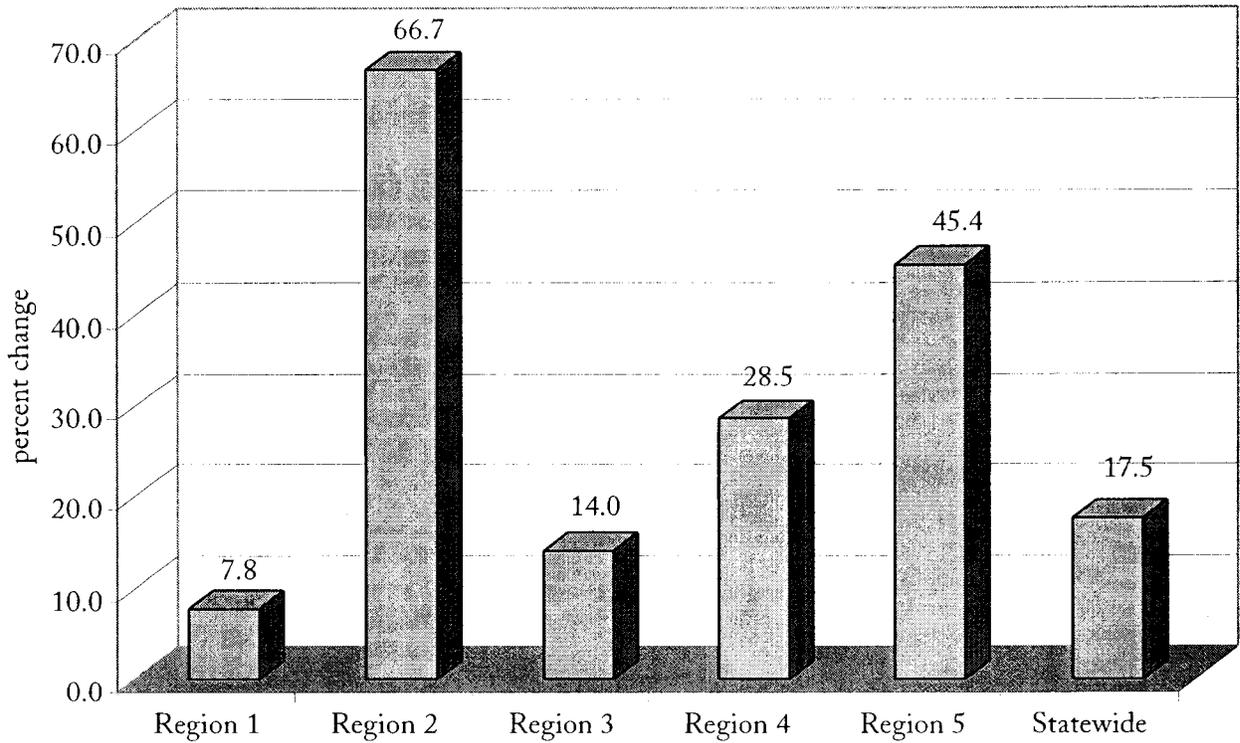
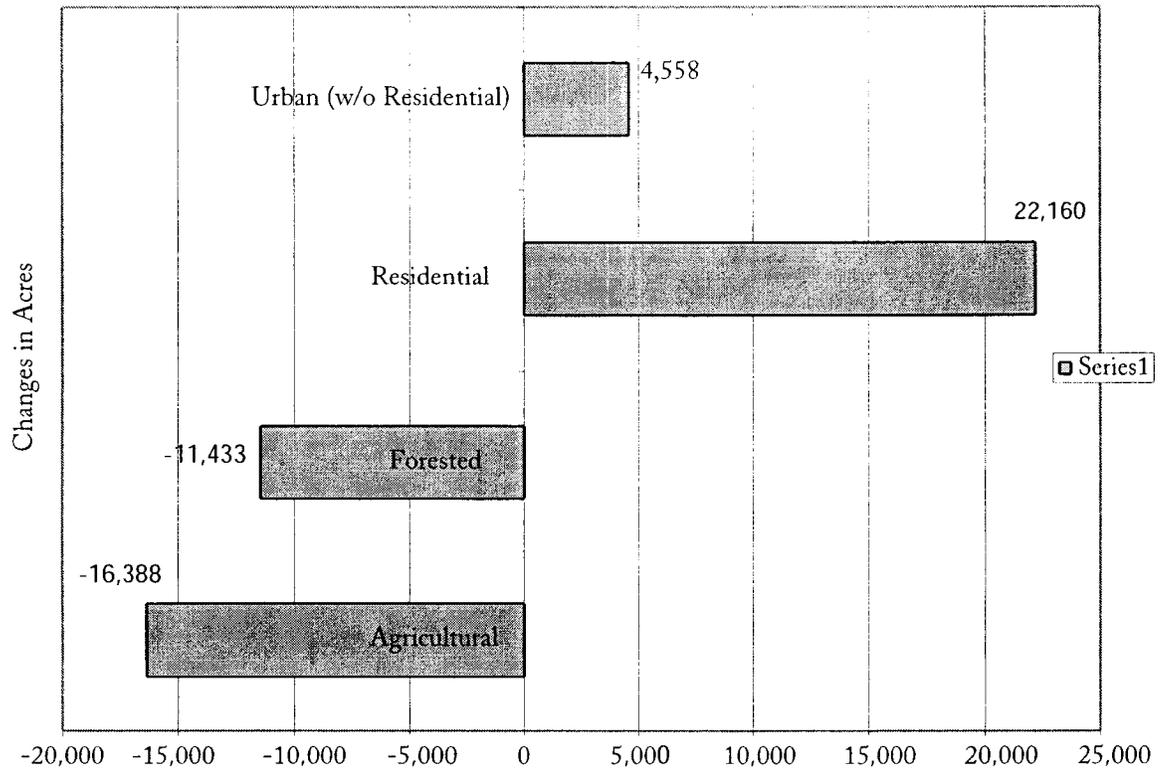
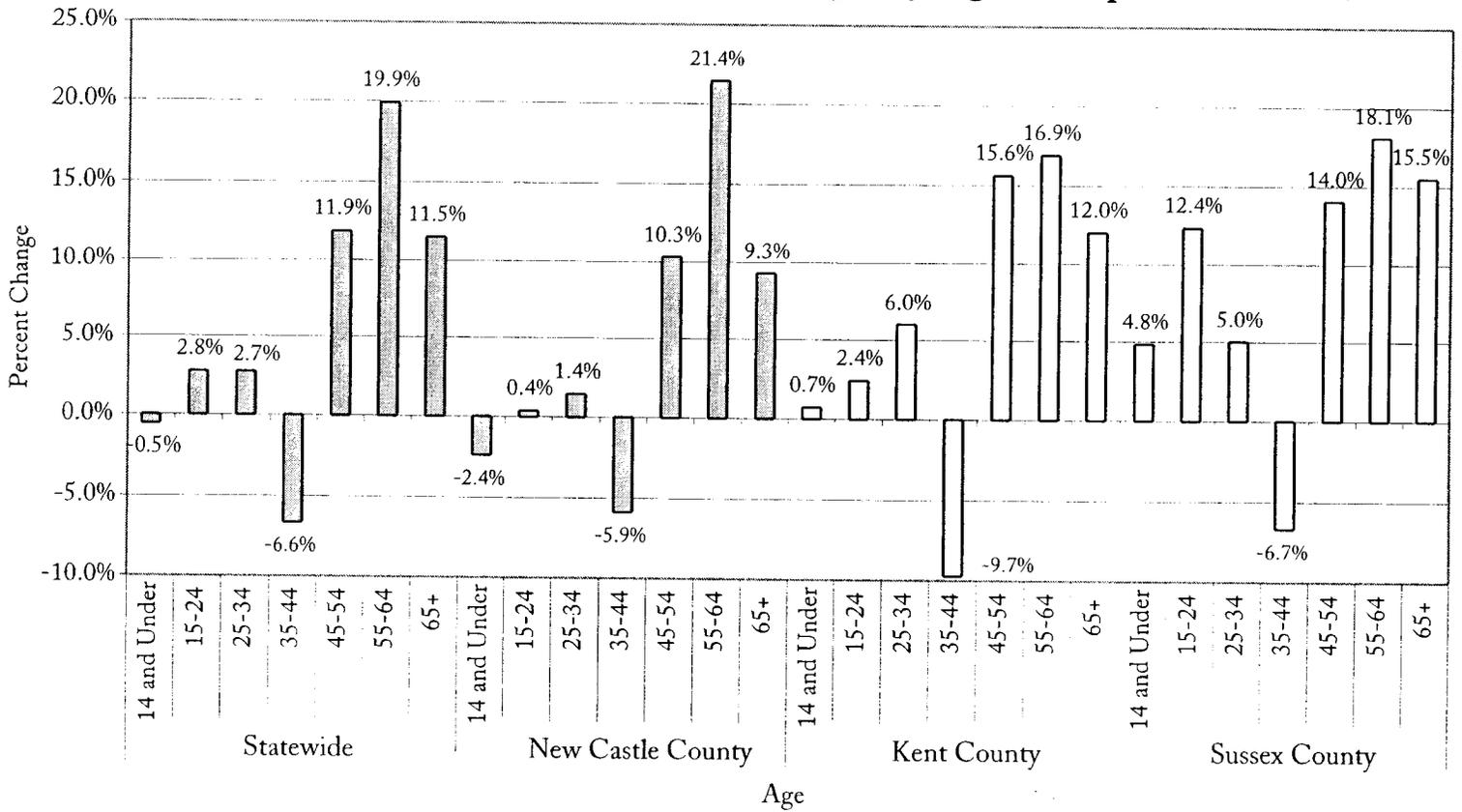


Chart 2.2 Statewide Land Cover Changes in Acres (1992-1997)



**Chart 2.3 Estimated Population Changes by Age Groups (2003-2008)**



**Chart 2.4 Estimated Population Change by Ethnic Group (2003-2008)**

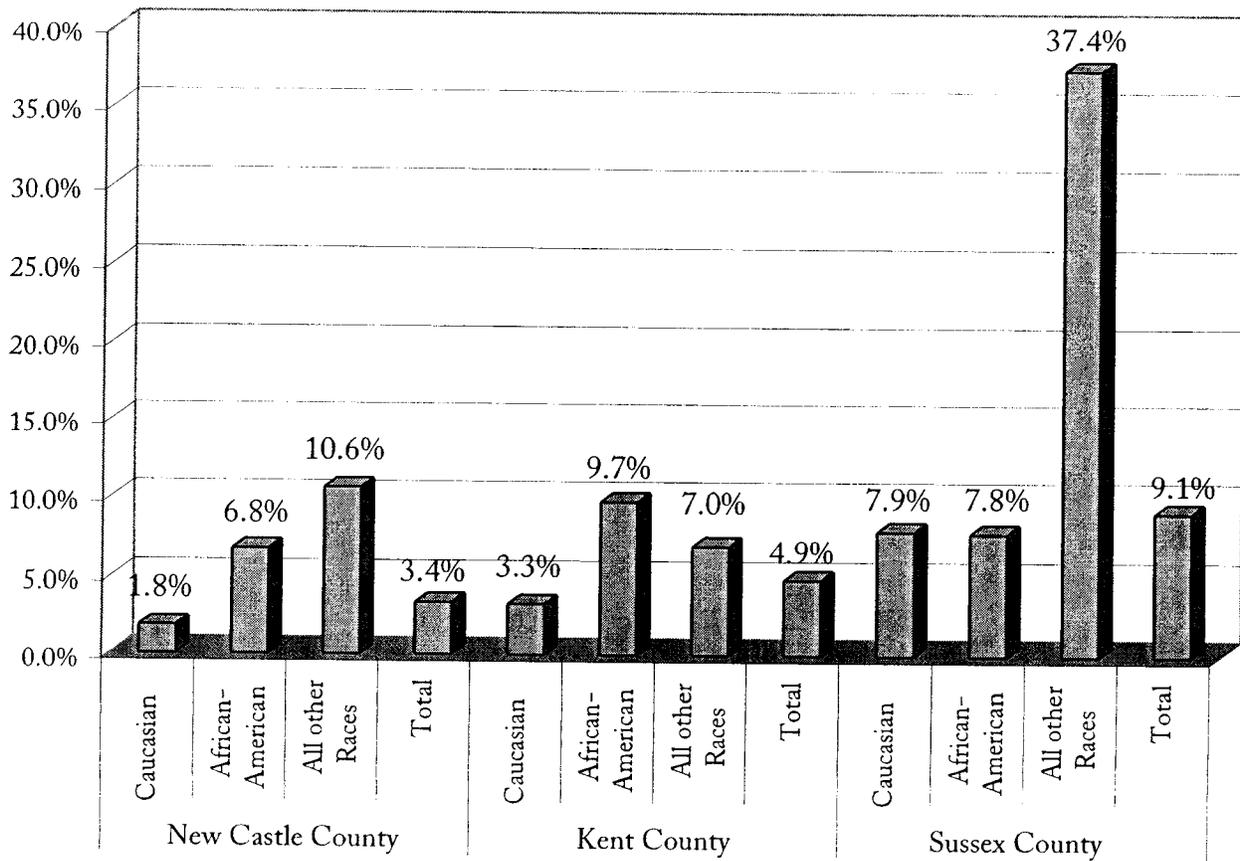
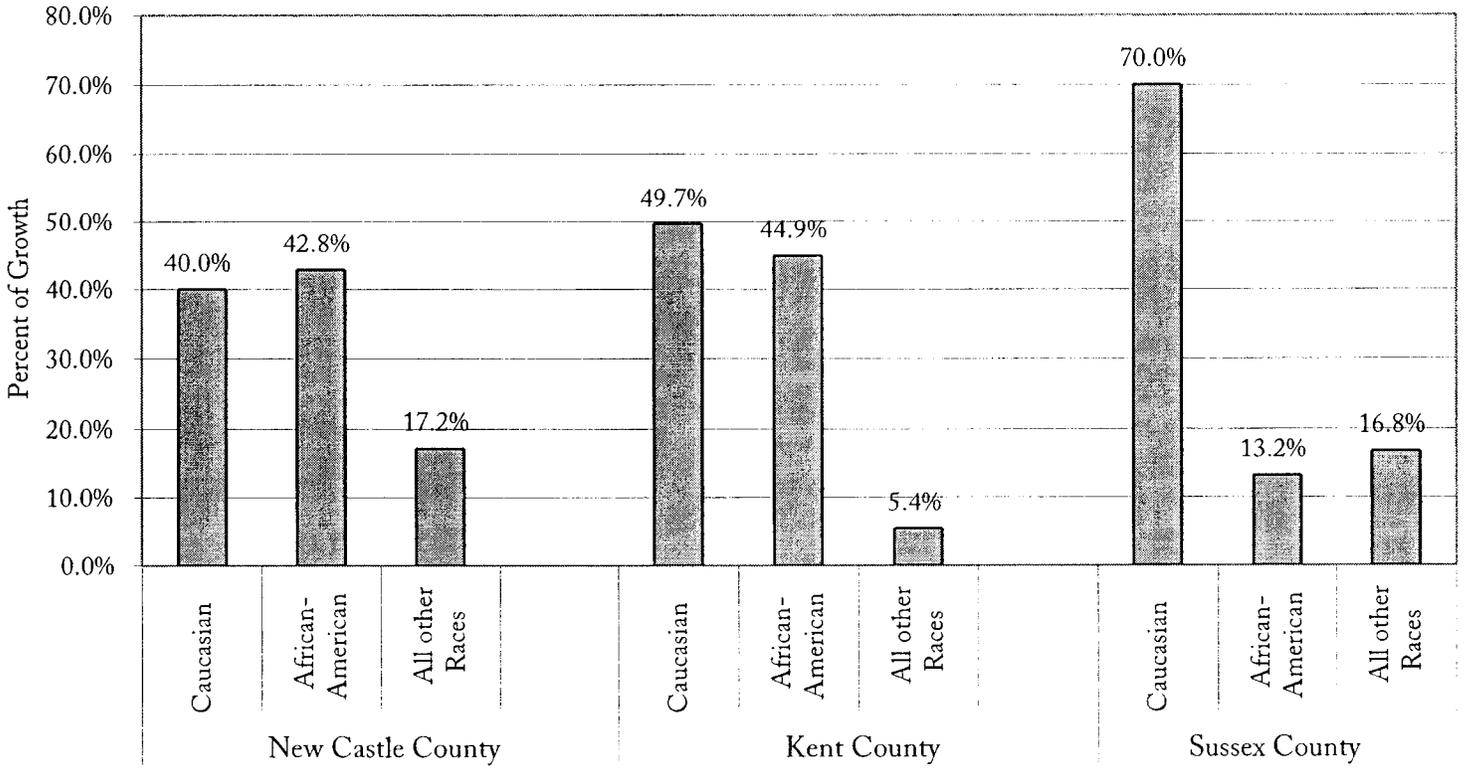
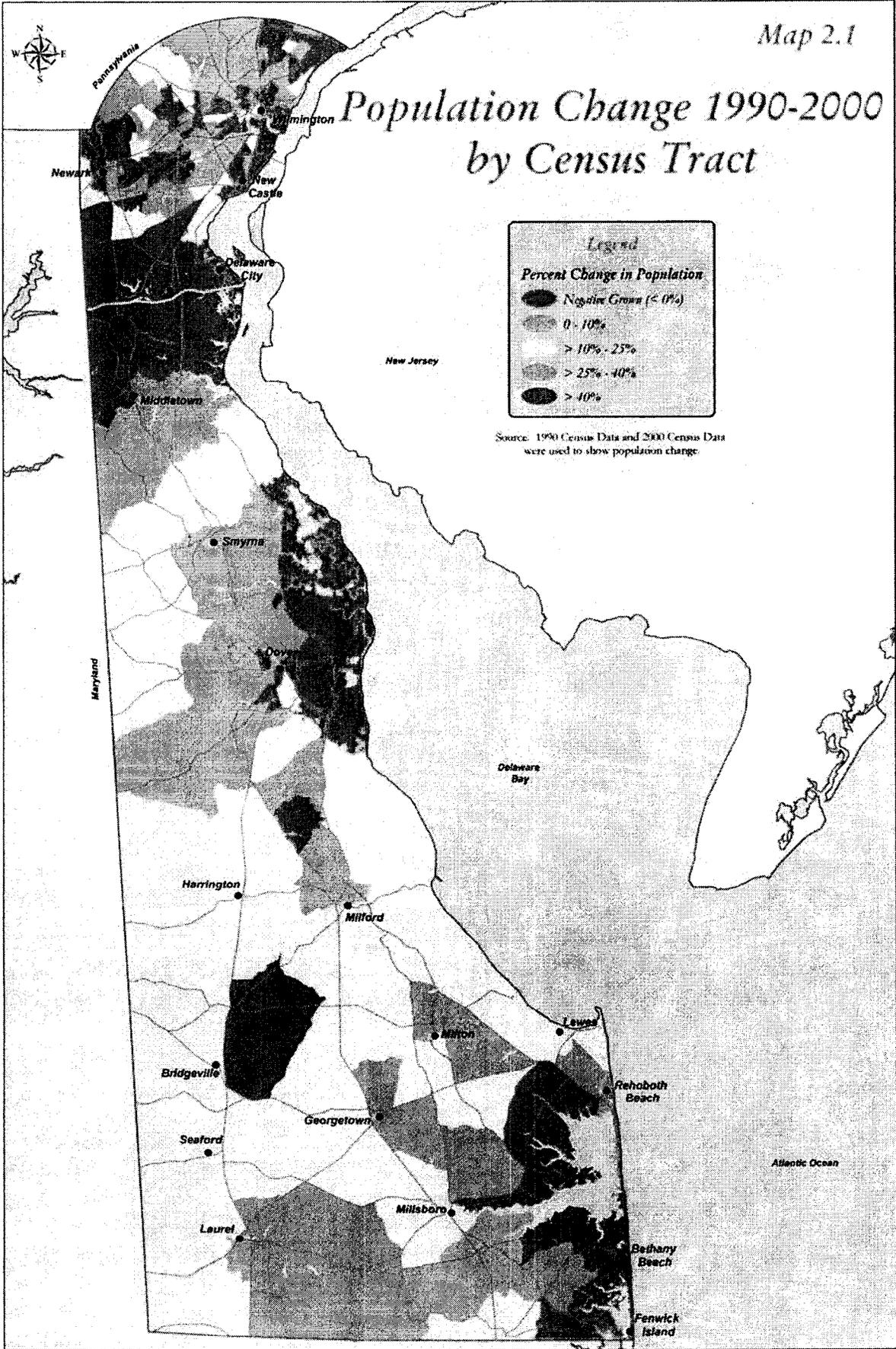
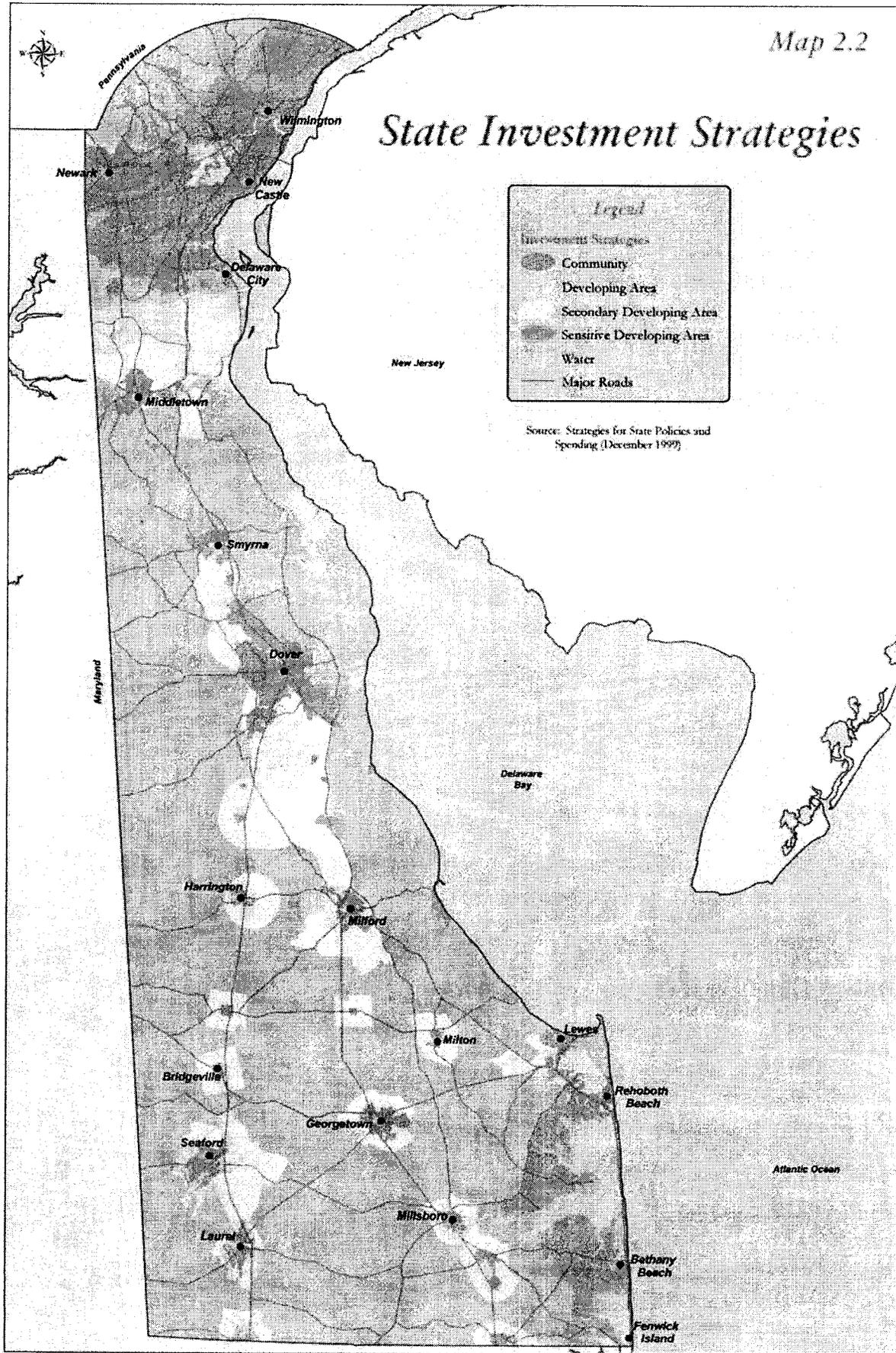


Chart 2.5 Estimated Percent of the County Population Change by Ethnic Group (2003-2008)







## Outdoor Recreation Trends and Demand Reasons for Participation in Outdoor Recreation

In this section and other sections of the SCORP document, findings are reported from a telephone survey contracted by the Division of Parks and Recreation. Responsive Management Inc., a survey and research firm specializing in outdoor recreation and natural resource issues, was contracted to conduct a survey to assess Delawareans' participation in outdoor recreational activities. Specifically, the survey of 1,800 Delawareans concentrated on assessing the respondents' view of six content areas:

- Individual participation in outdoor recreational activities
- Household participation in outdoor recreational activities
- Locations of park destinations
- Attitudes about funding open space and outdoor recreational facilities
- Opinions about management of parks
- Opinions about landscape preferences and development

The phone survey methodology, instrument and comments can be found in Appendices A, B and C. Also, a demographic comparison between the phone survey respondents and the U.S. Census is located in Appendix D.

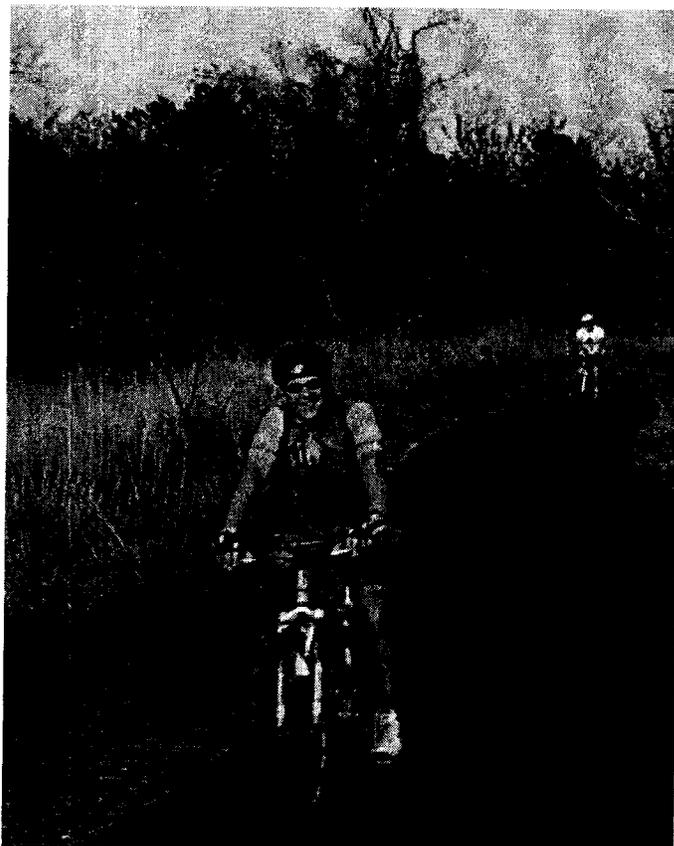
### Importance of Outdoor Recreation

When looking at the findings from the telephone survey conducted in 2002, and a similar survey taken in 1995, it can be concluded that Delawareans live active lifestyles and that the importance of outdoor recreation to individuals and to households has increased.

Ninety-two percent of those interviewed for the survey reported that outdoor recreation has some importance in their lives, while 62.5% said it was very important to them personally. This represents a 6.5% increase over the responses given in a 1995 telephone survey. In Chart 3.1 the importance of outdoor recreation is presented by Region.

According to the 2002 telephone survey responses, physical fitness is the number one reason given for participating in outdoor recreation. One out of every two people surveyed said physical fitness is the most important reason they participate in outdoor recreation. Physical fitness steadily increases with the respondents' age - 44% of 24 to 35 year old group and 56% of the 65+ age group exercises outdoors.

The trend of valuing outdoor recreation is expected to increase in the future as our population ages and lives longer. In the previous century from 1902 to 2002, the median age of Americans increased from 23 years to 36 years of age. In the same time period, the life expectancy increased from under 52 years to 77 years. Improving personal health has moved beyond the absence of disease, to a more proactive and disease prevention approach.<sup>1</sup> Our aging society better understands the health benefits of being active and outdoors. The top three reasons given in the telephone survey for why Delawareans participate in outdoor recreation is shown in Chart 3.2.



Twenty-three percent of the survey respondents said recreating outdoors for relaxation and to be with family and friends, are the second and third most popular reasons for recreating out-of-doors. The 24 to 35 year old group represented the highest percent response in wanting to be with family and friends. This is the age group most likely to have young children. The fourth most frequent response overall (19%) is to be close to nature. The 55 to 64 year old age group had the highest desire to be close to nature.

The 1995 telephone survey, conducted for the 1996 SCORP, asked for the top two reasons for participating in outdoor recreation from a list of choices. Nearly half of the respondents, 48% said to be with family and friends; 42% for relaxation; and 39% for physical fitness.

In both the 1995 and 2002 SCORP telephone surveys, Delawareans were asked, what would encourage them to participate in outdoor recreation or to be more active. In 1995 and 2002, 51% and 52% respectively responded they want more outdoor facilities, while 53% and 44% (1995, 2002) were seeking more information about the facilities. Chart 3.3 reflects regional responses from the 2002 telephone survey to this question. Region 2, a rapidly developing area in New Castle County, showed the highest need for more facilities.

### Preferences for Activity Participation

Statewide, 88% of those surveyed said walking or jogging are activities in which their households will participate in over the next twelve months. Picnicking (79%), swimming at the beach (75%), visiting historical sites (74%) and swimming at a pool (71%) were the next highest preferred and participated in outdoor activities. Chart 3.4 shows the statewide responses to activities in which any member of the household will participate in the next 12 months. Later in this chapter, regional demand for facilities will be presented. Although there are some regional variations to survey responses, the top activities statewide are also the top activities in each planning region.

In addition to household participation, Delawareans were asked which single activity they personally

participate in most often. By far the most popular individual activity is walking or jogging (40% of survey respondents). Walking or jogging requires little or no special equipment, but safe facilities for these activities is a necessity. For reasons of health, enjoyment and fitness, walking has become very important with age. The three older age groups 45 to 54; 55 to 64; and 65 and older - had higher than average responses to walking or jogging. The next three most popular individual recreational activities statewide are beach swimming (9%), fishing (8%) and bicycling (7.5%). Trends tracked over a series of Delaware SCORP plans show that these activities have always had high participation rates in Delaware.

### Local Official Responses

City and County Council members and local citizen park and recreation committees or commissions, were mailed a Local Official survey to gather their input on facility needs and glean their top outdoor recreation issues. The responses to this survey indicate similar needs as those given by the general public in the telephone survey. Overall, local officials identified walking and jogging trails as the most needed facility followed by playgrounds, bike paths and picnic areas. The least needed facilities, according to the local officials, are mountain bike trails, ATV trails and disc golf. The Local Official survey instrument can be found in Appendix E.

### Nationwide Trends

The United States Forest Service conducts the National Survey on Recreation and the Environment (NSRE). National trends show that backpacking, hiking, bicycling, horseback riding, camping, off-road driving and walking have all experienced a 30% or greater increase in participation from the 1994/95 survey to the 2000 - 02 survey. All of these activities, except camping, are linear activities and require trails or paved pathways. The NSRE results indicate that 78% of Delaware residents walk for pleasure followed by observing or photographing natural scenery, visiting nature centers, picnicking, beach swimming, visiting historical sites and outdoor pool swimming. These activities were also among the top activities results from the 2002 Delaware telephone survey.

The NSRE survey demographics indicate walking, running and jogging, bicycling, picnicking and hiking are activities shared evenly among males and females. However, there are noticeable gender differences in Delaware for the following activities: horseback riding (81%), tennis (82%) and sailing (68%) receive predominately female participation; while baseball (100%), hunting (88%), football (81%), backpacking (79%), primitive camping (77%), golf (75%), and saltwater fishing (70%) receive predominately male participation.



## Regional Analysis of Outdoor Recreation Demand

Because Delaware is a relatively small state, much of the public preference and attitude survey findings are meaningful at the state level. However, variations in development density and population composition, make it important to present survey findings at the regional level.

### Region 1 Demand Analysis

Region 1, Northern New Castle County, is the most populated and most dense area of the state. (See Region Map 1.1) The total county population grew 13%, mirroring nationwide growth, between 1990 and 2000. There are 1,174 people per square mile in New Castle County compared to the state average of 401 people per square mile. Walking and jogging and

picnicking ranked as the number one and two highest household outdoor activities. Despite the absence of beaches in Region 1, swimming at the beach (76%) ranked third in activity participation. Region 1 household participation responses are depicted in Chart 3.5.

The most visited recreation areas in Region 1, in order of response are: Delcastle Recreation Area, and Lums Pond, Bellevue, Cape Henlopen, White Clay Creek, and Brandywine Creek State Parks and New Castle's Battery Park. In fact, two-thirds (67%) responded that they live nine miles or less to the park most visited. Still, three-quarters of the respondents drive to their most visited park site. Region 1 had the highest percentage of respondents, of any region, that said physical fitness (55%) is a main reason for participating in outdoor recreation.

### Region 2 Demand Analysis

Geographically, Region 2 encompasses Southern New Castle County from the Route 40 corridor to the boundary with Kent County. (See Region Map 1.1) This region is one of the fastest growing areas in Delaware. Sixty-nine percent of the survey respondents from this region said that outdoor recreation is personally very important. Over 89% responded that they or a family member will participate in walking or jogging in the next 12 months. Among all the regions, bicycling ranked the highest in Region 2, with a 74% participation rate. Chart 3.6 shows household participation by activity for Region 2.

The most visited recreation areas in Region 2, in order of response are: Lums Pond State Park, Delcastle Recreation Area, Cape Henlopen State Park, Rehoboth Public Beach, White Clay Creek State Park, Killens Pond State Park and Silver Lake Park (Middletown). In Region 2, 84% of the respondents - the most of any region - said they drive to the park area they visit the most. The response is an indication that local park creation is not keeping pace with growth to meet the public's recreational needs. When asked what would encourage them to participate more actively, Region 2 respondents overwhelmingly said more outdoor facilities and opportunities close to home.

### Region 3 Demand Analysis

Kent County, Region 3, has seen a 14.1% increase in population between 1990 and 2000. (See Region Map 1.1) The 2000 Census shows that the County was home to 126,697 residents or 215 people per square mile. While most telephone survey respondents feel they live in a small city or town (40%) or a rural area (39%), only a few consider their residence as suburban (15%) or a large city (3%). Of those surveyed, 59% do not have household members under the age of 18. Walking or jogging (84%), picnicking (78%), visiting historic sites (71%), swimming in a pool (69%), swimming at the beach (68%) and bicycling (65%) are the most popular activities among households in Region 3. Chart 3.7 depicts household preferences for Region 3.

The most visited recreation areas in Region 3, in order of response are: Killens Pond State Park, Brecknock Park (Kent County), Cape Henlopen State Park, Rehoboth Public Beach, Silver Lake, Schutte Park and Smyrna Municipal Park. Forty two percent of the survey participants responded that they live nine miles or less from the park they visit the most. Seventy-five percent of the Region 3 respondents said they chose the place most visited because the park is 1) close by and/or there are no other parks in the area (43%); and 2) park has facilities they desire (32%). In addition, 24% of those polled said they travel more than 20 miles to a park for the facilities they need.

### Region 4 Demand Analysis

Of all three counties, Sussex County has experienced the largest population change (38%) between 1990 and 2000. (See Region Map 1.1) Although Sussex has slightly more people than Kent County, Sussex is the largest county in land area with 938 square miles and the least densely populated with 167 people per square mile. Region 4 in Western Sussex County has a landscape characterized as rural agricultural land punctuated by small towns. Region 4 survey respondents consider their place of residence as a small city or town (44%) or rural (40%) in nature. The 65 and older age group represented 24% of those surveyed in Region 4; the most of any region. In Region 4, fishing (64%) ranked above the state average

in household participation, while hunting (31%) and all-terrain vehicle use (26%) ranked the highest for household participation among all the regions. Chart 3.8 represents household participation in Region 4.

The most visited recreation areas in Region 4, in order of response are: Trap Pond State Park, Killens Pond State Park, Cape Henlopen State Park, Rehoboth Public Beach, Lewes Beach, Delaware Seashores State Park, and Fenwick Island State Park. Of those surveyed, 33% travel nine miles or less to the park they visit most often. According to those surveyed in Region 4, 39% live greater than nine miles to the closest park facility.



### Region 5 Demand Analysis

Region 5, Eastern Sussex County, is distinguished by the Inland Bays and the Atlantic coast beaches that seasonally attract thousands of visitors (see Region Map 1.1). Rapid growth is occurring throughout Region 5. Outdoor recreation is very important to 70% of the survey respondents and is somewhat important to 24% of them. When characterizing their place of residence, 47% indicated that they live in a small city or town - the highest percent response rate of any region - and 36% indicated they live in a rural area. Several characteristics define the survey respondents of Region 5. First, an unprecedented number (70%) of respondents said no one under the age of 18 lives in their house, while 46% live in two-person households.

In Region 5, 19% of the households have a physically disabled member, compared to the statewide average of 14%.

Walking and jogging, swimming at the beach and picnicking are very popular activities with Region 5 respondents. While bicycling is enjoyed by 72% of the respondents, water-based activities including fishing, power boating and canoeing or kayaking are popular as well. Chart 3.9 shows household recreation activity participation in Region 5.

The most visited recreation areas in Region 5, in order of response are: Cape Henlopen State Park, Rehoboth Public Beach, Killens Pond State Park, Trap Pond State Park, Lewes Beach, Delaware Seashore State Park and Fenwick Island State Park. About one-third in Region 5 said they live near the park they visit the most and 40% said they visit that park because its facilities meet their recreational needs. Despite the popularity of bicycling, only 6% of the Region 5 survey respondents bike to the park they visit the most because they live too far from a park or roads are unsafe.



(Footnotes)

<sup>1</sup> Parks and Recreation Magazine April 2003, p.18

Chart 3.1 How Important is Outdoor Recreation to Delawareans?

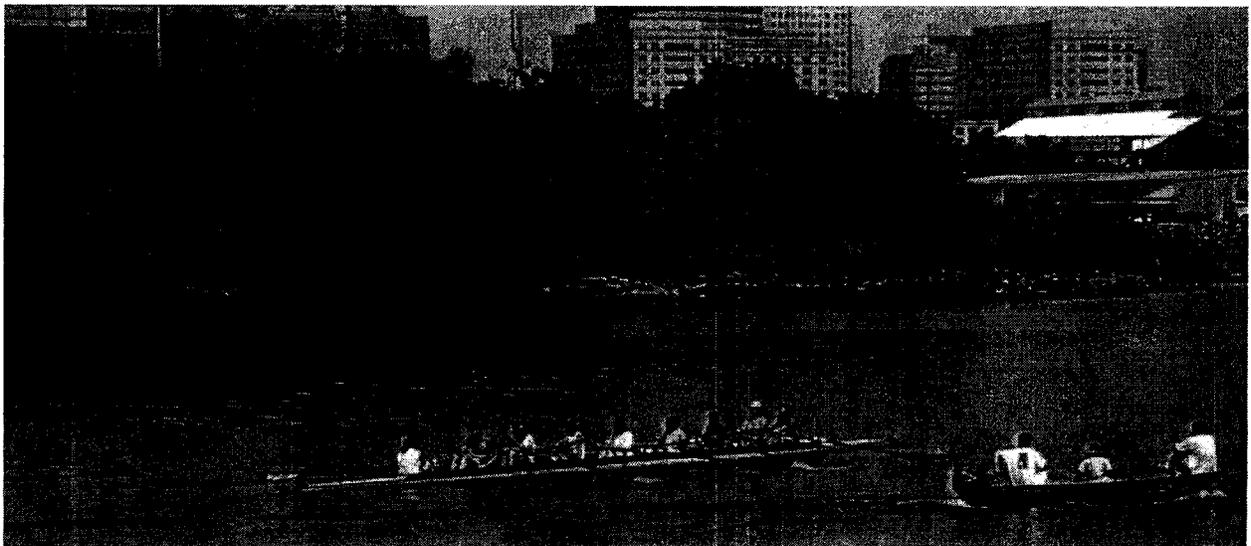
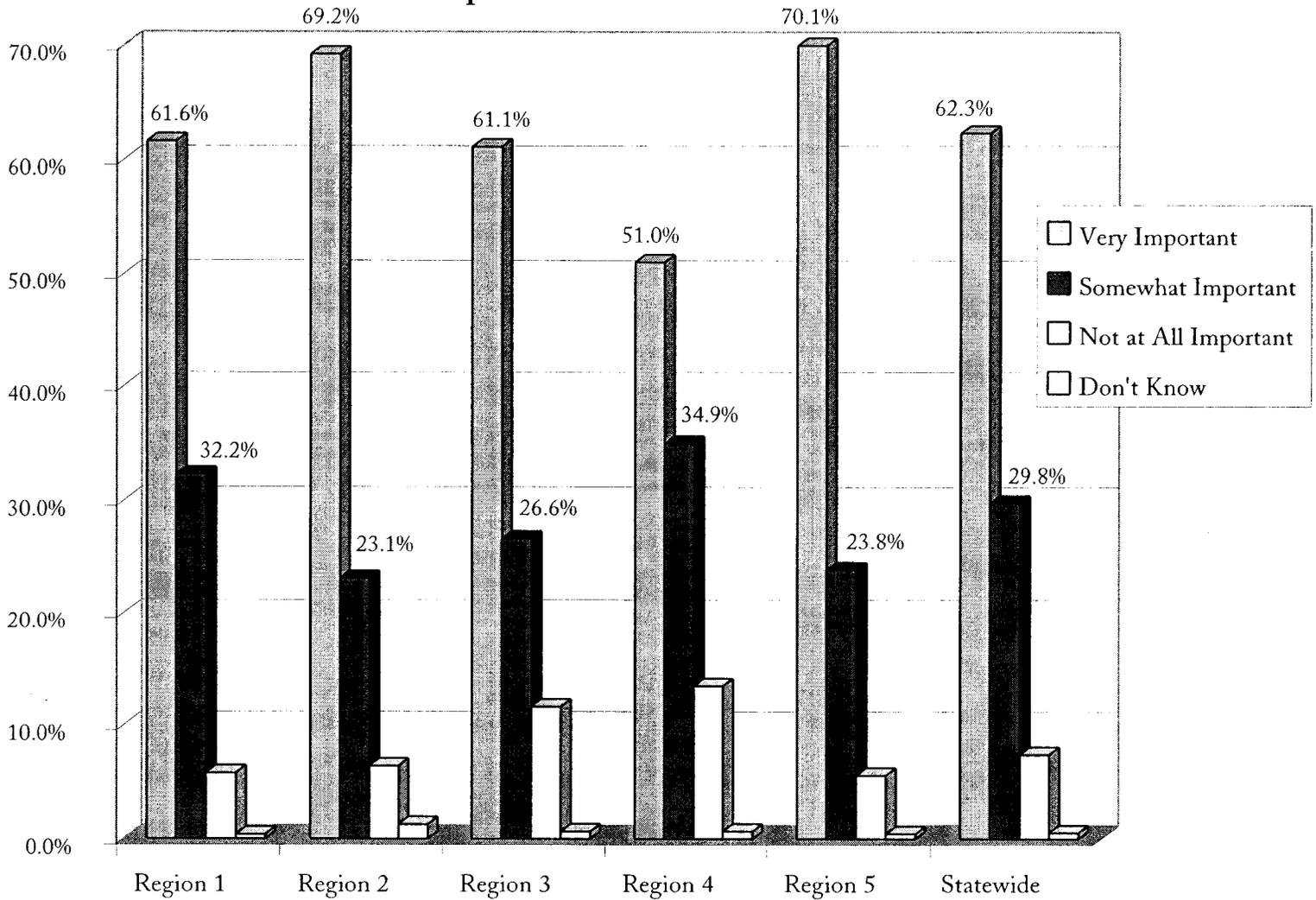


Chart 3.2 Top Three Reasons Why Delawareans Participate in Outdoor Recreation

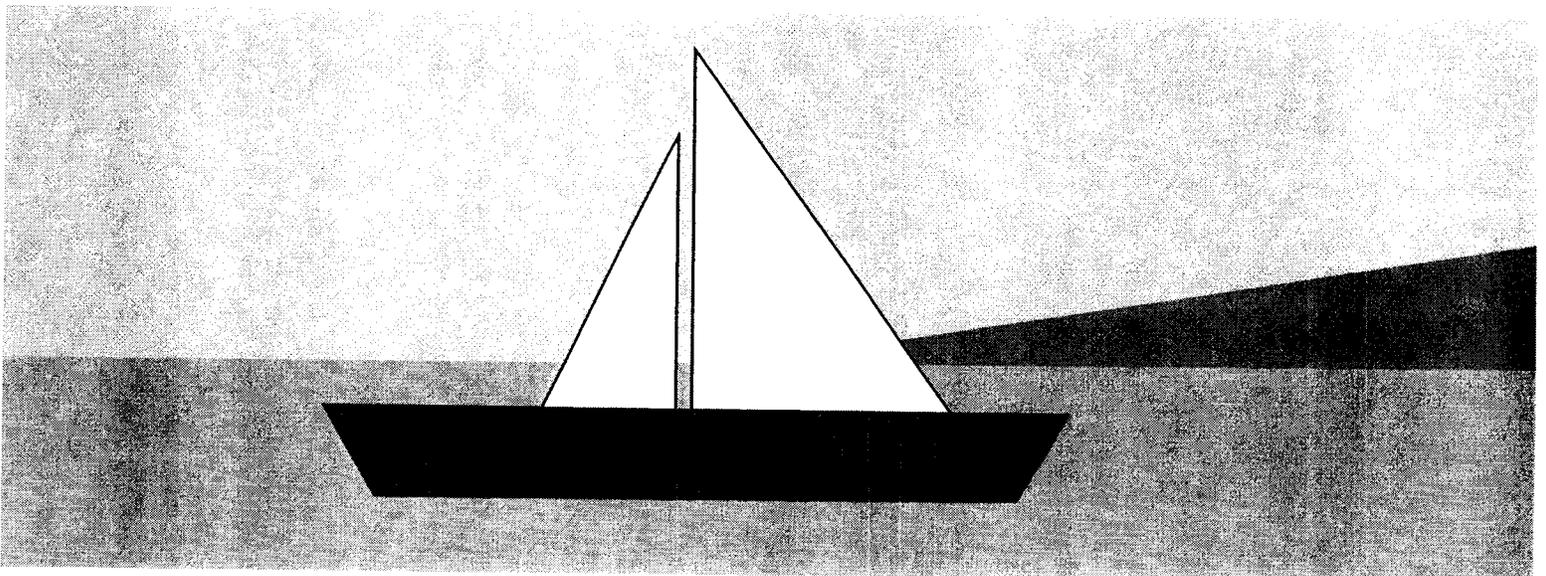
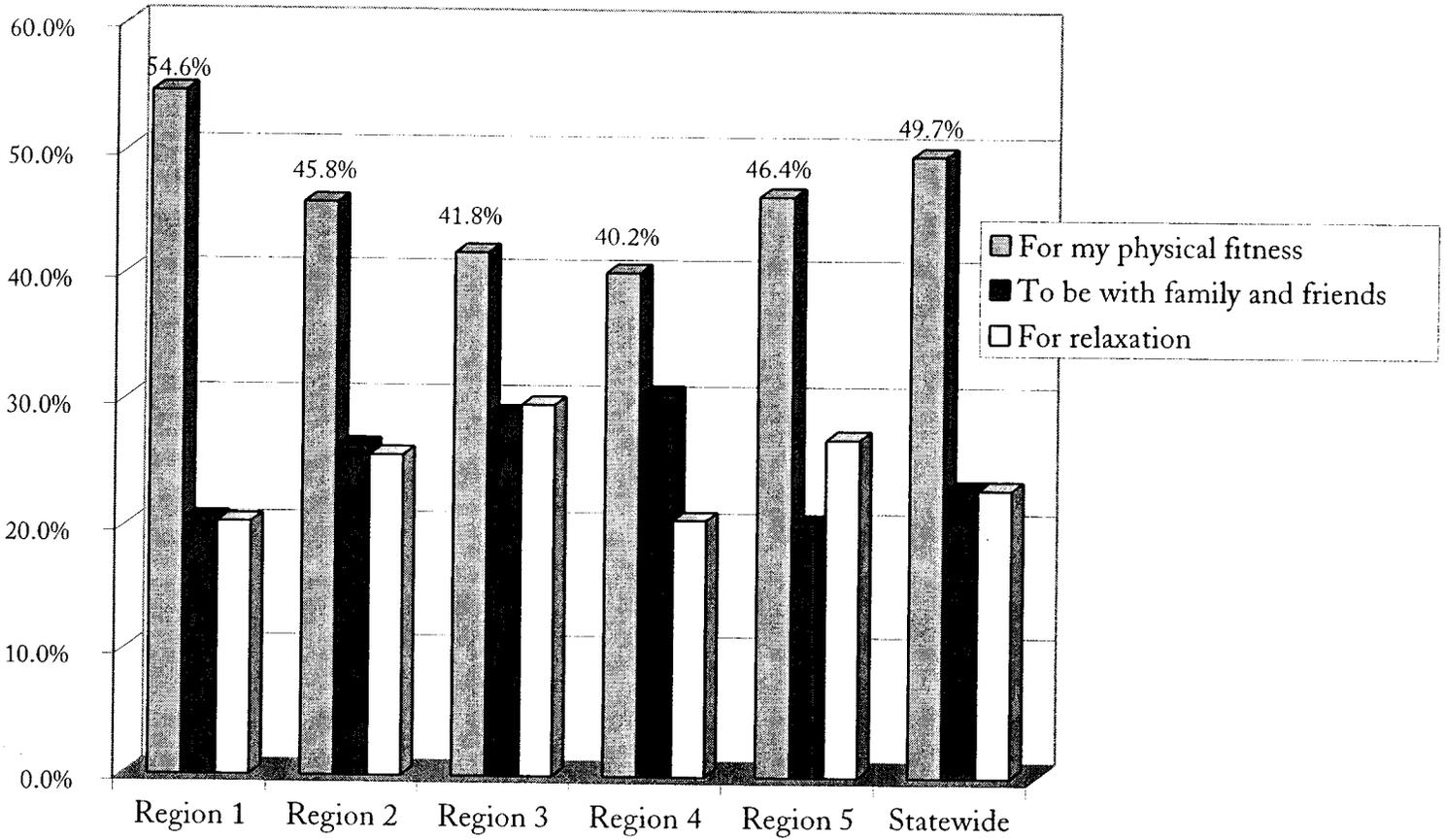


Chart 3.3 Top Three Reasons for Participating More Actively in Outdoor Recreation

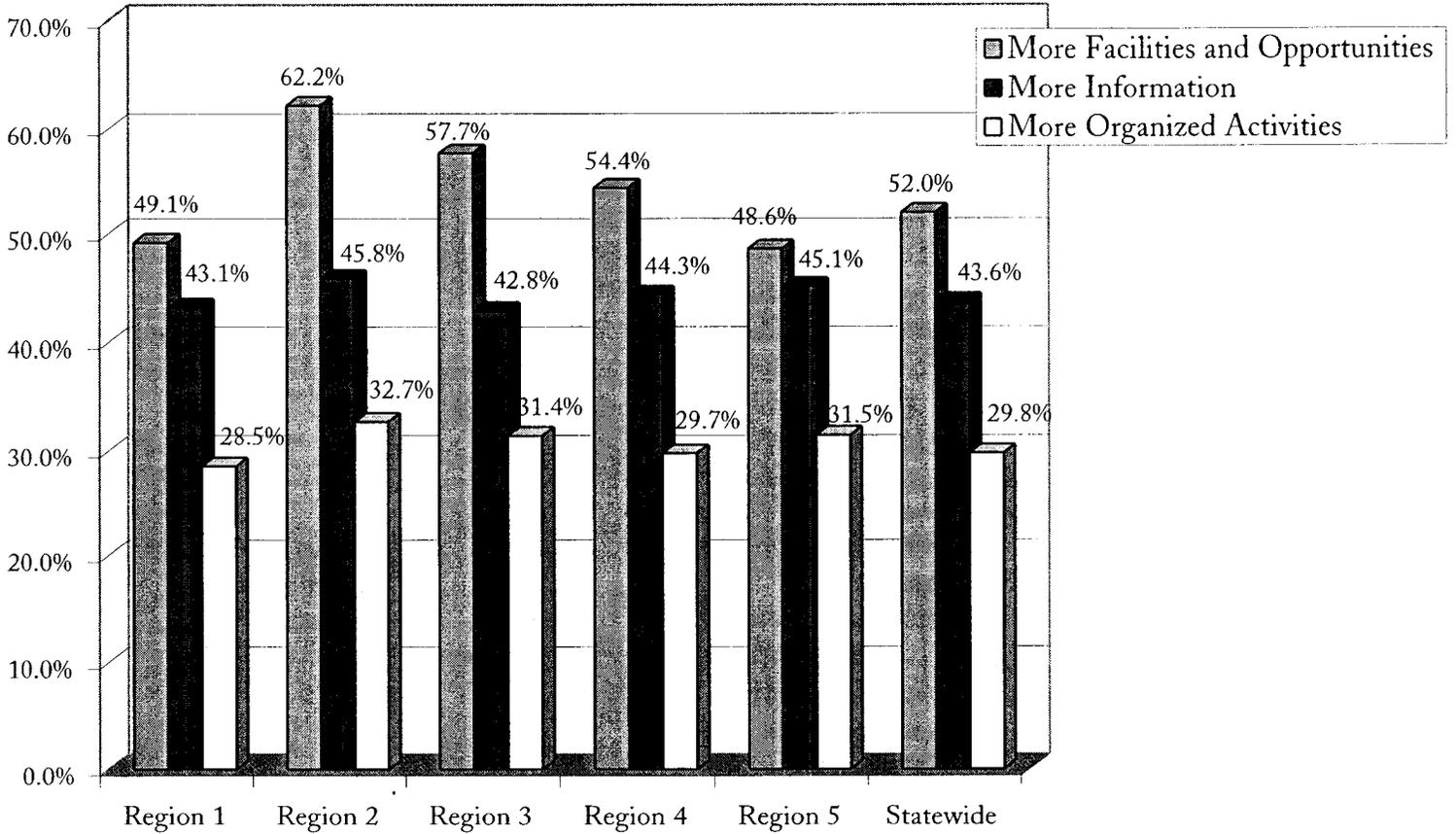


Chart 3.4 Household Participation Statewide

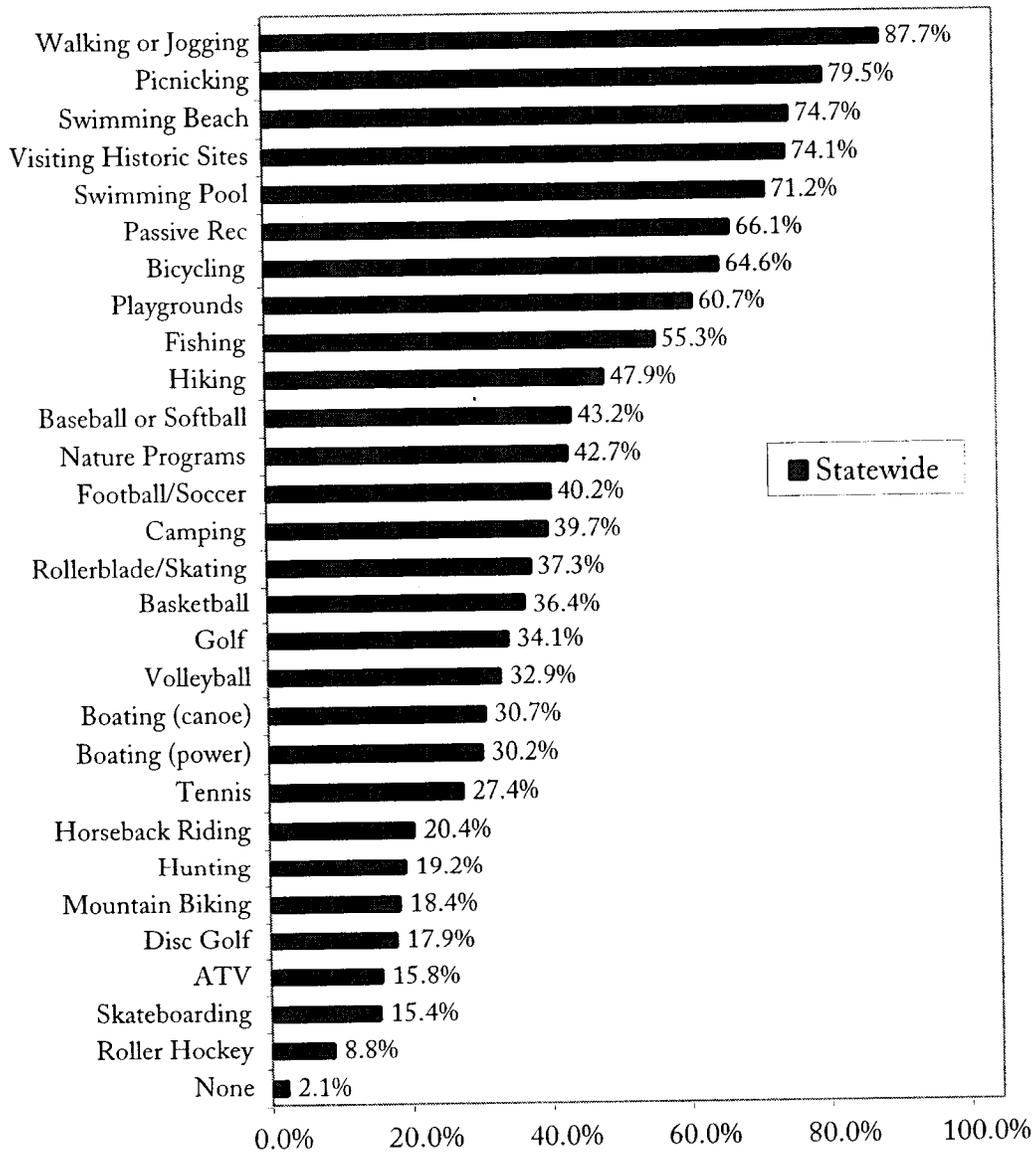


Chart 3.5 Household Participation in Region 1

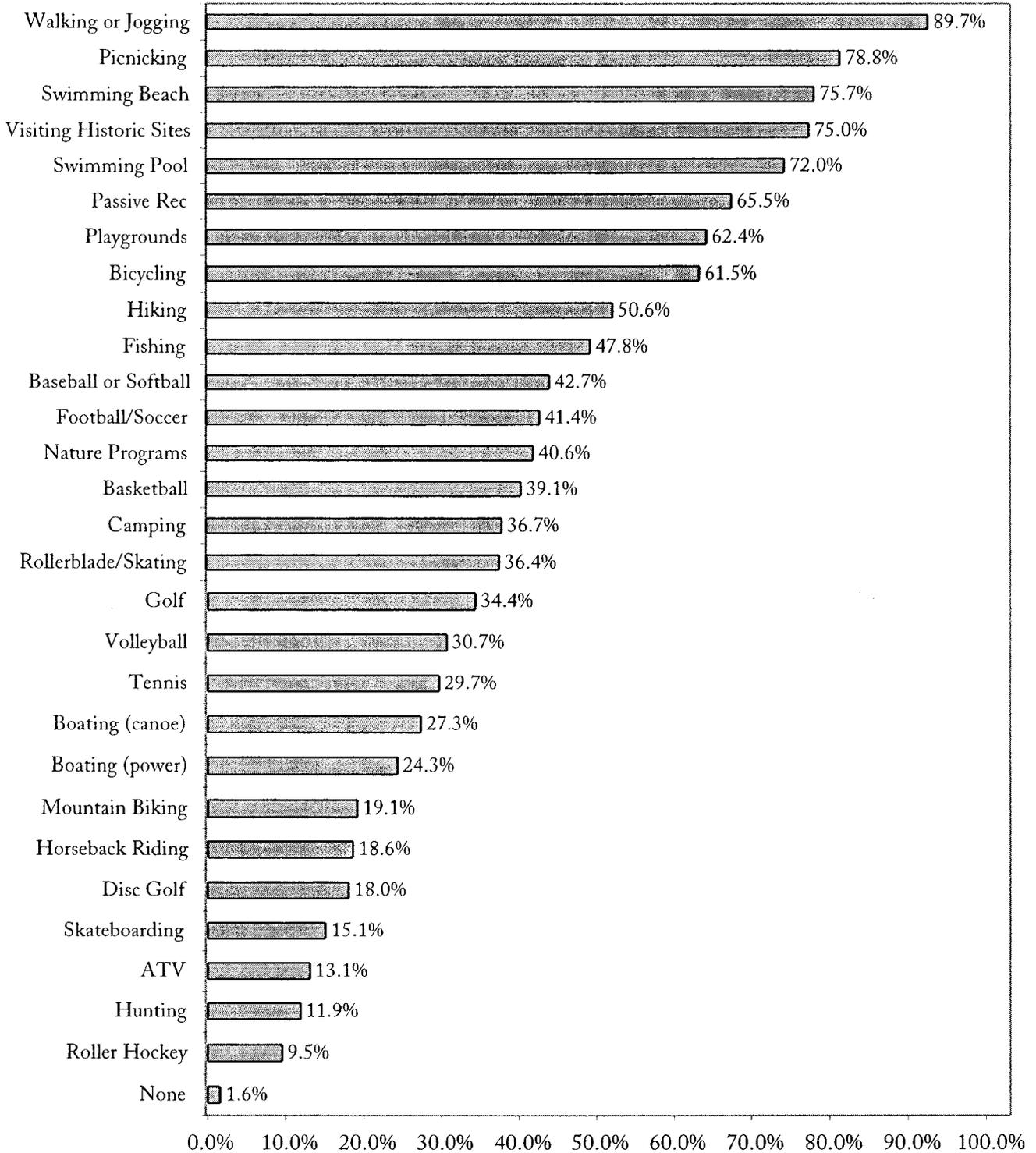


Chart 3.6 Household Participation in Region 2

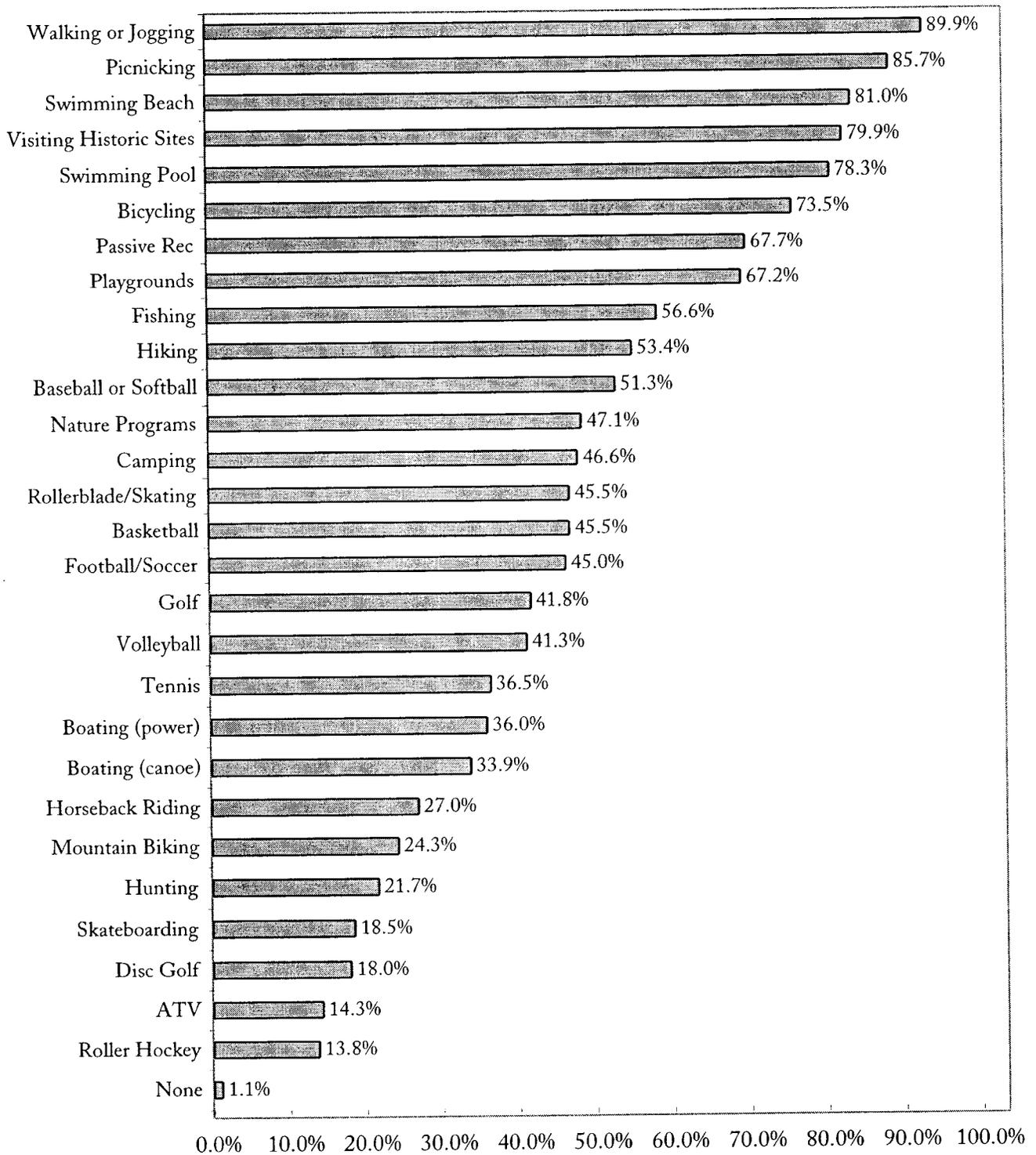


Chart 3.7 Household Participation in Region 3

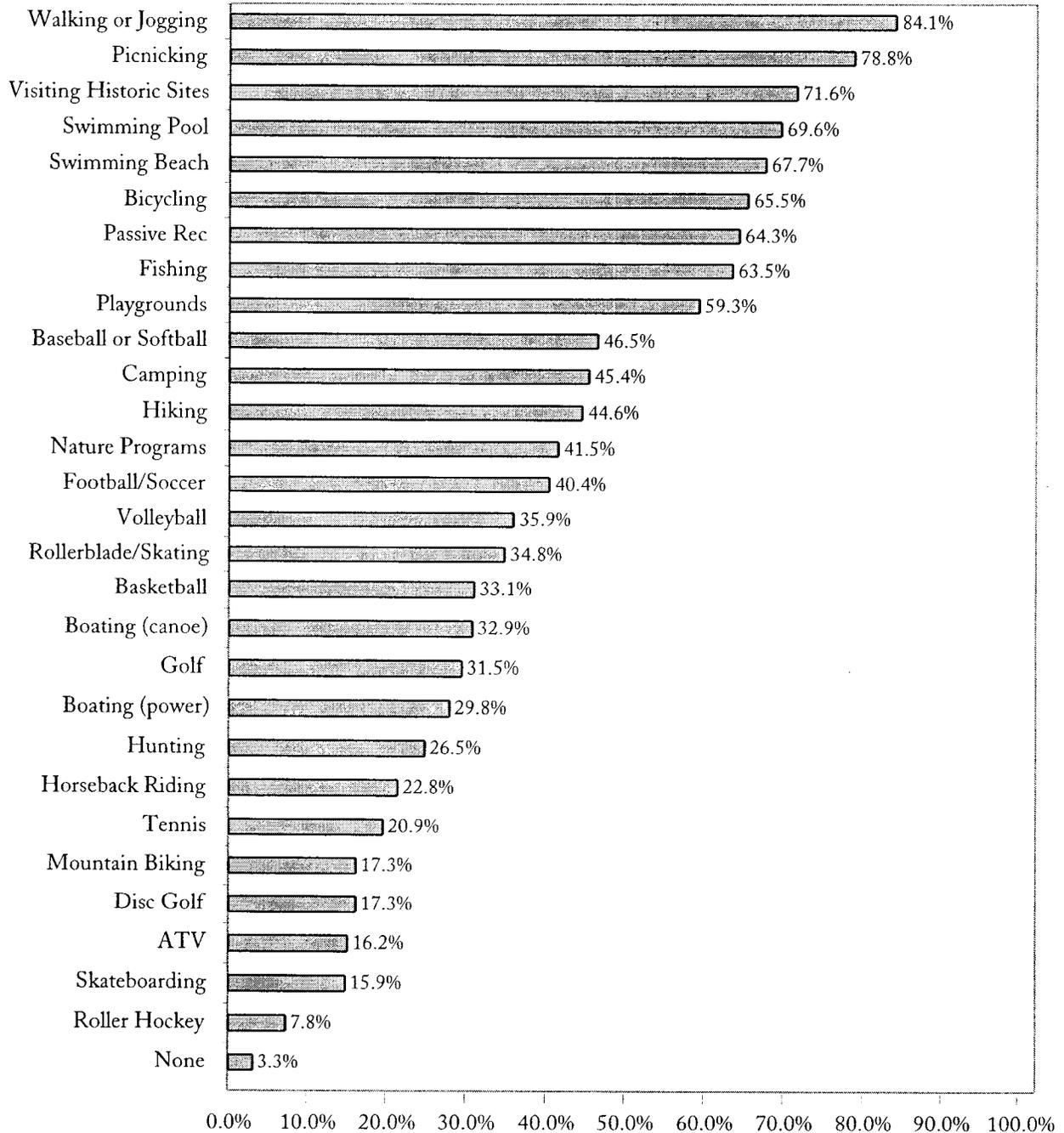


Chart 3.8 Household Participation in Region 4

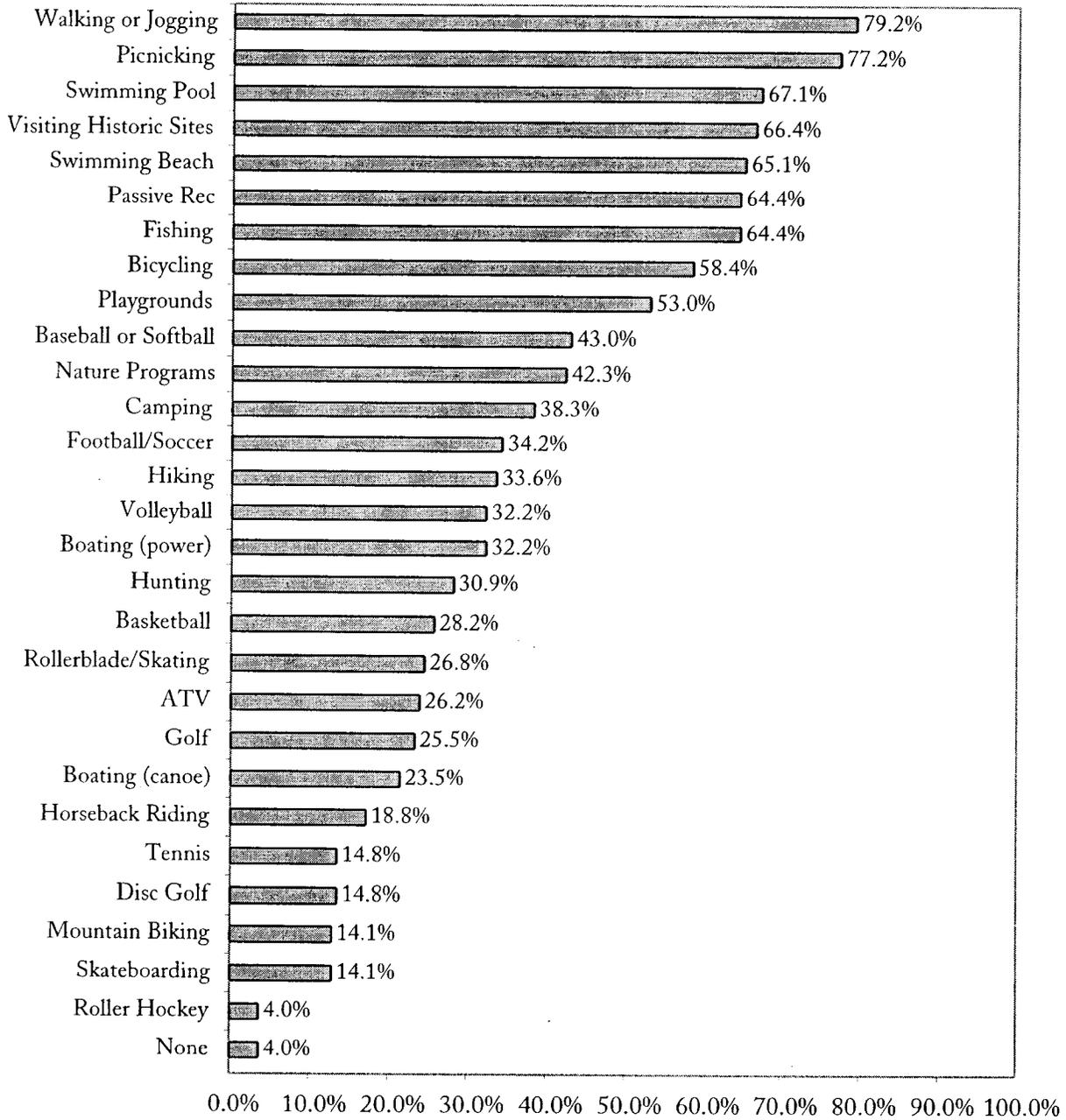
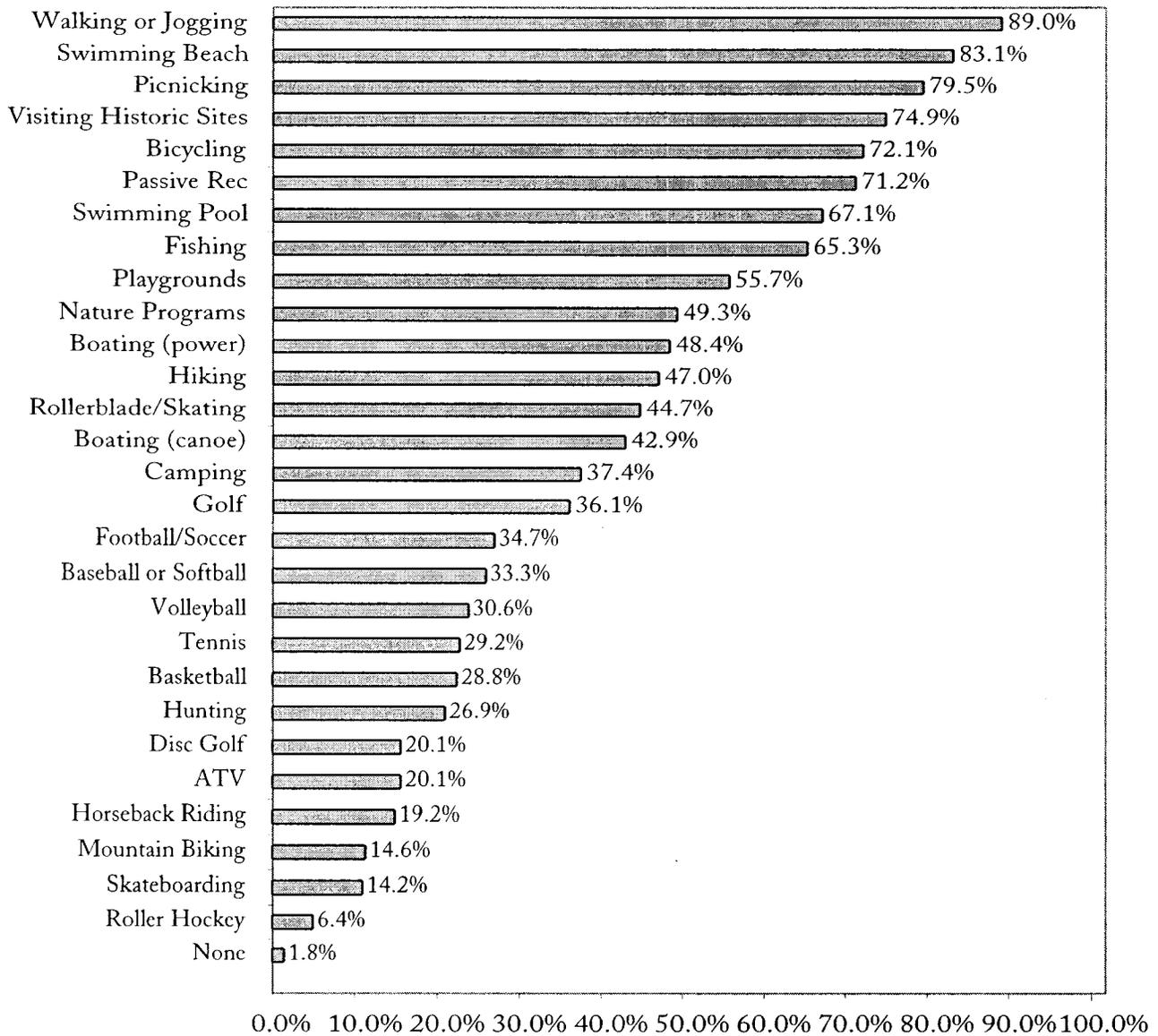


Chart 3.9 Household Participation in Region 5



## Outdoor Recreation Supply

### Inventory and Public Access

Accurate information about existing outdoor recreation facilities and sites is essential to properly characterize outdoor recreation in Delaware. The Delaware Division of Parks and Recreation maintains the Outdoor Recreation Inventory (ORI), a database of all public-managed lands and recreation facilities statewide. The ORI contains a complete list of public parks managed by federal, state, county, and municipal governments and school districts. At the Federal and State levels, public lands in Delaware are managed by the US Fish and Wildlife Service; Department of Natural Resources & Environmental Control, Division of Parks & Recreation and Division of Fish & Wildlife; the Department of Agriculture, Division of Forestry; and the Department of State, Division of Historical & Cultural Affairs. Municipal and county governments manage lands at the local level.

The ORI database includes information on a wide range of outdoor recreation amenities from ball fields and boat ramps to playgrounds, picnic pavilions and many more facilities found at each site. In a 1993 ORI update, every site was visited and all the outdoor recreation amenities were documented. In March of 2002, the Division of Parks and Recreation updated the ORI based on input received from municipalities and counties with park facilities. Now, as facilities are constructed and park or conservation lands acquired, the ORI is updated.

Table 4.1 summarizes outdoor recreation facilities for each Region. Maps 4.1 to 4.3 graphically represent the location of public park and conservation lands held by federal, state, and local agencies and by private conservation organizations.

### Delaware Environmental Navigator

In 2003, the ORI database was integrated into the Delaware Environmental Navigator (DEN) - a dynamic database supported by the Department of Natural Resources and Environmental Control (DNREC). The Navigator, as it is known, brings together core environmental information where it is

easily accessible to the public via the Internet. The Navigator contains site-specific information from the ORI and can be a useful tool in locating and mapping parks, forests, wildlife areas and outdoor recreation facilities. Navigator features allow the user to select from the state map an area of interest then display the location. Web site query tools enable the Internet user to search for and then list outdoor recreation sites and amenities in a specific geographic area of interest. The Navigator is available to the public and can be accessed at <http://www.dnrec.state.de.us/DNRECEis/>. An example of accessing the Navigator is included in this chapter.

### Resources for Water-Based Recreation

Unique to Delaware is our 24-mile Atlantic coast and expansive Inland Bays, valuable resources that are critical for satisfying the public's need for water access. These naturally unique features make them the crown jewels for water-based recreation that draw

millions of residents and visitors annually to enjoy swimming, fishing, and boating. Fourteen miles of ocean coast are publicly-managed as state park land, while the remaining ocean coast is developed with businesses and private homes. Although beachfronts in Rehoboth Beach, Dewey Beach, Bethany Beach and Fenwick Island are developed, these towns manage stretches of beach for public use.

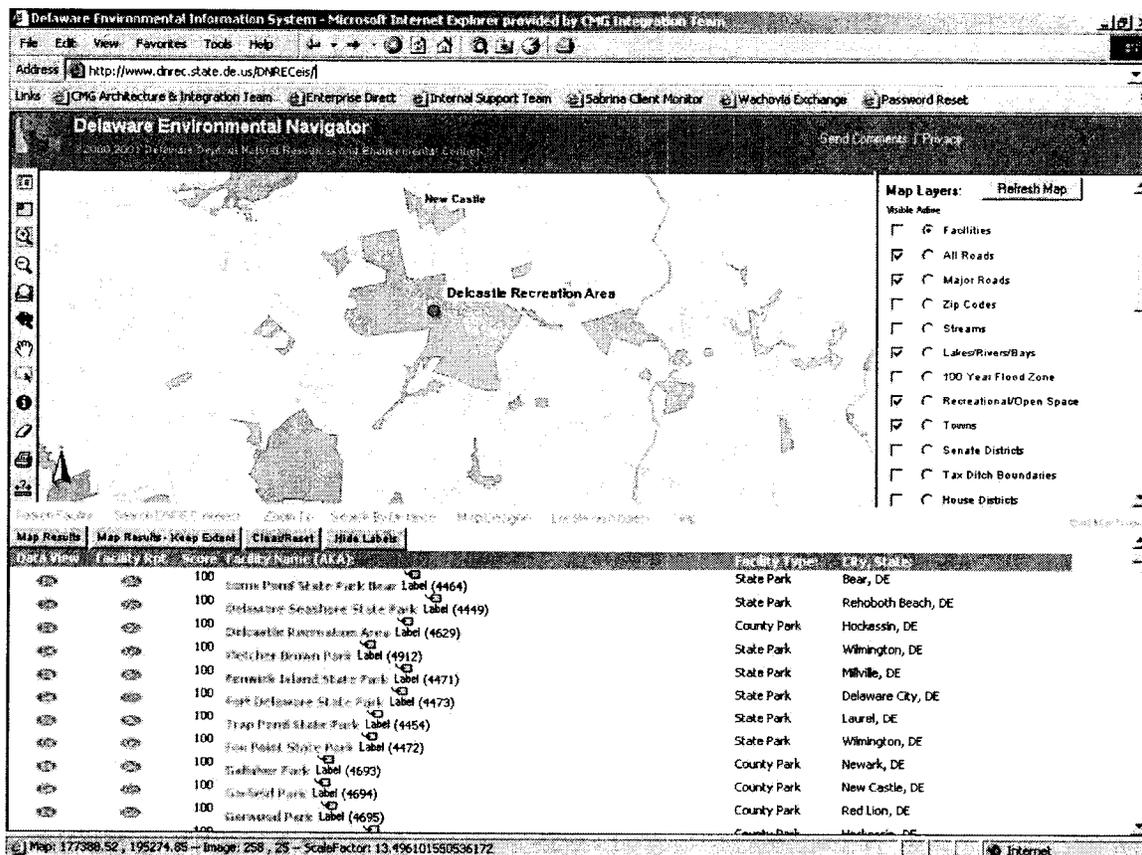
Rehoboth Bay, Indian River and Little Assawoman Bays comprise the "Inlands Bays", distinctive water resources covering 32 square miles. These bays, rich in natural resources, are an attraction for pleasure boating, fishing, shell fishing, crabbing, and kayaking. The natural environment that draws people to coastal Sussex County is potentially threatened by its very popularity - increasing use, conflicting uses, development - all possibly compromising the long-term sustainability of the resource vis-à-vis its recreational value and appeal.



## Delaware Environmental Navigator

http://www.dnrec.state.de.us/DNRECEis/

- Select “Map View” from menu on left-hand side of opening page of the Delaware Environmental Navigator.
- In the pop-up box, select a map resolution. The Map View and Search Page is displayed.
- Select the items of interest from the drop down menu boxes at the bottom of the screen.
- The bottom half of the screen displays the results of your search criteria. By clicking on the “Go” buttons to the left of the park of interest, you can get additional information in either a Data View or a Facility Report.
- You can display a map of the site by clicking on the Park Name. This zooms to a center point of the park. You will need to use the zoom tool along the left-hand side of the window to zoom out to an appropriate distance.



## Delaware Environmental Navigator

- Selecting a Data View of Delcastle Recreation Area, an information screen appears with a variety of folder tabs and underlying information. The default tab to open is Program Interest.
- Click on the “Go” button next to the Park of interest to display an additional tab called “Recreation”. It appears in the top row on the right-hand side.
- Click on the “Recreation” tab to display information about the park of interest. This is the type of information collected and maintained in our Outdoor Recreation Inventory.

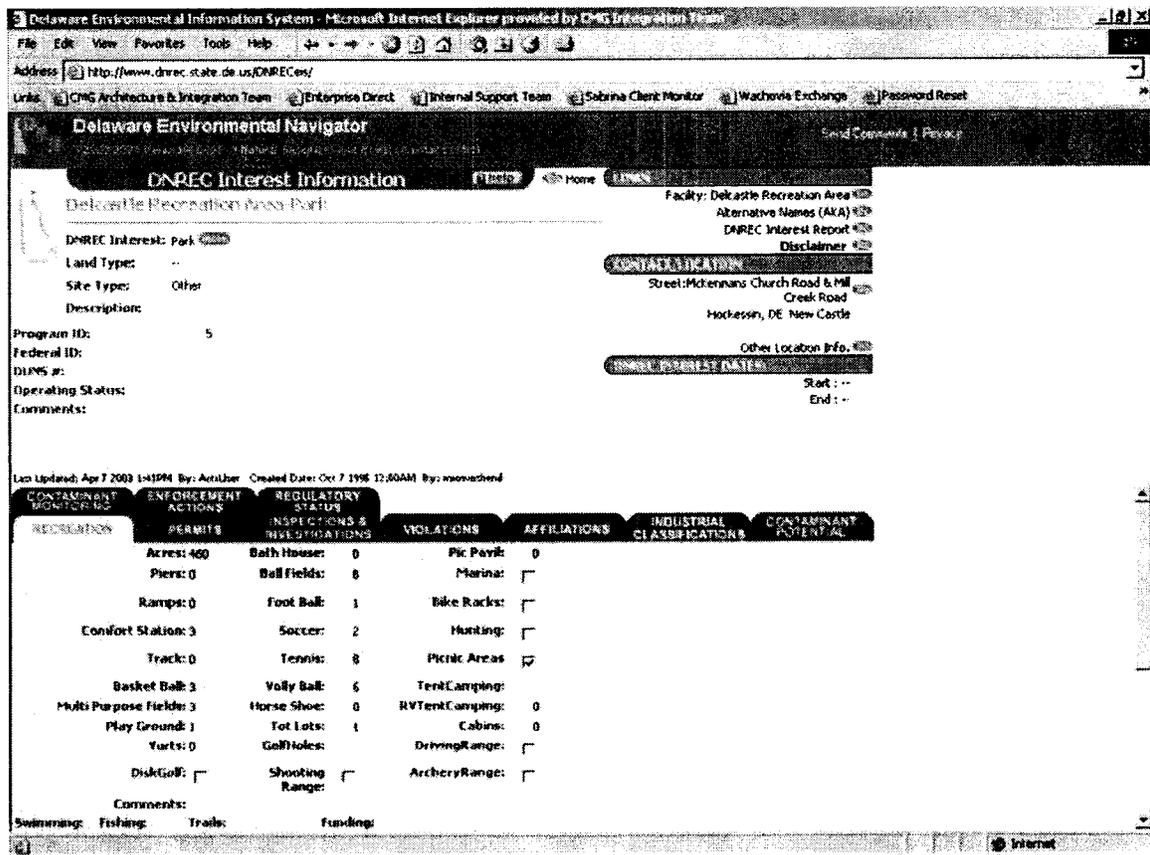
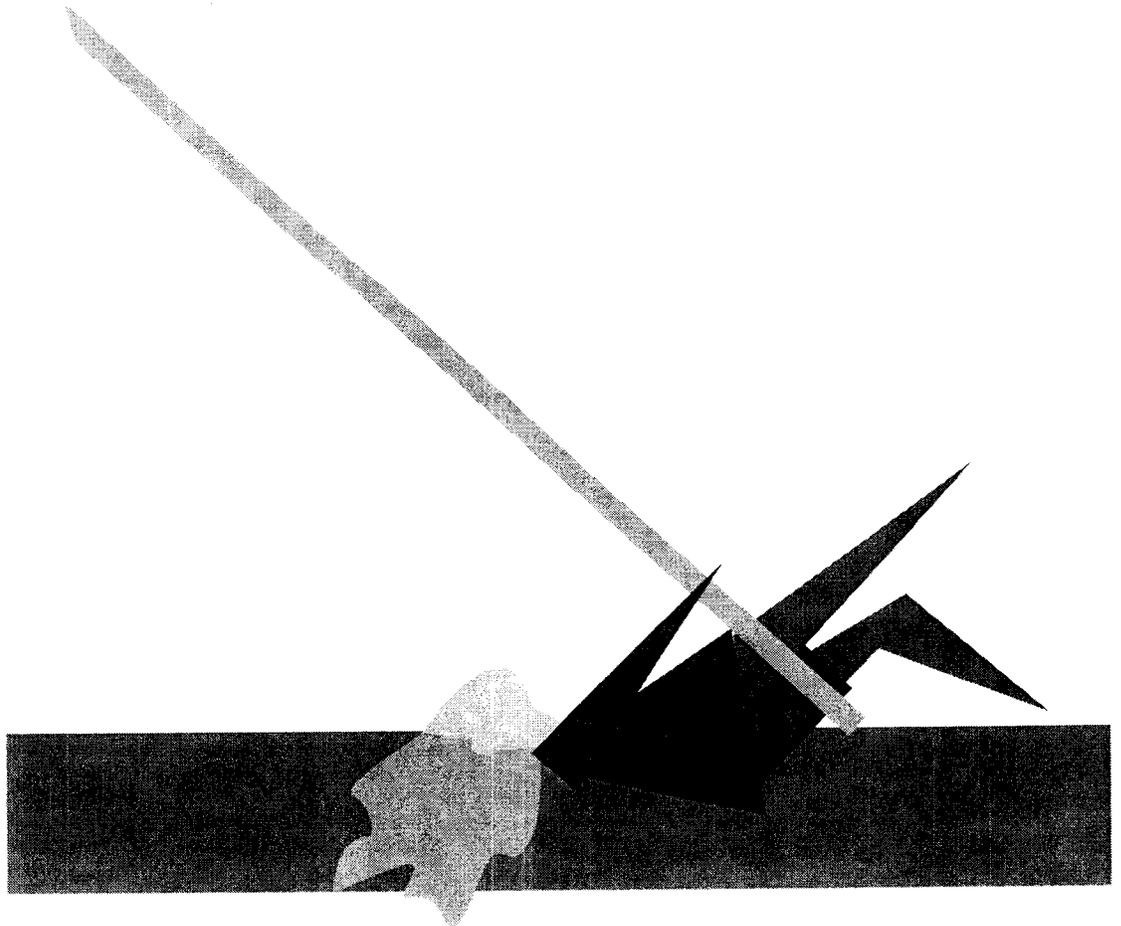


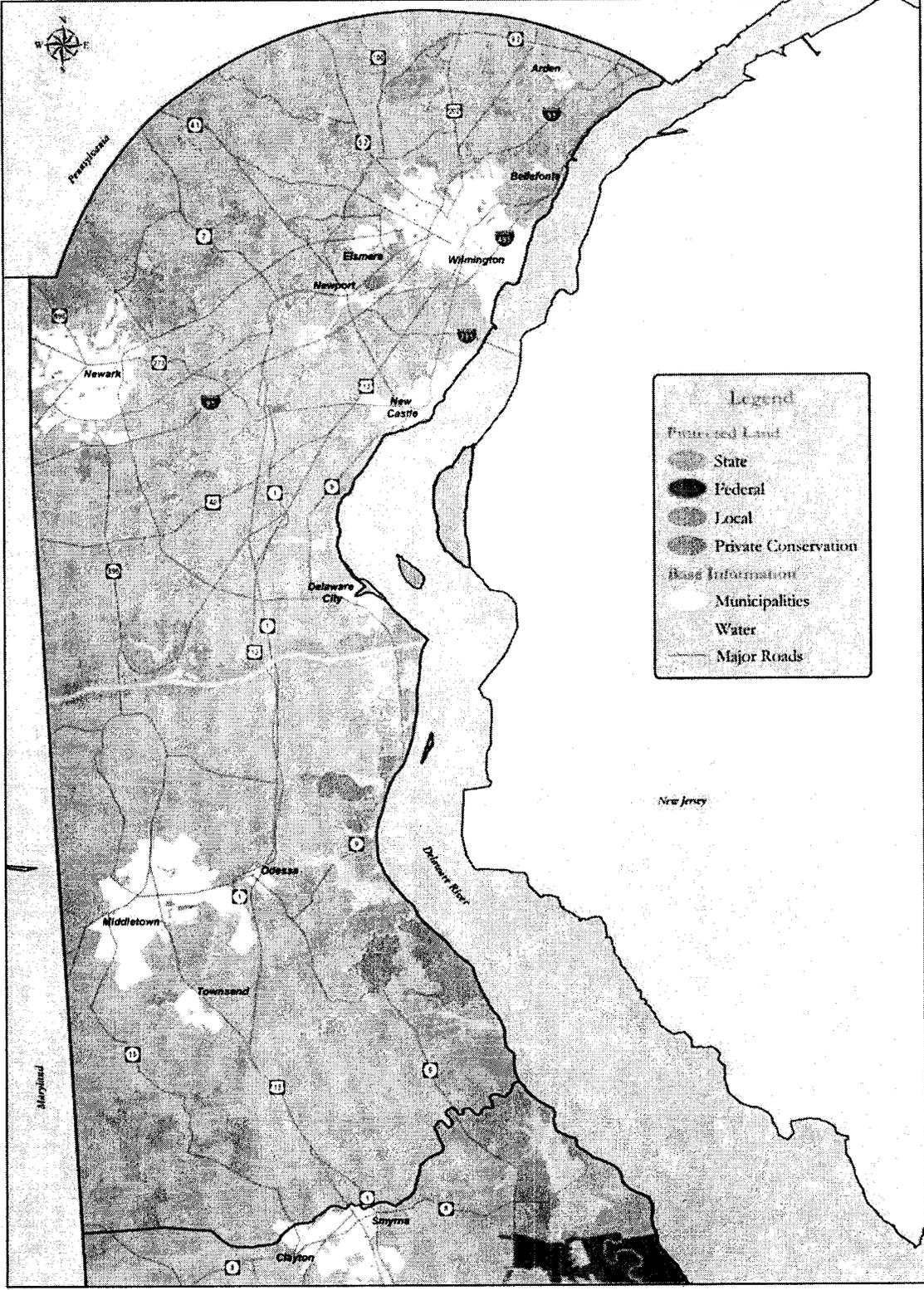
Table 4.1 Summary of the Outdoor Recreation Inventory

	Region 1	Region2	Region 3	Region4	Region5	Statewide
Public Park Land (Acres)	11,966	23,360	50,343	7,239	33,143	126,050
Hiking Trails (miles)	131.5	127.1	35.4	45.4	29.3	368.7
Ball Fields	242	21	64	37	49	413
Football Fields	27	8	15	8	10	68
Soccer Fields	57	11	22	11	11	112
Tracks	23	5	11	4	6	49
Tennis Courts	184	26	72	25	33	340
Basketball Courts	159	13	26	14	14	226
Volleyball Courts	37	0	0	0	12	49
Horseshoe Pits	31	21	14	10	0	76
Multi-Purpose Fields	99	27	48	18	20	212
Playgrounds	257	17	63	26	27	390
Tot Lots	89	7	15	12	15	138
Picnic Pavilions	36	8	15	13	16	88



# Protected Lands Parks, Forests, Wildlife, and Conservation Sites New Castle County

Map 4.1

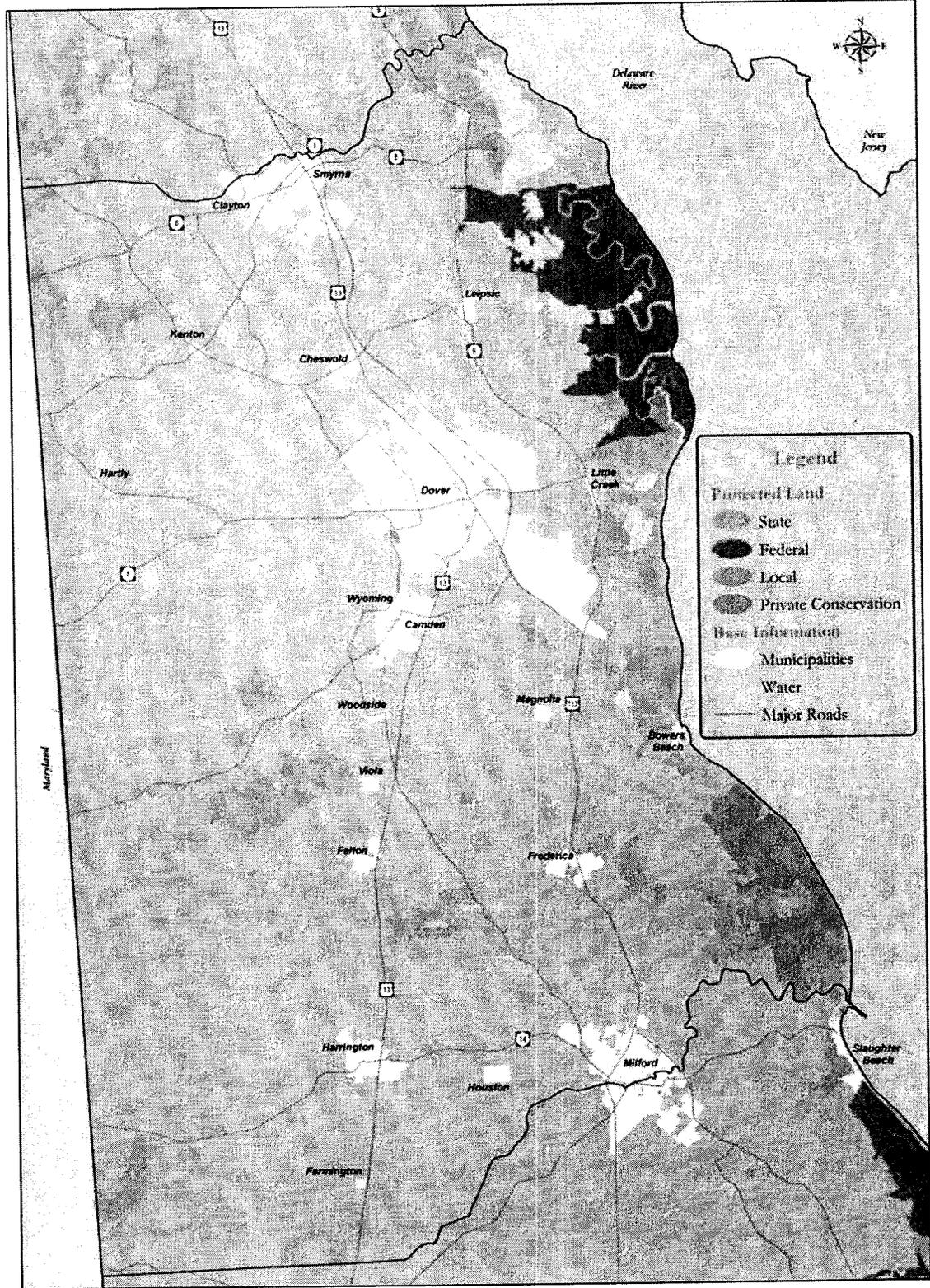


# Protected Lands

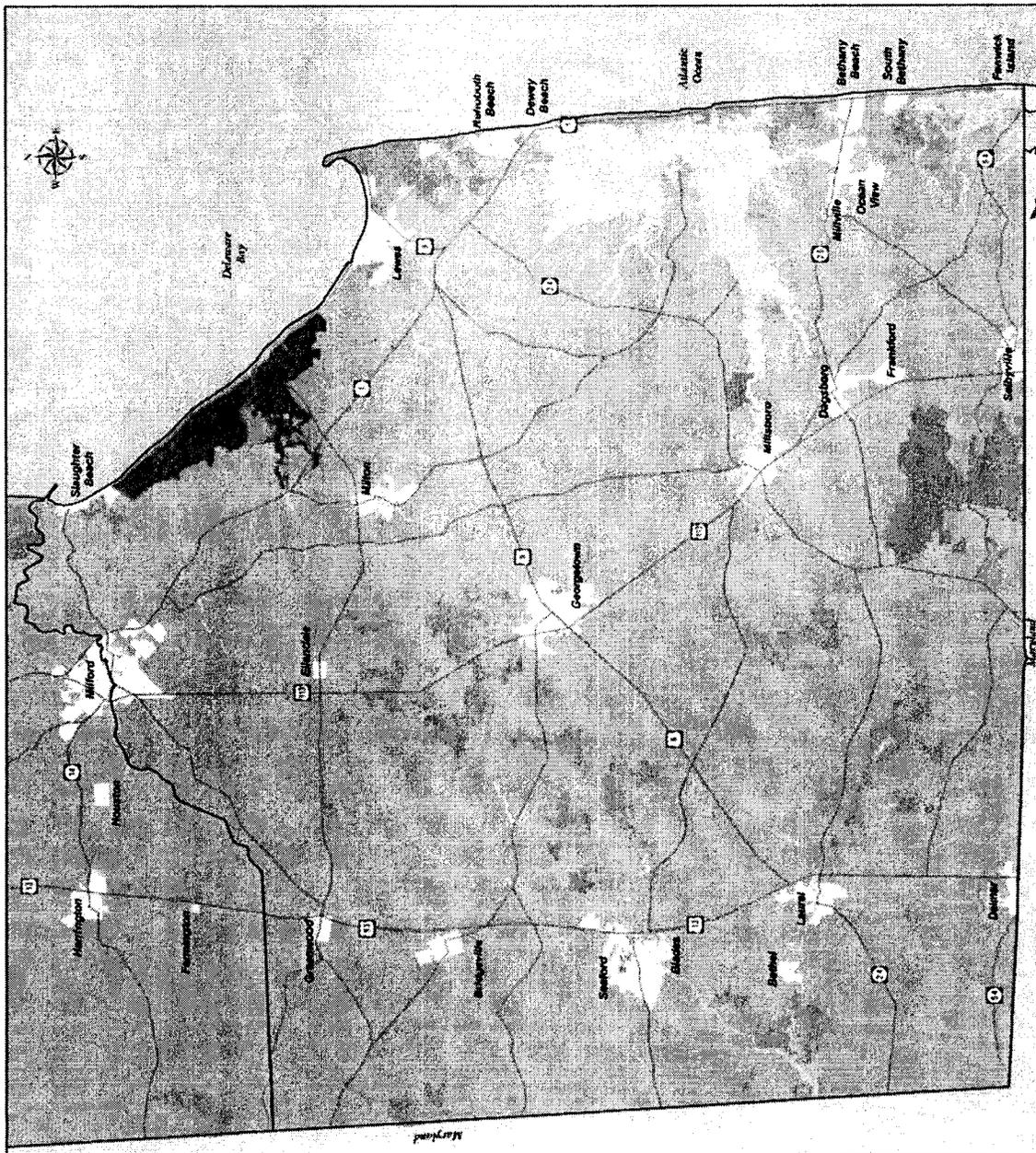
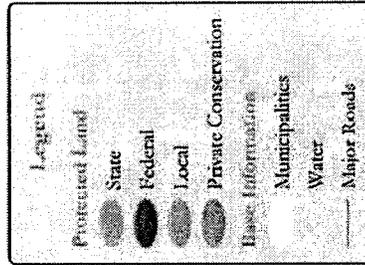
## Parks, Forests, Wildlife, and Conservation Sites

### Kent County

Map 4.2



Map 4.3  
*Protected Lands,  
Parks, Forests,  
Wildlife, and  
Conservation Sites  
Sussex County*



## Outdoor Recreation Needs

### Public Survey of Outdoor Recreation Preferences

Delawareans have a host of outdoor recreation opportunities awaiting use in their leisure time. Survey instruments are essential in determining where, and how often Delawareans participate in outdoor recreation. Furthermore, surveys are valuable in gleaning information of the types and frequency of outdoor recreation activities in which individuals and households participate. This information is a necessary planning tool in directing future funding and guiding planning decisions related to outdoor recreation.

### Priority Outdoor Recreation Facility Needs

A primary purpose of the State Comprehensive Outdoor Recreation Plan is to report outdoor recreation facility needs. Analyzing the supply of outdoor recreation facilities and examining the public's stated preference and use patterns, helps determine the gap between existing outdoor recreation facilities and those needed to meet the public's recreating appetite. The analysis is vital in planning for, investing in, and meeting present needs, and also in creating future outdoor recreation opportunities.

Delaware's priority facility needs analysis was conducted by region and cumulatively for the state. This report highlights the public's participation in the SCORP planning process, and how the public's input was used to identify and prioritize outdoor recreation facility needs. The three sources used in this analysis

are from the phone survey, local official survey and the workshop questionnaire. The questionnaire was completed by attendees of one of fourteen public workshops held around the state between September 10 and October 21, 2002. The workshop questionnaire instrument can be found in Appendix F. The methodology used to rank activities is exclusively the result of public input and is detailed in Appendix G. The telephone and local official surveys are explained in detail in Chapter 3.

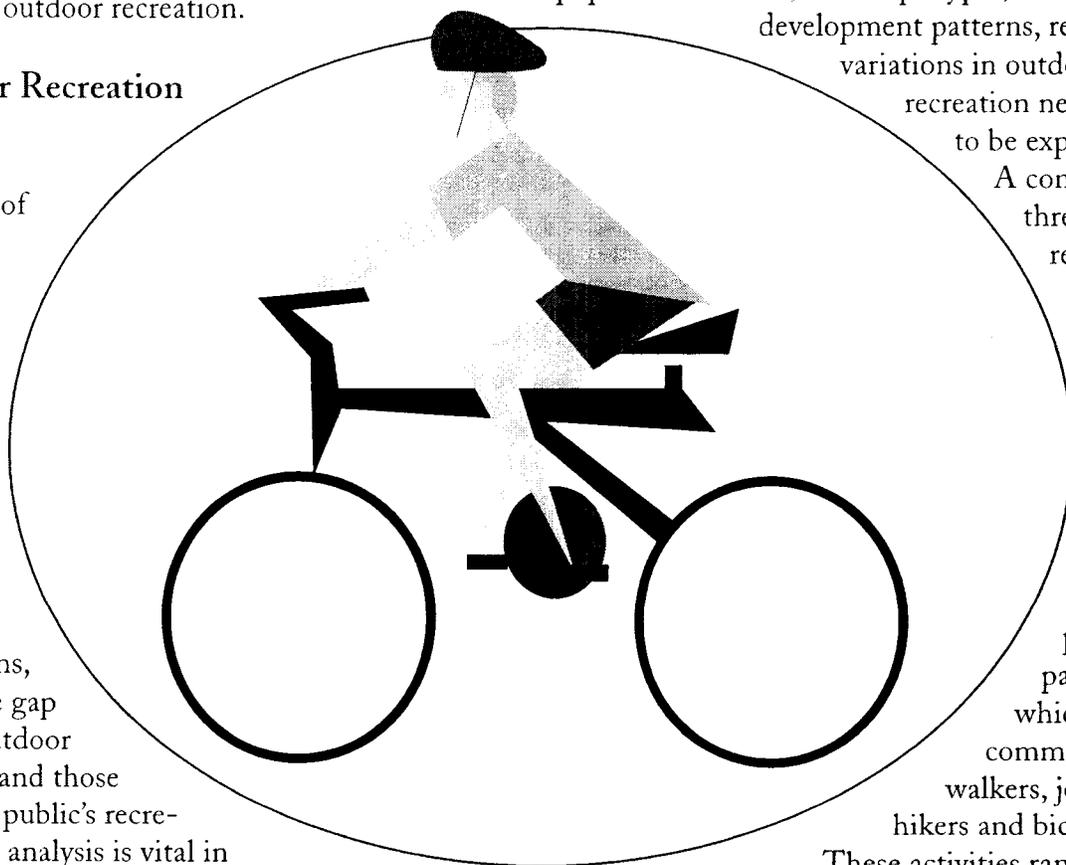
Delaware's demand analysis determined the most needed facilities that fulfill the public's requirement for outdoor recreation. Because Delaware is home to diverse population centers, landscape types, and varying development patterns, regional variations in outdoor

recreation needs are to be expected.

A common thread in all regions is the need for linear facilities, such as trails and paved pathways, which accommodate walkers, joggers, hikers and bicyclists.

These activities ranked high in every region, as well as among ethnic groups and age categories, meaning that more linear facilities should be constructed to keep pace with the public's growth and participation.

Walking, jogging and bicycling have broad appeal most likely because they require little or no specialized equipment and can be easily engaged in, making them common forms of recreation. Furthermore these activities can be done alone or with others - a jogger



can get an intense workout alone or a family can take a leisurely stroll or bicycle ride together. Sidewalks and pathways provide people with the opportunity to pursue these activities safely and also serve a transportation function by connecting homes to schools and businesses. Furthermore, the public health community continues to promote walking as a beneficial form of exercise to combat cardiovascular disease and overweight conditions.

Picnicking and playgrounds are activities that ranked high in both demand and participation in every region. An evaluation of the Outdoor Recreation Inventory (ORI) determined that these two activities are most often located together in a park. Picnicking and playgrounds compliment one another making them core components for close to home recreation and family outings.

The results of the statewide facility needs analysis is presented in Table 5.1, while Tables 5.2 through Table 5.6 present facility needs by region. The regional rankings of facility needs presented in these tables will provide guidance in making outdoor recreation facility investments for the five-year period, 2003 to 2008, in Delaware.

## Regional Perspective on Outdoor Recreation Needs

The tables that follow represent the core recommendations of this report resulting from the analysis of public facility needs and prioritize the public's need for outdoor recreation facilities by region. These regional rankings will guide future public investments made by local, county and state agencies for both the Federal Land and Water Conservation Fund and the Delaware Land and Water Conservation Trust Fund. Because these findings represent general public needs, private land developers will find this information helpful in planning recreational facilities in growing areas of the state.

**Table 5.1 Statewide Facility Needs**

High Priorities	Moderate Priorities	Low Priorities
Walking or Jogging Paths ✓	Hiking Trails ✓	Volleyball Courts
Bike Paths ✓	Swimming Pools	Tennis Courts
Picnic Areas ✓	Fishing Areas	Football Fields
Playgrounds	Skate Facilities	Lacrosse Fields
	Baseball/Softball Fields	Golf Courses
	Campgrounds	Power Boat Access
	Soccer Fields	ATV Trails
	Basketball Courts	Mountain Bike Trails
	Canoe/Kayak Access	Equestrian Trails
		Hunting Areas
		Disc Golf

Table 5.2 Region 1 Facility Needs

High Priorities	Moderate Priorities	Low Priorities
Walking or Jogging Paths ✓	Picnic Areas	Tennis Courts
Bike Paths ✓	Swimming Pools	Volleyball Courts
Hiking Trails ✓	Fishing Areas	Lacrosse Fields
Playgrounds	Baseball/Softball Fields	Golf Courses
	Skate Facilities	Mountain Bike Trails ✓
	Basketball Courts	Football Fields
	Canoe/Kayak Access	Power Boat Access
	Campgrounds	ATV Trails ✓
	Soccer Fields	Disc Golf
		Hunting Areas
		Equestrian Trails

**Table 5.3 Region 2 Facility Needs**

High Priorities	Moderate Priorities	Low Priorities
Walking or Jogging Paths	Hiking Trails	Volleyball Courts
Bike Paths	Fishing Areas	Football Fields
Swimming Pools	Playgrounds	Power Boat Access
Picnic Areas	Soccer Fields	Hunting Areas
	Skate Facilities	Golf Courses
	Baseball/Softball Fields	Canoe/Kayak Access
	Tennis Courts	Mountain Bike Trails
	Basketball Courts	Equestrian Trails
	ATV Trails	Disc Golf
	Lacrosse Fields	
	Campgrounds	

**Table 5.4 Region 3 Facility Needs**

<b>High Priorities</b>	<b>Moderate Priorities</b>	<b>Low Priorities</b>
Walking or Jogging Paths	Skate Facilities	Tennis Courts
Bike Paths	Hiking Trails	Lacrosse Fields
Swimming Pools	Baseball/Softball Fields	Equestrian Trails
Picnic Areas	Campgrounds	ATV Trails
Playgrounds	Soccer Fields	Football Fields
Fishing Areas	Volleyball Courts	Mountain Bike Trails
	Basketball Courts	Power Boat Access
	Canoe/Kayak Access	Hunting Areas
		Golf Courses
		Disc Golf

**Table 5.5 Region 4 Facility Needs**

High Priorities	Moderate Priorities	Low Priorities
Walking or Jogging Paths	Swimming Pools	Skate Facilities
Picnic Areas	Baseball/Softball Fields	Football Fields
Bike Paths	Hiking Trails	Canoe/Kayak Access
Fishing Areas	Basketball Courts	Volleyball Courts
	Campgrounds	Soccer Fields
	Playgrounds	Power Boat Access
		Lacrosse Fields
		Mountain Bike Trails
		Hunting Areas
		ATV Trails
		Golf Courses
		Tennis Courts
		Equestrian Trails
		Disc Golf

**Table 5.6 Region 5 Facility Needs**

<b>High Priorities</b>	<b>Moderate Priorities</b>	<b>Low Priorities</b>
Walking or Jogging Paths	Picnic Areas	Campgrounds
Bike Paths	Skate Facilities	Basketball Courts
Fishing Areas	Canoe/Kayak Access	Volleyball Courts
	Hiking Trails	Football Fields
	Swimming Pools	Lacrosse Fields
	Playgrounds	Hunting Areas
	Soccer Fields	Equestrian Trails
	Tennis Courts	Golf Courses
	Power Boat Access	Disc Golf
	Baseball/Softball Fields	Mountain Bike Trails
		ATV Trails

## Spatial Analysis of Needs and Public Supply of Recreational Facilities

Spatially-referenced data was used to graphically portray areas in the state that are served with publicly-maintained outdoor recreation facilities. To determine the geographic areas in the state with access to specific outdoor recreational facilities, Geographic Information System (GIS) software was utilized. Geographic areas with no recreational facilities or underserved by recreational opportunities are displayed in this analysis. The case study outlined later in this chapter, combined various GIS data sets, selected facility types and optimum travel distances to park facilities using ArcMap<sup>1</sup> to determine service areas.

GIS data sets of 1) parks and open spaces from the

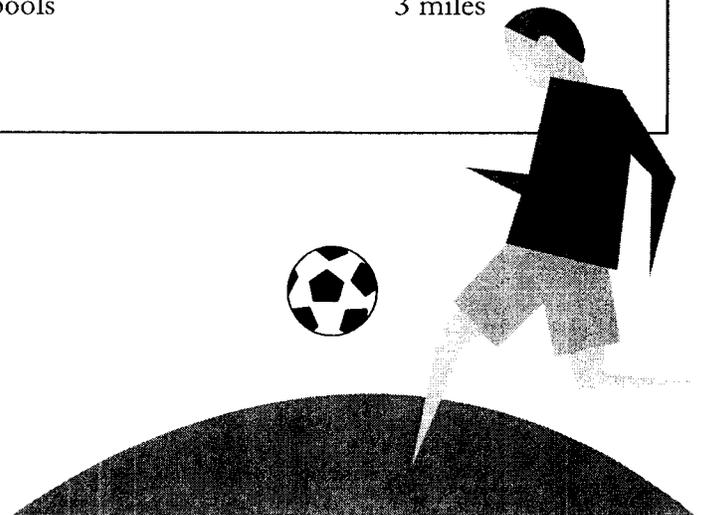
Outdoor Recreation Inventory (ORI); 2) Delaware's 2000 Census data; and 3) recommended receiving areas for growth<sup>2</sup> were overlaid to determine the spatial relationships between them. Recreational activities selected for analysis – taken from Table 5.1 – fall in the top half of statewide needed facilities. Those activities are: playgrounds, baseball/softball, soccer, basketball, swimming pools and picnicking. Other activities, especially those that are linear in nature - bike paths, walking trails, fishing areas - were not included in this statewide analysis because they are better evaluated in-depth at the community level where factors, such as access points, must be analyzed by different means.

For this analysis, distances that people may be willing to travel to use these recreational facilities were conservatively chosen. It was assumed that willingness to travel distances to facilities varied by recreational activity. For example, a family may expect a playground

to be located within their residential community or within a few blocks of their home making access convenient to the park for frequent use. But, a family may expect a swimming pool to be further from home and hence willing to travel a greater distance to use the pool. The distances chosen for this analysis, referred to as buffers, were selected for each activity and based on what is thought to be a reasonable distance as well as expected frequency of facility use. Narrower buffers (distances) were chosen for activities that ranked with more frequent participation. Activity buffer distances used in this analysis are outlined in Table 5.7. Parks containing the facility of interest were designated by a point which became the center of the radii for the buffer distances outlined in table 5.7.

**Table 5.7 Activity Buffers**

Activity	Buffer (Travel Distance)
Playgrounds	0.5 miles
Picnic areas	1 mile
Baseball/softball	1 mile
Basketball	1 mile
Soccer	1 mile
Swimming pools	3 miles



In the GIS method of evaluating outdoor recreation facility access, not only is level of service depicted, but the proportion of residents who are served or have access to facilities is also determined. Maps 5.1 through 5.6 include tables with population data that show the percent population collectively served by the designated facility. This broad-based case study analysis helps determine 1) accessibility of park and recreation services and facilities, 2) voids in outdoor recreation facilities, and 3) where investments need to be directed to fill gaps in facility services.

### Spatial Analysis Case Study: City of Dover

Spatial analyses conducted at the city scale can assist municipalities in their planning and investment strategies that can lead to more homogeneous public access to recreational opportunities. In cooperation with the City of Dover's Park and Recreation Department, a spatial analysis was conducted to demonstrate, at the municipal level, its use as an evaluation tool. The methodology developed for the statewide spatial analysis was

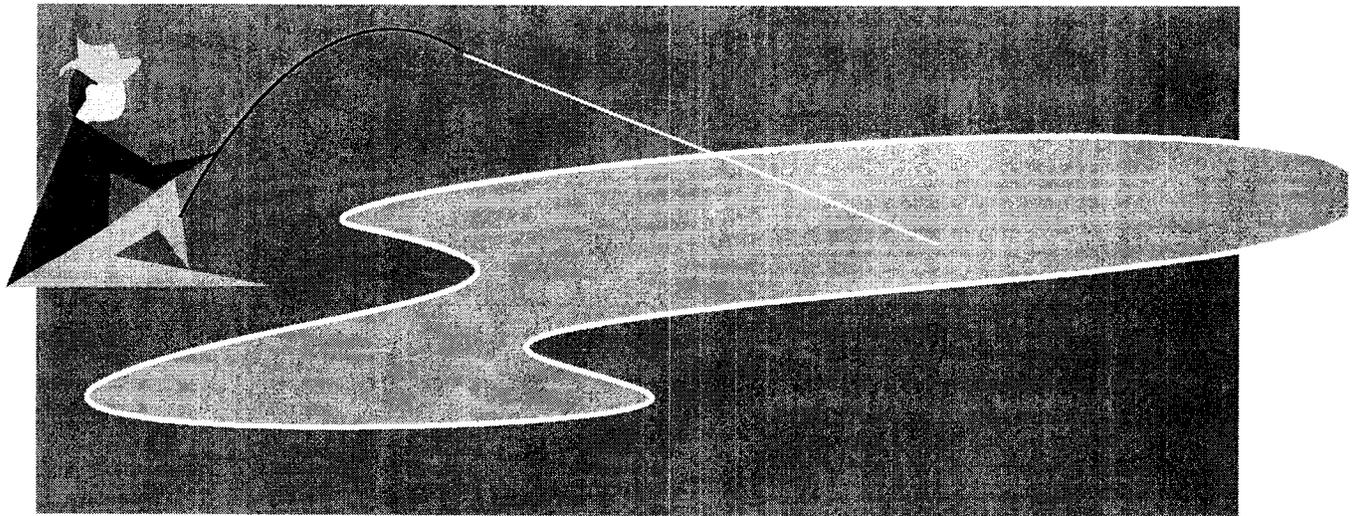
applied to park and recreation facilities managed by Dover's Department of Parks and

Recreation. The results are shown on Map 5.7.

The result of this spatial analysis of Dover is the graphic depiction of both the areas served and underserved by recreational facilities. A more in-depth city-level spatial analysis can be customized for buffer distances by factoring in the barriers to access such as major road ways, water features and private property. Also, demographic features can be effectively examined. For example, population densities from census

block data more accurately reflect specific areas and concentrations of recreationally-underserved people. Focusing recreational investments on the more densely populated and underserved areas improve the efficient allocation of funds and supports Livable Delaware initiatives.

This application will be made available by the State Division of Parks and Recreation as technical assistance to municipal and county governments. The application can be tailored to any governmental unit and becomes both a planning tool and a refined process for: 1) updating outdoor recreation supply; 2) tracking demand changes; and 3) addressing local recreation issues.

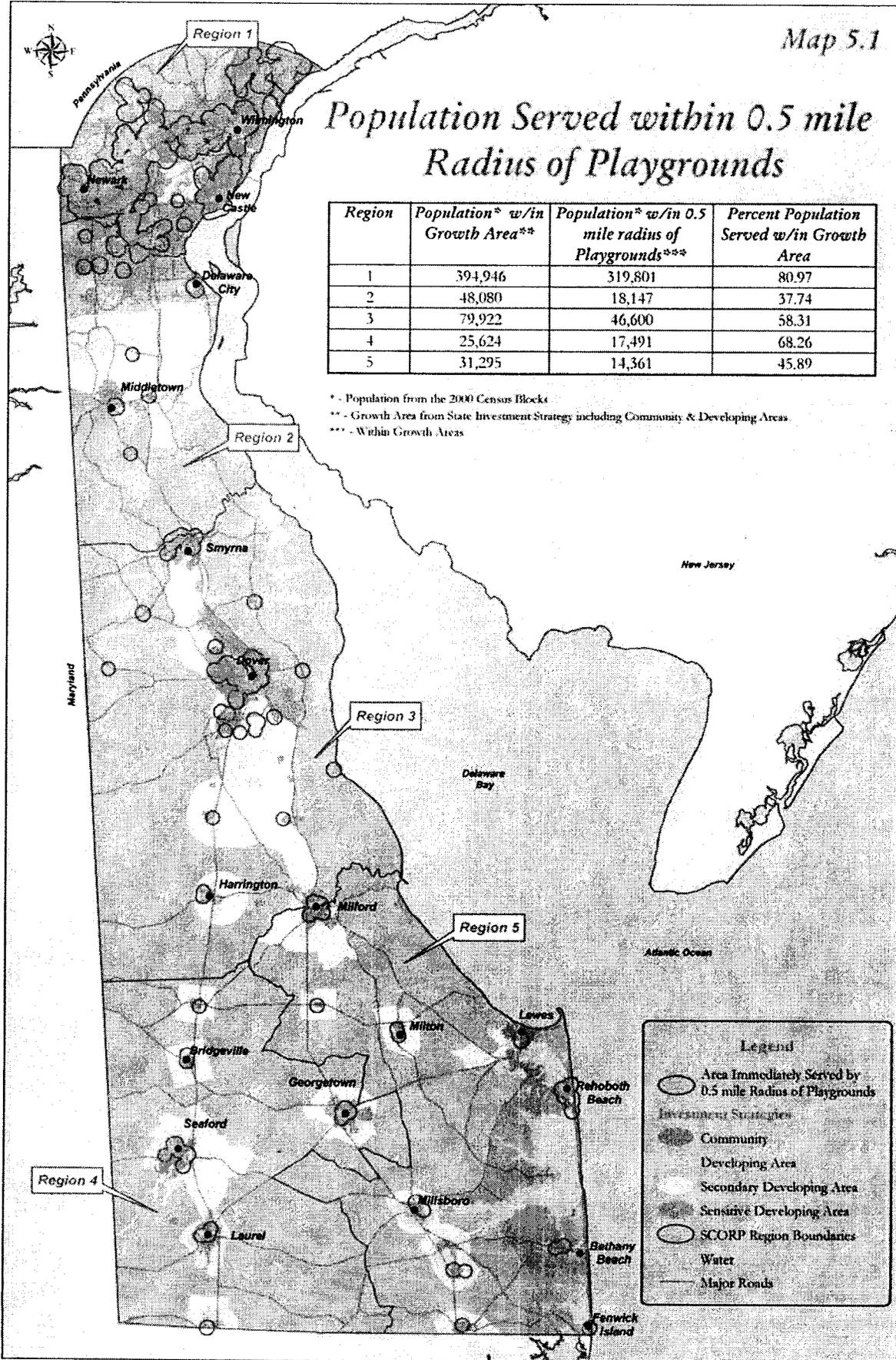


#### (Footnotes)

<sup>1</sup> GIS Software produced by Environmental Systems Research Institute

<sup>2</sup> Data designated by Livable Delaware's strategy plan: Shaping Delaware's Future

Map 5.1

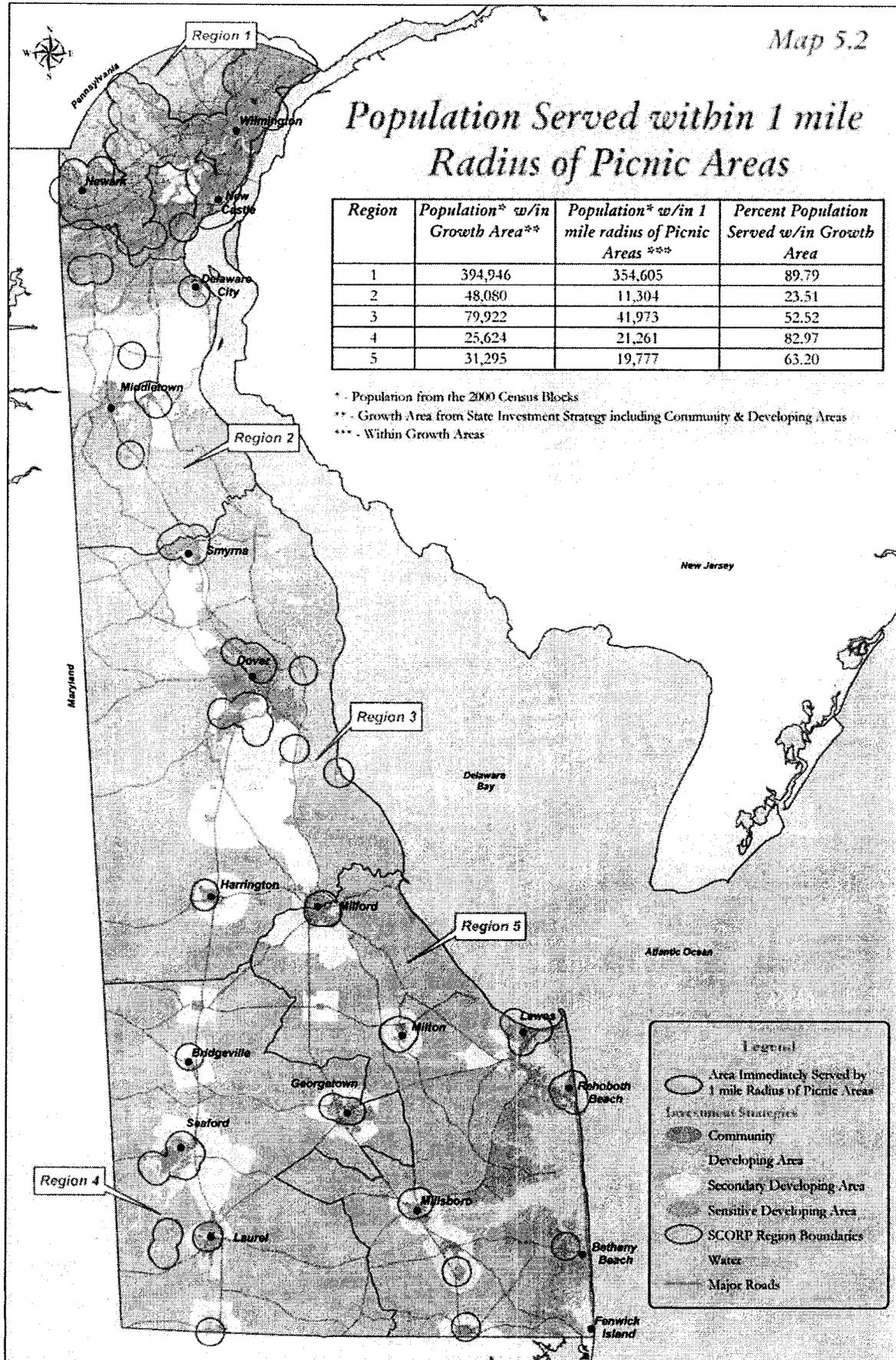


Map 5.2

# Population Served within 1 mile Radius of Picnic Areas

Region	Population* w/in Growth Area**	Population* w/in 1 mile radius of Picnic Areas***	Percent Population Served w/in Growth Area
1	394,946	354,605	89.79
2	48,080	11,304	23.51
3	79,922	41,973	52.52
4	25,624	21,261	82.97
5	31,295	19,777	63.20

\* - Population from the 2000 Census Blocks  
 \*\* - Growth Area from State Investment Strategy including Community & Developing Areas  
 \*\*\* - Within Growth Areas



Map 5.3

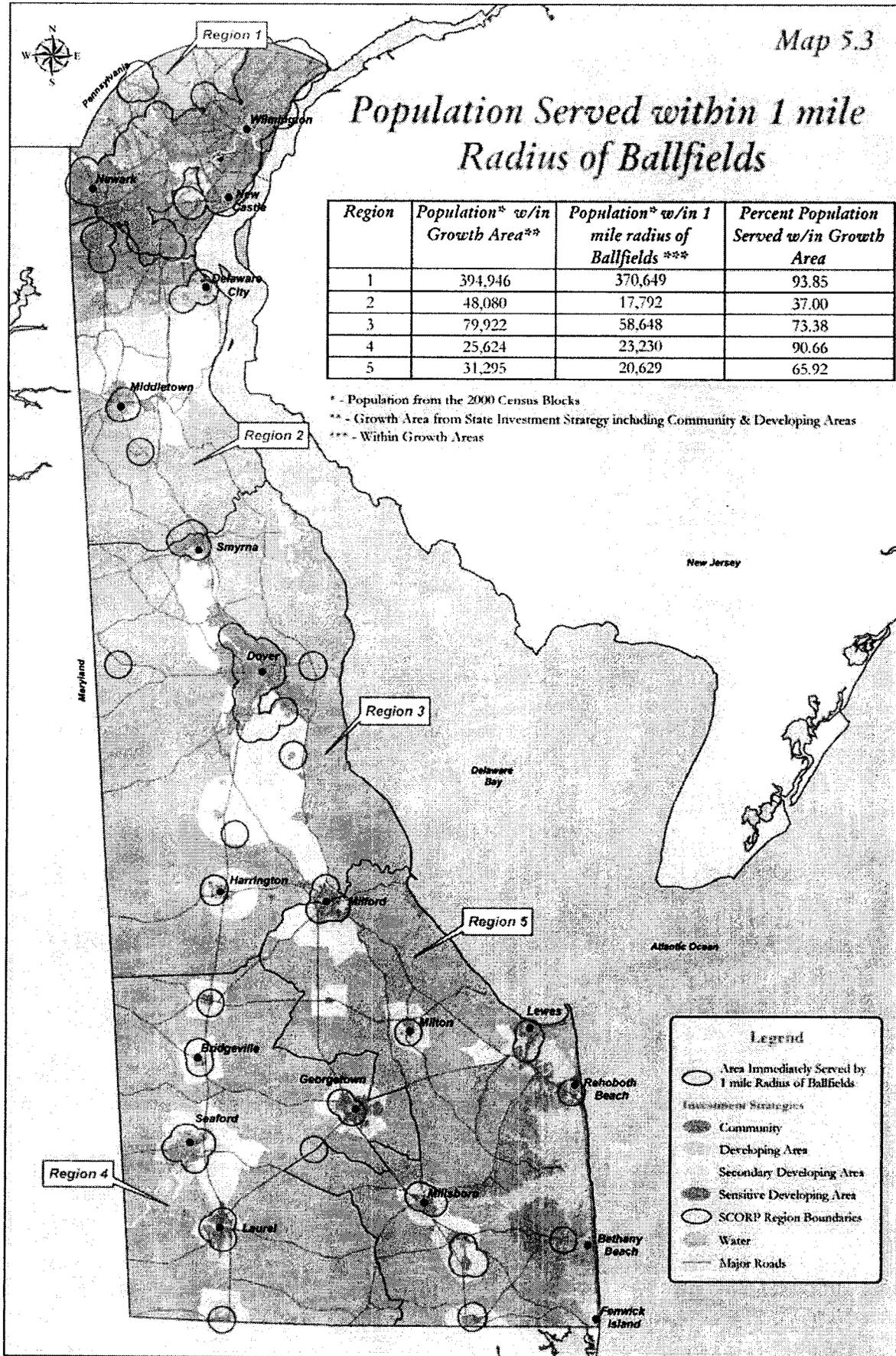
## Population Served within 1 mile Radius of Ballfields

Region	Population* w/in Growth Area**	Population* w/in 1 mile radius of Ballfields ***	Percent Population Served w/in Growth Area
1	394,946	370,649	93.85
2	48,080	17,792	37.00
3	79,922	58,648	73.38
4	25,624	23,230	90.66
5	31,295	20,629	65.92

\* - Population from the 2000 Census Blocks

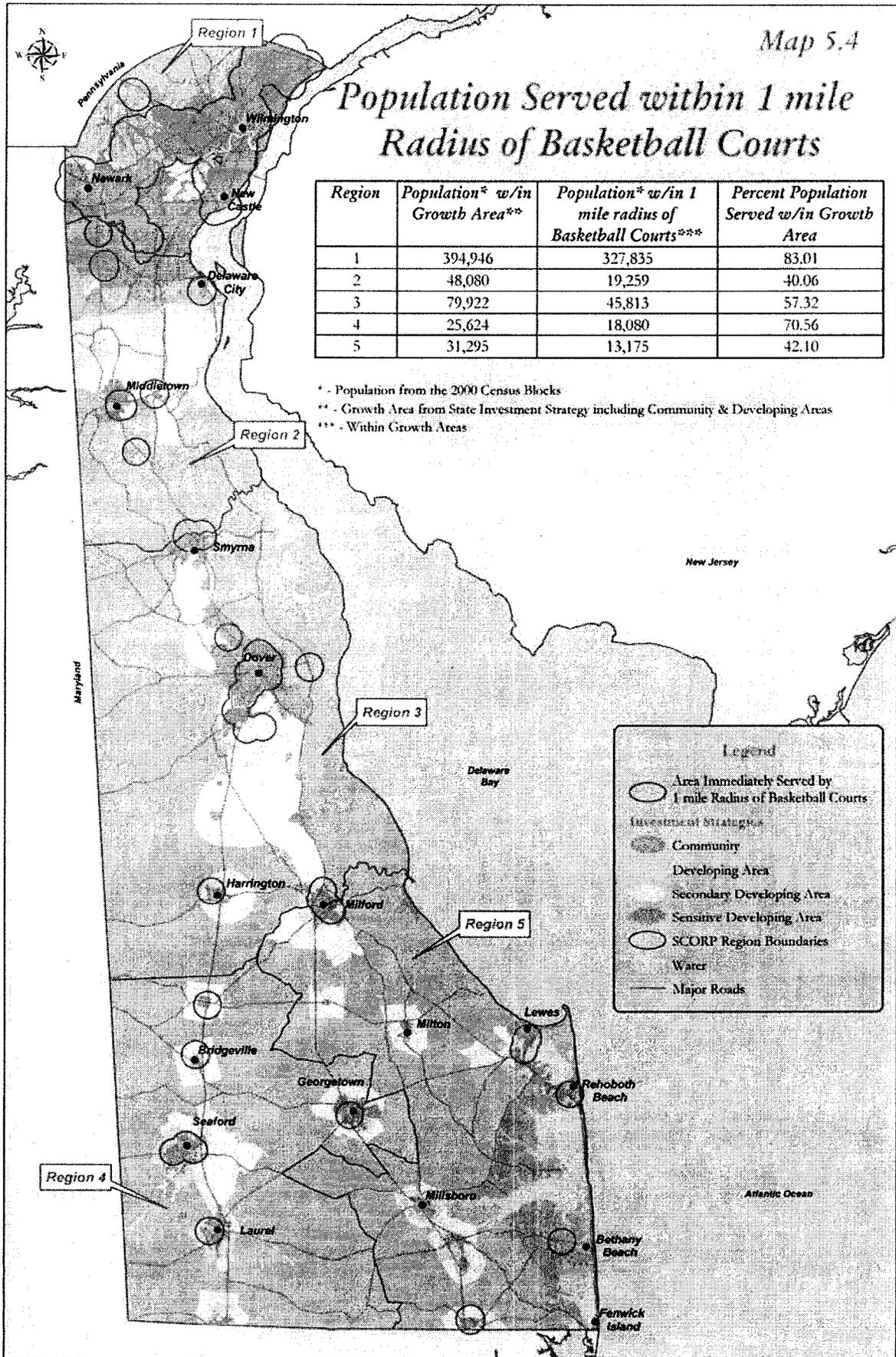
\*\* - Growth Area from State Investment Strategy including Community & Developing Areas

\*\*\* - Within Growth Areas



**Legend**

- Area Immediately Served by 1 mile Radius of Ballfields
- Investment Strategies
  - Community
  - Developing Area
  - Secondary Developing Area
  - Sensitive Developing Area
- SCORP Region Boundaries
- Water
- Major Roads



Map 5.5

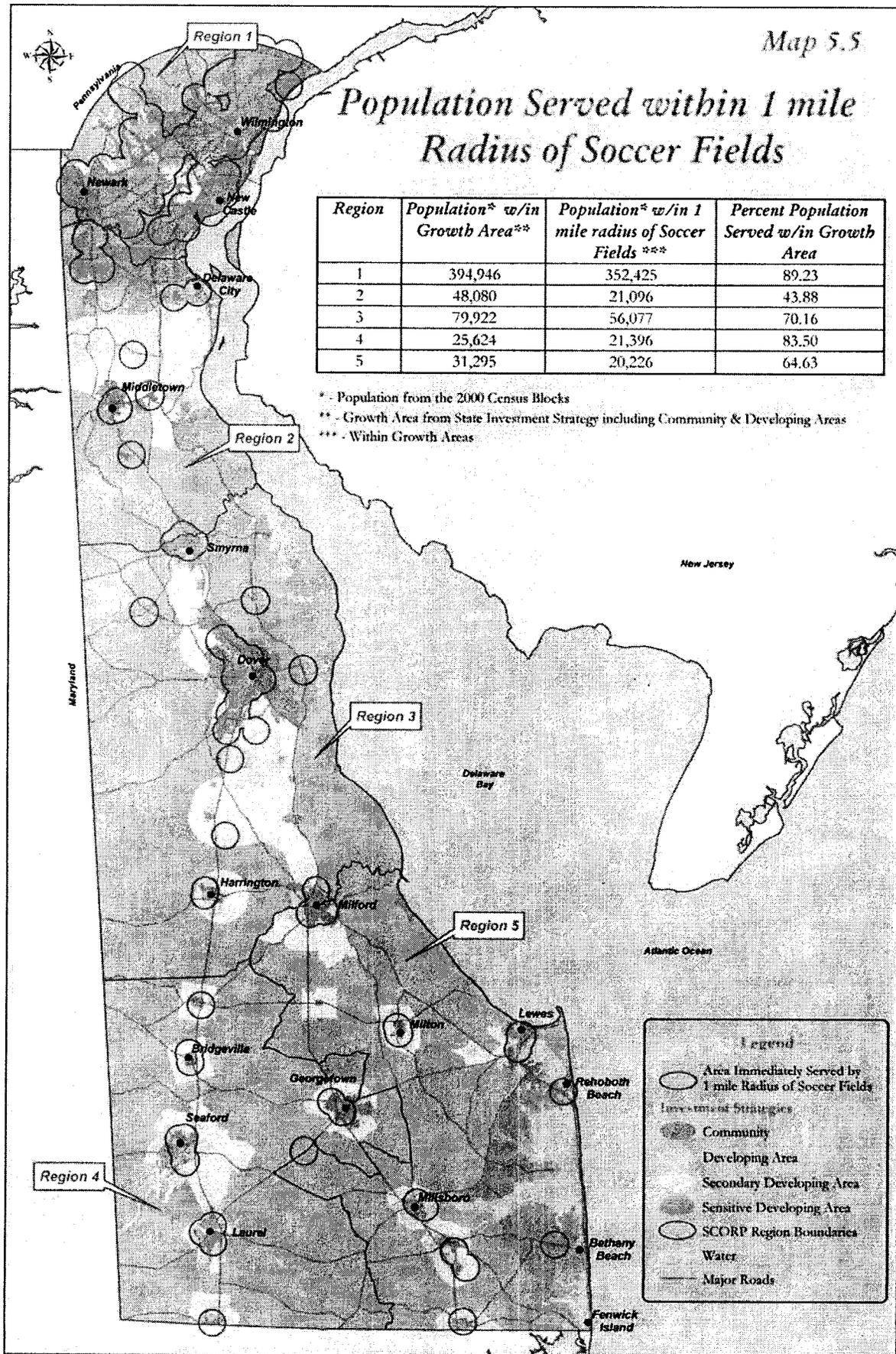
## Population Served within 1 mile Radius of Soccer Fields

Region	Population* w/in Growth Area**	Population* w/in 1 mile radius of Soccer Fields***	Percent Population Served w/in Growth Area
1	394,946	352,425	89.23
2	48,080	21,096	43.88
3	79,922	56,077	70.16
4	25,624	21,396	83.50
5	31,295	20,226	64.63

\* - Population from the 2000 Census Blocks

\*\* - Growth Area from State Investment Strategy including Community & Developing Areas

\*\*\* - Within Growth Areas



**Legend**

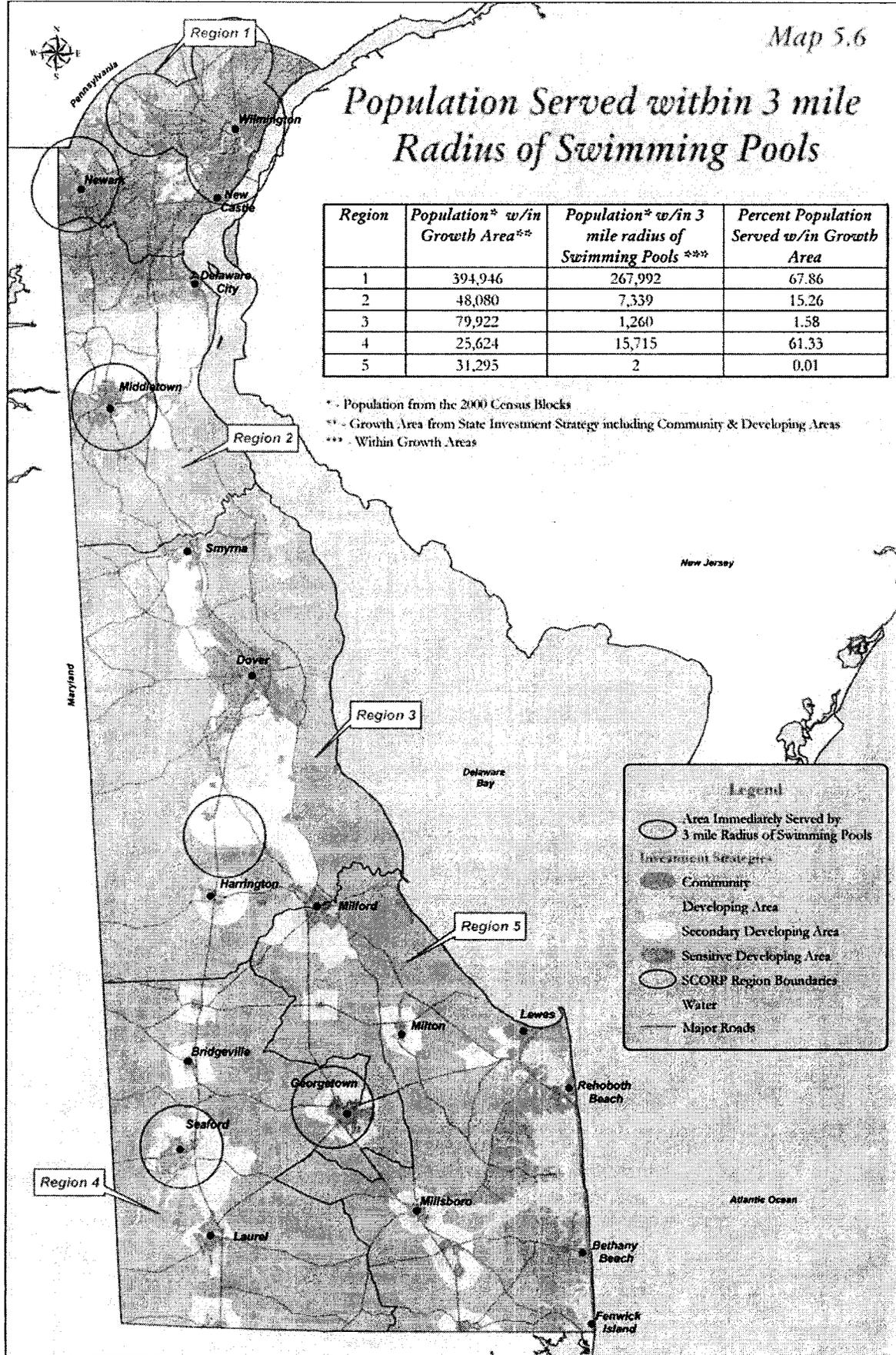
- Area Immediately Served by 1 mile Radius of Soccer Fields
- Investment Strategies
  - Community
  - Developing Area
  - Secondary Developing Area
  - Sensitive Developing Area
- SCORP Region Boundaries
- Water
- Major Roads

Map 5.6

# Population Served within 3 mile Radius of Swimming Pools

Region	Population* w/in Growth Area**	Population* w/in 3 mile radius of Swimming Pools ***	Percent Population Served w/in Growth Area
1	394,946	267,992	67.86
2	48,080	7,339	15.26
3	79,922	1,260	1.58
4	25,624	15,715	61.33
5	31,295	2	0.01

\* - Population from the 2000 Census Blocks  
 \*\* - Growth Area from State Investment Strategy including Community & Developing Areas  
 \*\*\* - Within Growth Areas

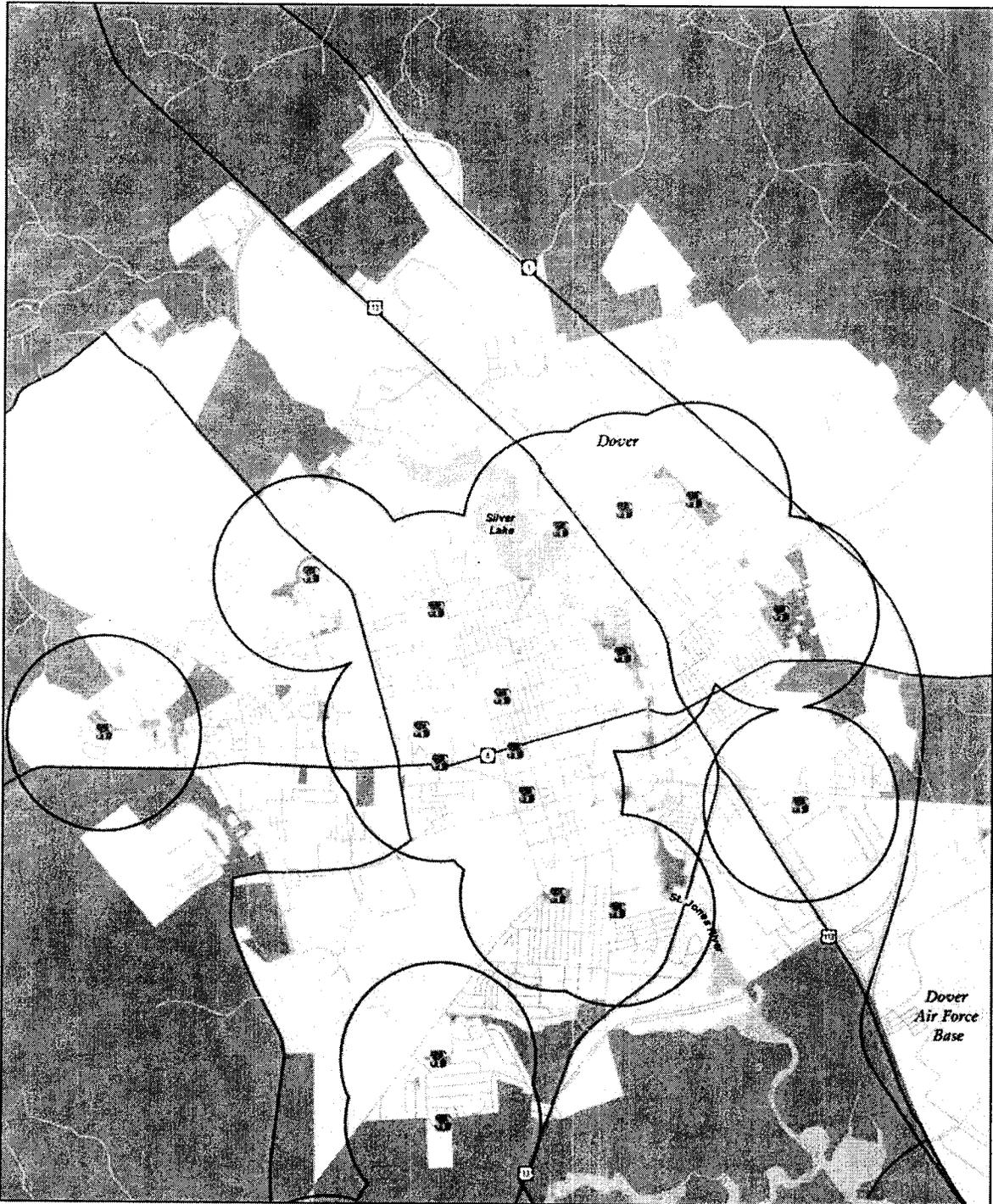


**Legend**

- Area Immediately Served by 3 mile Radius of Swimming Pools
- Investment Strategies:
  - Community
  - Developing Area
  - Secondary Developing Area
  - Sensitive Developing Area
- SCORP Region Boundaries
- Water
- Major Roads

# City of Dover - Playgrounds

Map 5.7



**Legend**

 Park Land	 Municipalities
 Facilities with Playgrounds	 Water
 Area Immediately Served by 0.5 mile Radius of Playgrounds	 Major Roads



Department of Natural Resources and Environmental Control  
Division of Parks & Recreation

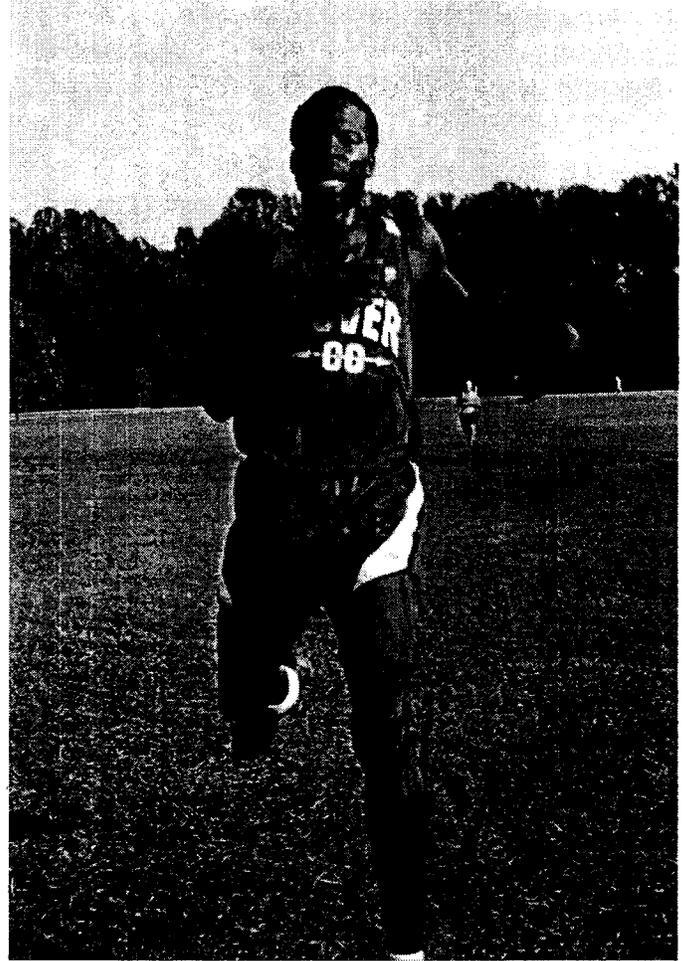
## Issues Affecting Outdoor Recreation

As important as our understanding of public outdoor recreation preferences are, so too is our understanding of the public's issues relating to outdoor recreation. Throughout the preparation of the 2003 SCORP, meaningful comments were gleaned from many public participation venues including the phone survey, mail survey, workshops' questionnaire and discussions, telephone conversations, letters and emails. The telephone opinion survey and workshops conducted by the Division of Parks & Recreation also revealed attitudes, preference and patterns regarding both outdoor recreation and the environment. Furthermore, issues were gathered from the Technical Advisory Committee members and the Park and Recreation Department Directors. Finally, the document was reviewed by the public through the Office of State Planning Coordination.

Combined, these sources of input are vital in understanding the public's issues and concerns about outdoor recreation in Delaware. The issues and recommendations summarized and presented in this chapter are tools to direct investments in outdoor recreation and assist local governments with their comprehensive plans. The information can also be used to gain public support for Livable Delaware as well as other quality of life and environmental protection initiatives.

### Issue: Health

According to the Center for Disease Control, more than 60 percent of American adults are not regularly physically active and 25 percent of all adults are not active at all. Inactivity is a major factor that explains why nearly 59 million Americans are considered obese. Even more alarming, the number of overweight children has more than doubled in the last 20 years. Overweight or obese conditions increase risk for heart disease, diabetes, high blood pressure, arthritis-related disabilities, and some cancers. Poor diet and physical inactivity lead to 300,000 deaths each year—second only to tobacco use.<sup>1</sup> Although dieting is important to losing weight, "95% of Americans who attempt to achieve a healthy body weight by dieting alone fail."<sup>2</sup> The direct medical cost associated with physical



inactivity was \$29 billion in 1987 and nearly \$76.6 billion in 2000.<sup>3</sup> Chart 3.2 indicates that in every region of the state, physical fitness is the most important reason why Delawareans recreate outdoors.

Another health issue is the effect that automobile dependency has on air pollution. Smart growth organizations report that in the past 20 years, vehicle miles traveled has almost doubled and continues to increase faster than our population growth. During this same time, air pollution from automobiles has significantly increased respiratory illness in children. In the past 15 years, there has been a 160% increase in asthma in children under five years of age. Asthma is the leading cause of school absenteeism and child hospitalization for chronic diseases.<sup>4</sup>

Drinking water quality is also a health concern when both farmland and forests are converted into impervious surfaces like roads and homes. Although a necessary part of growth, impervious surfaces increase runoff and the potential for pesticides and lawn fertil-

izers to enter the water supplies. As a result, degraded waterways reduce or eliminate water contact recreation activities like fishing and swimming. In addition, impervious cover reduces groundwater recharge contributing to the periodic deficit supply.

### Recommendations

Encourage the public to incorporate physical activity into their daily lives and promote physical activity through the Lt. Governor's fitness challenge and other programs for groups of all ages.

Encourage employers to offer opportunities for employees to incorporate moderate physical activity during the workday.

Support development that offers alternative modes of transportation and induces physical activity such as safe, accessible and attractive trails and sidewalks for walking and bicycling.

Support the Livable Delaware initiative, which encourages growth in areas that lessen the environmental impacts while preserving open spaces and farmlands. Concentrate growth in areas where infrastructure and utilities exist while minimizing the footprint of impervious cover.

### Issue: Linear Facilities

The one issue that sparked more conversation than any other at the SCORP public workshops is safety concerns for walkers and bicyclists. Delawareans from around the state want more pathways and bicycle lanes to safely travel between home and parks, work, schools and shopping centers. The safety concerns range from major intersections without cross walks to bicyclists and pedestrians being forced to share busy streets and road shoulders because of the lack of sidewalks. In the responses to the SCORP telephone survey, nearly 60% statewide think that bike and pedestrian pathways are a very important funding priority. Over 50% of the survey respondents in every region expressed that opinion. Refer to Chart 6.1.



### Recommendations

Encourage county and municipal decision makers and planners to incorporate sidewalks and trails into their comprehensive plans and ordinances.

Expanding on the spatial analysis techniques used in this report, assist municipalities in identifying specific routes where walkers, joggers and bikers could safely recreate and commute.

Integrate greenway corridors and trails into new communities linking parks and cultural and historical sites to residential areas, schools, work sites and shopping areas. Promote the recreational, social, health and transportation aspects of pathways.

Find ways to retrofit greenway corridors and trails into existing neighborhoods.

Continue to acquire greenway links with significant recreational, natural and cultural value through the Open Space, LWCF and DTF programs.

Develop better trail user information that includes trail markings, maps and web-based data.

### Issue: Access

Access is vital for the enjoyment of outdoor recreation and access issues are not limited to distance from home. Physical barriers as well as safety and limited space are also issues of access. While necessary infrastructure is changing the landscape of Delaware,

residents are increasingly aware of the impacts of development on their daily lives. A noticeable impact is the traffic congestion, due in part to our auto dependency for many daily activities. Present development patterns make walking or bicycling to a destination lengthy, unsafe or impossible. Access to outdoor recreation opportunities is limited by how far a park is from home and how safe it is to travel to a park. Although commuting distances can be increased due to natural barriers like rivers or lakes, the more prevalent barriers to recreation sites are the built environment like busy intersections, high-speed roadways and no sidewalks or pathways for walkers and bikers. Ineffective and uncoordinated land use decisions fragment communities and isolate services and businesses. Car dependency also limits access for sectors of the public that do not have vehicles or cannot drive. Chart 6.2 indicates public dependency on cars to travel to a most visited park.

Even within the confines of the parks themselves, facilities may not be accessible to individuals with physical limitations. For example, some surfaces and equipment types in older playgrounds make use difficult. Many parks do not have pathways from parking areas or streets to the playgrounds or other park facilities, thereby making access a challenge. Boundaries like fences or landscape borders intended to contain playground surfacing create access obstacles as well.

When asked to rate handicap accessibility, 16.5% of those surveyed with a physically challenged family member indicated that facilities in Delaware are poor. Chart 6.3 compares the handicap accessibility responses between families with and without disabled members. Over 20% of households with a disabled member responded that they did not know how to rate handicap accessibility in parks.

Another survey question asks what would get you to participate or to participate more actively in outdoor recreation. Again, looking at those households with and without a physically-disabled member, accessibility is the number one response for households with a disabled member. For those respondents, accessibility is more important than having more facilities and opportunities or having more information. Chart 6.4 shows the top five responses that would get Delawareans to

participate more or more actively.

Yet another issue with access is the limited existing open space available to address the increase in demand for sports playing fields. For example, soccer has become a three-season sport and competes, in many cases, for the same playing space that also must accommodate baseball, softball, field hockey and lacrosse. According to those responding that soccer/football/lacrosse are their most often participated in activity, the average number of participation days per person over the next 12 months is 130. Of the top facility needs statewide, only walking or jogging and basketball had a higher frequency of participation. Heavy scheduling of playing fields in parks for organized sports leaves few spaces for informal recreational activities such as a friendly pick up game of Frisbee or football or walking the dog.

## Recommendations

Communities are encouraged to work with the Department of Transportation on road sharing projects and improving intersection crossings for non-motorized traffic.

Work with the Department of Health and Social Services to better understand the needs of the physically challenged and incorporate those suggestions into recommendations for park development and upgrades.

Involve and consult with disabled persons in planning for new parks and the modification of existing facilities.

Provide technical support to municipalities and recreation providers on the best management practices on over-used fields.

Encourage the shared use of school facilities (fields and equipment) and community resources (funding and volunteers) to meet the recreation needs of the community. In most cases, only mowed open spaces are needed for most organized team sports, especially those for younger children.

Work with private providers to fulfill a need in their community. Some private facilities like swimming pools, tennis courts, soccer clubs and golf courses sup-

plement publicly supplied recreation opportunities.

Promote the personal and environmental benefits of using parks. Personal benefits include health, fitness, stress relief and a sense of community. As people access these parks and open spaces, they become more aware of their surroundings and acquire a deeper appreciation for the importance of quality air, water, soil and wildlife. This raised awareness can motivate park users to help protect and preserve these precious areas.

The Department of Education will consult with the Department of Natural Resources and Environmental Control, Division of Parks and Recreation, and the Office of State Planning Coordination in planning for future school locations.

### Issue: Funding

According to many park and recreation professionals, the greatest challenge in providing quality outdoor recreation to the public is funding. Meeting the needs of a growing population requires funding for parkland purchases and construction of new facilities as well as enhancing existing park facilities. Many park professionals are faced with limited and/or unstable funding sources to support park development and recreation programs. With their available budgets, park professionals must make maintenance of existing parks a priority over park enhancements or parkland acquisitions. In fact, a survey of local officials found that their collective priority is money for operation and maintenance. The next priority for local officials is funding for developing parks followed by acquiring land for open space and recreation needs.

Both the Delaware Land and Water Conservation Trust Fund (DTF) and Land and Water Conservation Fund (LWCF) grants provide funding to localities for parkland purchases. However, as new residential developments emerge, property values rise and the availability of land for parks diminishes, making parkland acquisition a greater challenge in meeting the expected outdoor recreation needs of growing areas. Green infrastructure, that is parkland and open space, historically has been a lower priority for public investment than for other public needs. Due to high land acquisition costs, many local governments find they do not

have the required grant match for acquisition projects.

Also reported from the 2002 Public Outreach Preference Survey was the high priority to fund parkland acquisition communities across the state. Statewide, 85% feel funding parkland is either a very important or a somewhat important priority for policy makers. Chart 6.5 gives the responses by planning region.

Funding indoor recreation facilities is another issue. Although indoor facilities are ineligible for funding under the LWCF or DTF programs, parks and recreation providers assert that indoor facilities are highly needed. In fact, indoor facilities ranked fifth overall for funding priorities in the telephone survey.

### Recommendations

Continue to provide grant assistance to local projects that meet the highest need for outdoor recreation facilities and needed land for parks.

Encourage shared use of indoor school facilities with the community.

Technically support municipalities and parks and recreation departments by expanding on the case study presented in Chapter 5. Identify issues, barriers and voids in outdoor recreation, and assist in planning for local parkland acquisition and development. Offer this technical analysis to municipalities and counties as a tool in developing the recreation element of their comprehensive plans.

Coordinate information sharing of the Outdoor Recreation Inventory to minimize the unnecessary duplication of efforts and to assure a single data source that is accurate and updated.

Educate the public that parks are important assets to them and their communities, not places to fear or avoid.

### Issue: Park Maintenance and Operation

A key funding issue is the upkeep and maintenance of the parks and open spaces managed by parks and recreation providers. Much of their budget goes toward routine operations and maintenance, such as grass

mowing, trash collection, snow removal, equipment repair and facility upkeep, all of which, leave municipal parks and recreation budgets and resources stretched thin. Adding to these constraints is the recent movement that assigns park departments the maintenance of open spaces, previously cared for by residential development associations, without increasing department budgets. As more land becomes the responsibility of the park departments, more financial resources are needed to maintain these areas.

Aging recreational equipment is a safety concern for park users and a liability concern for park providers. As a result of limited funding to meet the needs of a growing population, park departments anticipate added demands on existing facilities, increased maintenance costs, and shortened facility life spans. With stretched budgets, some park departments are pressured to charge higher facility use fees for non-resident user groups.

High demand for sports playing fields results in worn out turf, heavier demands for maintenance, and greater down time to reestablish turf. Add to this, there is a concentration of playing fields in a limited space. The potential for player injury has increased because of the minimal buffer between adjacent playing fields. There is also a need for open space for sport practices, dog walking and casual recreation.

### Recommendations

Promote the sharing of facilities and resources among recreation providers, both private and public. Increase cooperation can improve the efficient use of limited recreation areas. Opportunities exist for local governments to work with private providers to meet recreation needs effectively and efficiently. Schools, churches and community organizations, such as Boys and Girls clubs, YMCA, little leagues and soccer leagues, can partner with parks and recreation departments to meet the growing need for facilities and programs.

Expand membership of the Delaware Recreation and Parks Society (DRPS) to include town officials and those associated with park maintenance that are not currently members. Encourage them to attend the

yearly parks and recreation conference. The conference provides a great opportunity to share ideas and resolve issues common to recreation providers across the state.

Identify park and recreation facilities in need of rehabilitation or revitalization.

### Issues Regarding Conservation and the Environment

A series of questions in the telephone opinion survey, conducted by Responsive Management, Inc. for the Division of Parks and Recreation, obtained the public's attitudes and perceptions about the changing landscape in Delaware. These survey questions concentrated on assessing the respondents' view of wetlands, forests, green spaces, farmland and development. Although some variations occur between planning regions, the survey findings show that Delawareans generally feel there are too few farmland, forests, and open spaces and too much development.

#### Issue: Open Space Protection

The value of open space differs from person to person. At one end of the spectrum are those who view all open spaces as unnecessary and as an unused resource just waiting to be transformed into "better" uses. First, this viewpoint does not consider the long-term environmental impacts of conserved places nor the added value conservation lands have in providing wildlife habitat, parks for people or improved water and air quality. Second, this view does not consider the overall quality of life that comes from the present cultural and historical context of places where we live. In the long term, unrestricted growth fragments wildlife habitat, reduces areas for rain and storm water to recharge the ground water, increases automobile dependency, and has many more negative effects on our state. At the other end of the spectrum are those who view all open space as a place where natural systems and wildlife can sustain their cycles with minimal human interruptions. This viewpoint fails to consider the inevitable growth and continued conversion of natural areas to neighborhoods and shopping areas. Balancing these viewpoints and others in between is a centerpiece of the Livable Delaware initiative.

The public workshop questionnaire asked participants where land/open space preservation fit in with their favorite outdoor activities. People who attended the workshops had a wide range of interests including nature enthusiasts, hunters and all-terrain vehicle users. Despite the diversity of interests at the workshop, only bike paths ranked higher than land/open space preservation for most needed facilities. In the same questionnaire, people were asked about funding priorities. The results indicate that workshop attendees put a higher priority on purchasing more land for recreational needs and for open space than spending money on developing existing parks or for operating/maintaining public parks.

It's interesting to note that the local officials responded to these same questions by stating that money for developing existing parks and money for operating and maintenance are more of a concern than purchasing land. While the local officials see the immediate need to upgrade and maintain existing parks, the general public would like to invest in more parkland and open spaces.

### Recommendations

Educate residents about the needs for and benefits of parks, open spaces, and greenways. Knowledge will not only increase park use, awareness and stewardship; it will increase the community's acceptance of the costs involved with park acquisition and development.

Create and encourage both traditional and innovative methods to acquire and develop parkland and open spaces.

Identify, acquire or set aside open space as new residential areas emerge. Considering park and open space needs early in the land development process will result in close to home parks and a potential cost savings for parkland acquisition.

### Issue: Landscape and Environmental Preferences

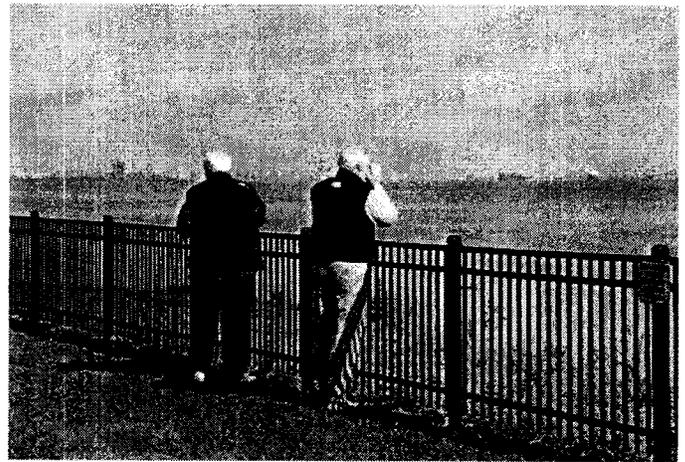
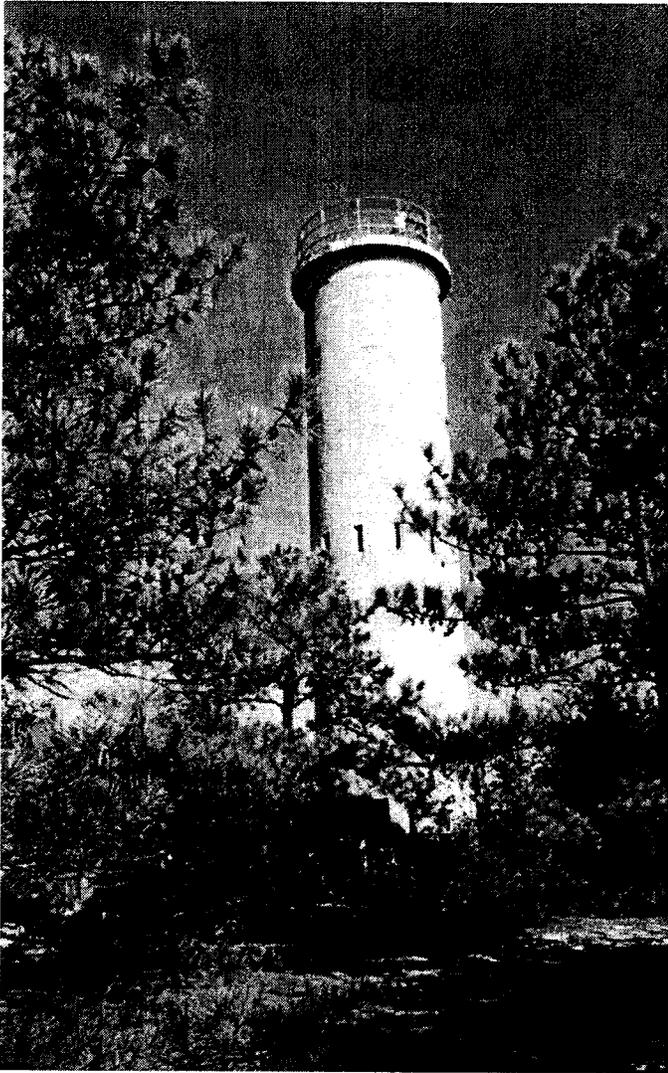
It is not surprising that Delawareans are aware and concerned about land development in the state. "Delaware lost 3,530 acres of farmland to development

annually between 1982 and 1997".<sup>5</sup> The survey questions asked respondents to rate the levels of various land uses and landscapes. Over half of the telephone opinion survey respondents statewide think there are too few green spaces in urban and suburban areas (52.4%) and too few forests (52.3%), while 46.5% say there are too few farmlands and 32.4% say there are too few wetlands. The responses to these questions are shown in Charts 6.6 through 6.11.

Since the respondents who answered "about the right amount" are content with the landscape, the important comparison in these questions is the proportion of people who feel "there is too many" versus those who feel "there is too little" of the landscapes presented. What is very clear from the responses is the high percentage of people who feel there are too few forests, wetlands, green spaces and farmland. Chart 6.6 indicates that respondents are much more aware of development than they are about other land uses. Over 70% statewide feel there is too much development in the state.

Of all the landscape types polled, researchers for this plan believe that respondents are not sure what wetlands are or where wetlands are located. While farmland, forest and development are relatively easy to understand and visualize, wetlands are more of an enigma, yet a very important part of Delaware's environment. Despite the strong awareness of land use changes and the public's expressed need for forest and farmland preservation, the support to build smart communities to reduce the impacts of sprawl and our auto dependency is slow in coming.

Charts 6.7 through 6.11 show the survey opinion responses by region to forested, wetland, farmland, open space and developed landscapes.



## Recommendations

In the next SCORP public opinion survey, track the public's landscape preferences and growth concerns to develop trend information.

Continue to protect state lands identified within State Resource Areas and other critically important environmental areas.

Invest in greenways that have a multitude of benefits including wildlife and human mobility, water quality buffers and noise attenuators.

### (Footnotes)

<sup>1</sup> <http://www.cdc.gov/nccdphp/sgr/intro.htm> and  
[http://www.cdc.gov/nccdphp/aag/aag\\_dnpa.htm](http://www.cdc.gov/nccdphp/aag/aag_dnpa.htm)

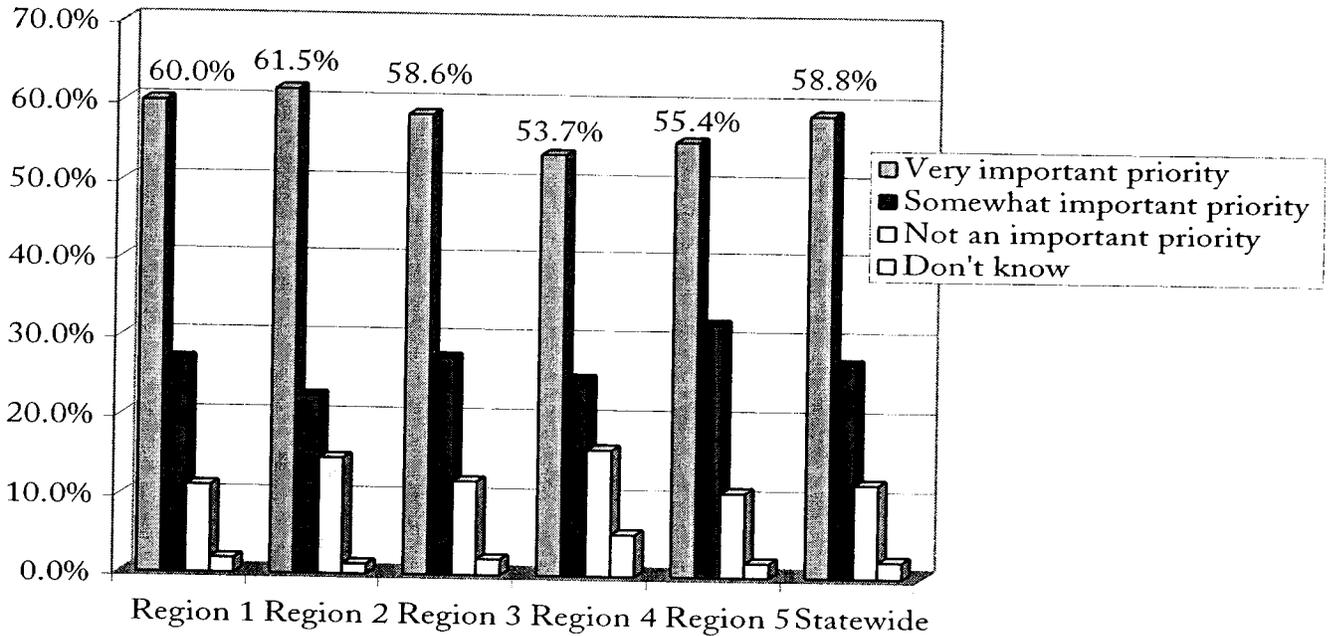
<sup>2</sup> <http://www.foot.com/>

<sup>3</sup> [http://www.cdc.gov/nccdphp/bb\\_nutrition/index.htm](http://www.cdc.gov/nccdphp/bb_nutrition/index.htm)

<sup>4</sup> <http://www.smartgrowth.org/library/byissue.asp?iss=5>

<sup>5</sup> The News Journal Sunday March 9, 2003 Section A p.9 The United States Department of Agriculture.

**Chart 6.1 Funding Priority for Policy Makers – Bicycle and Pedestrian Pathways**



**Chart 6.2 How do you get to the park most visited?**

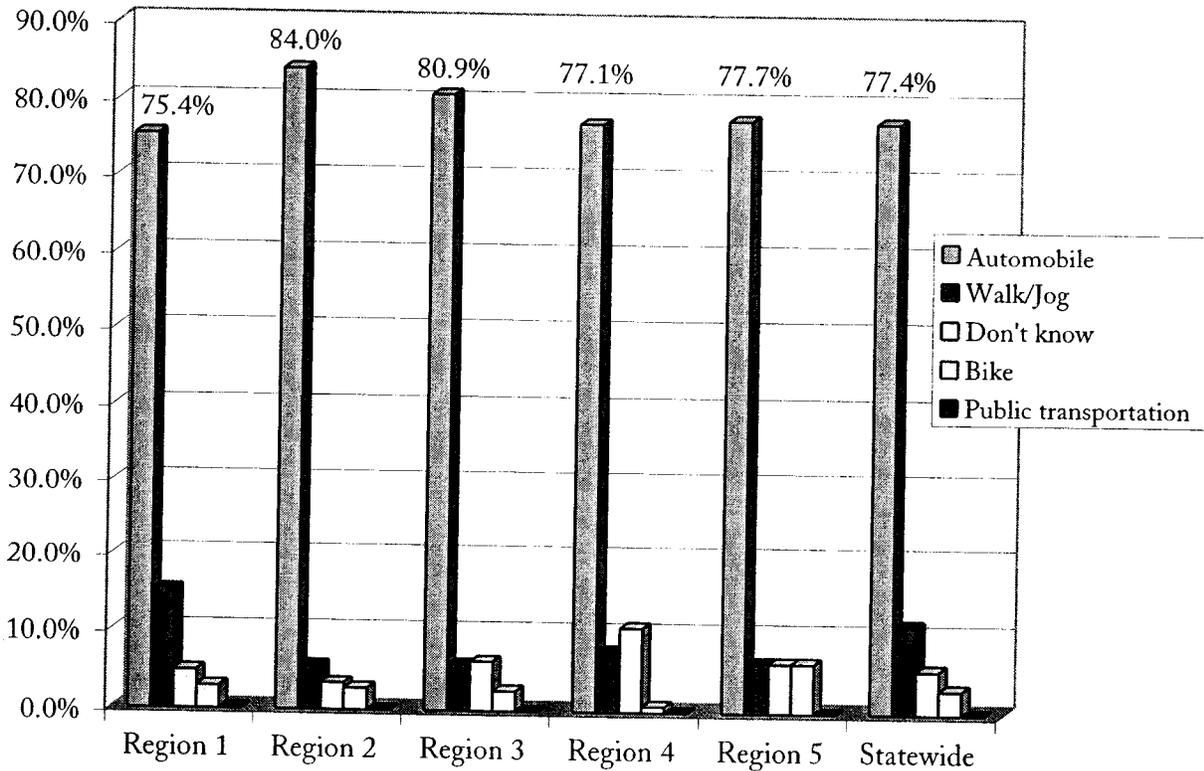
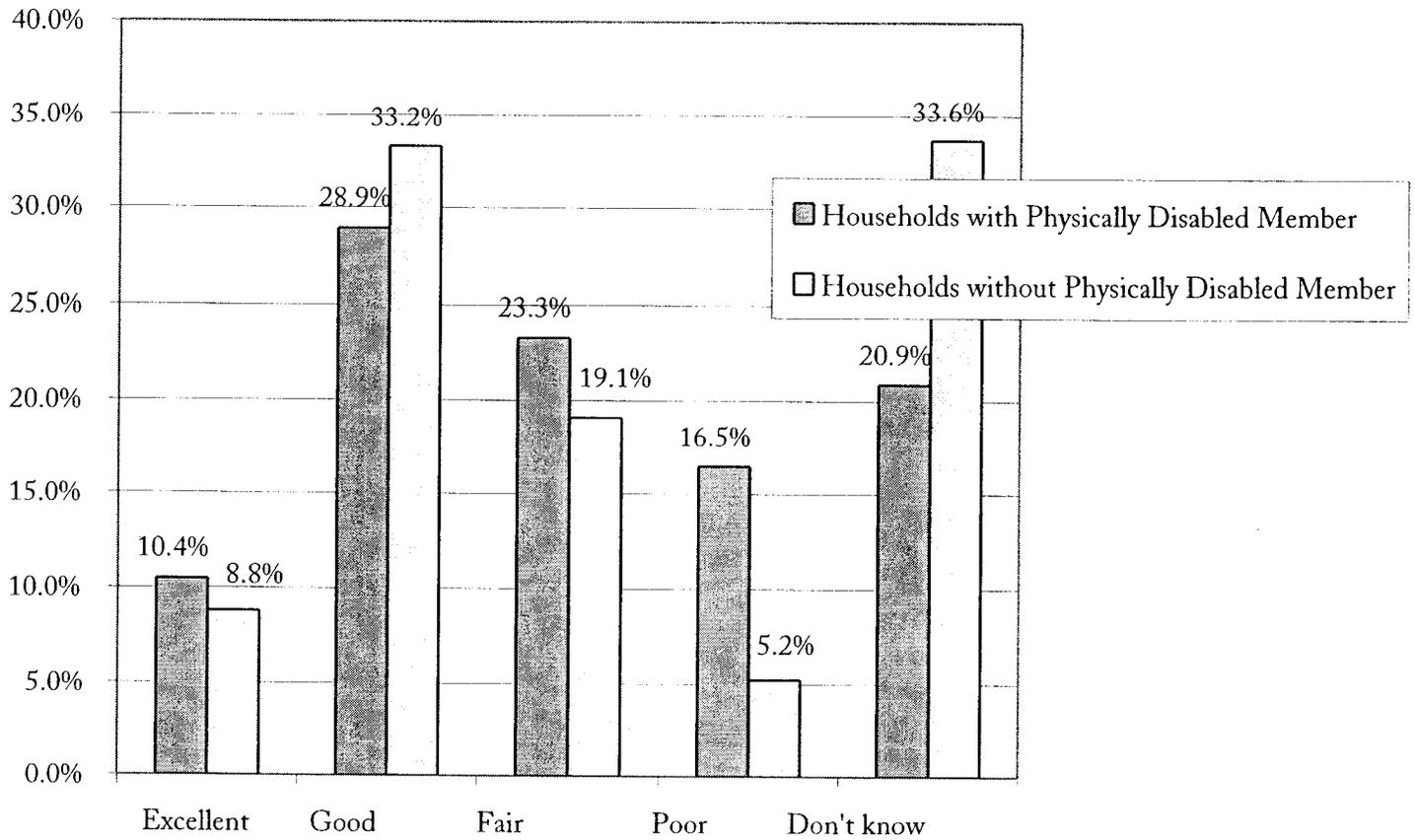
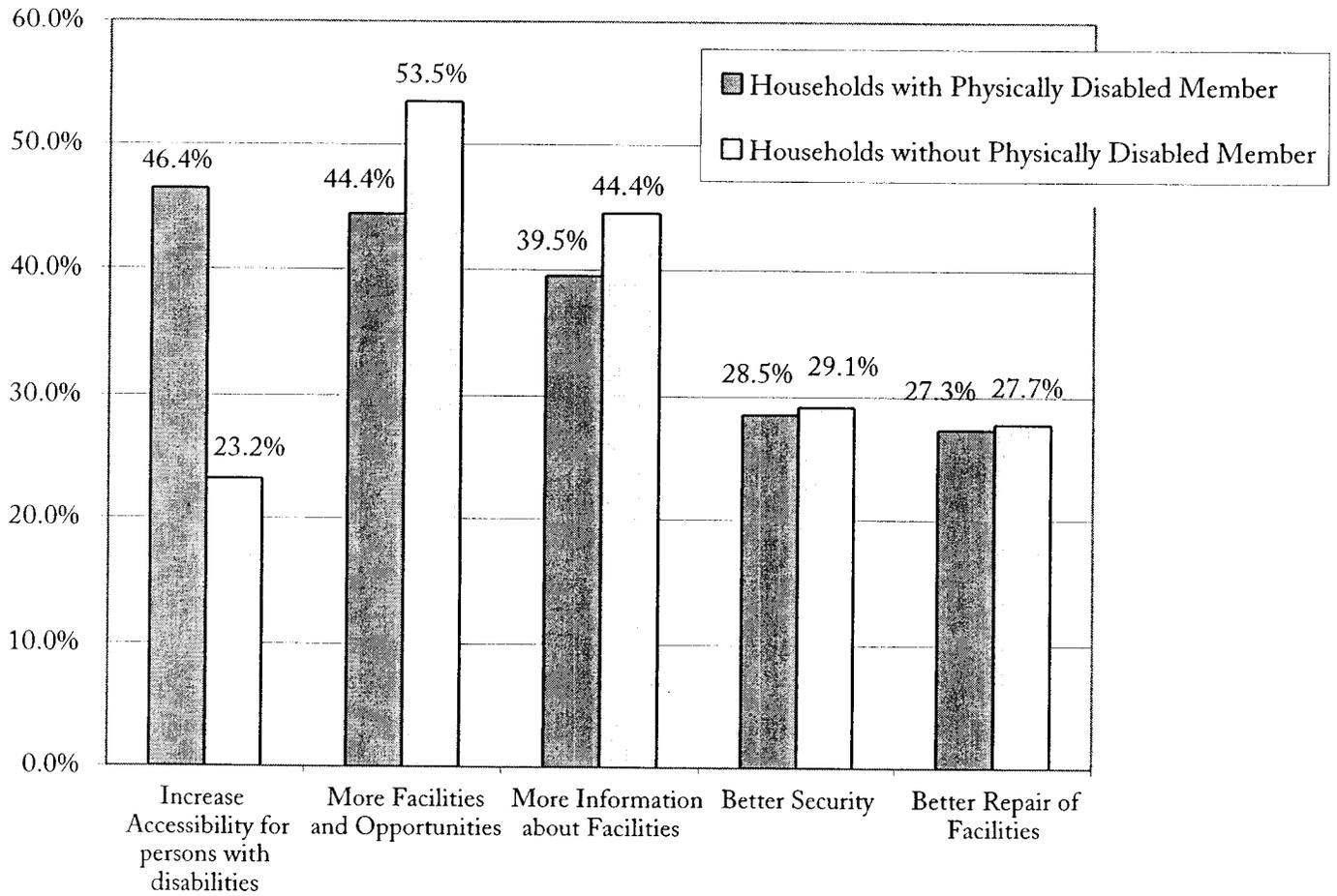


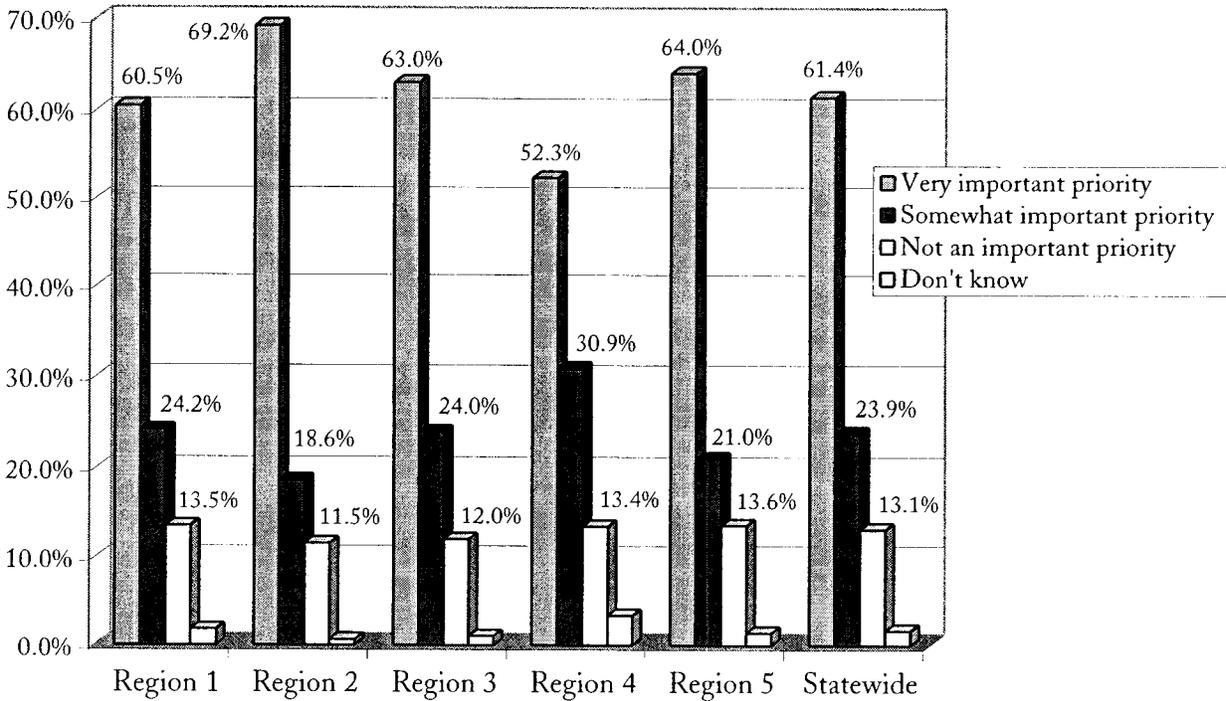
Chart 6.3 Overall, how would you rate handicap accessibility at parks and outdoor recreation facilities in Delaware?



**Chart 6.4 Factors That Would Increase Outdoor Recreation Participation**



**Chart 6.5 How important is it for local policy makers to fund park land acquisition in your community?**



**Chart 6.6 Statewide Environmental and Landscape Preferences**

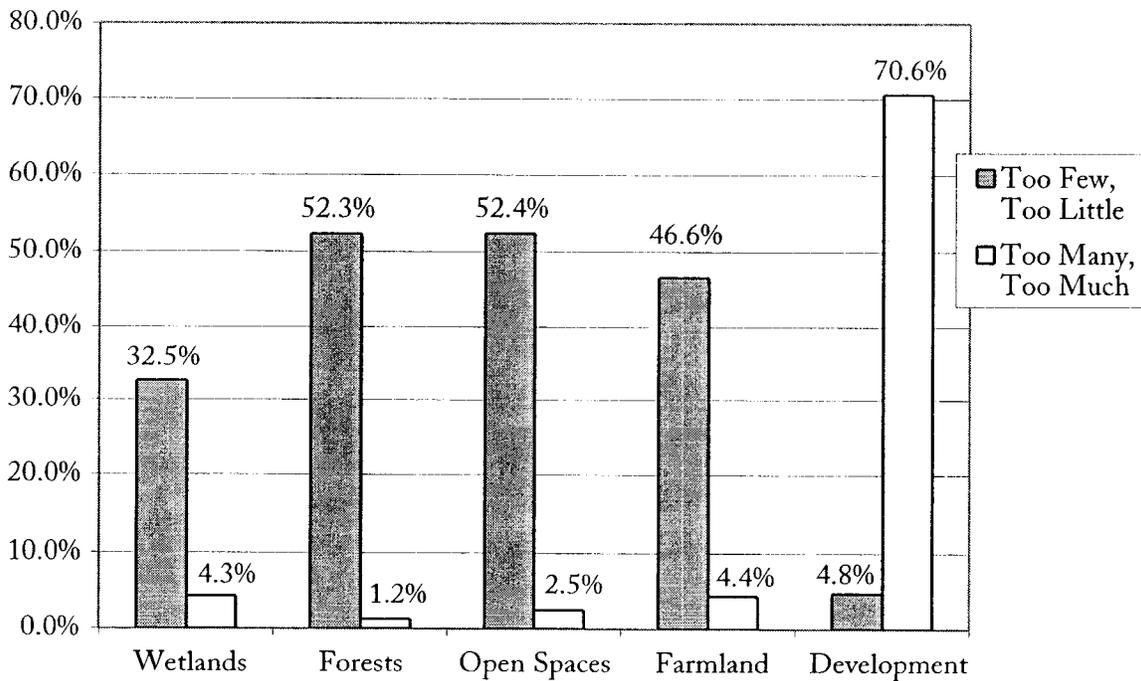


Chart 6.7 Opinion on Forested Landscapes in Delaware

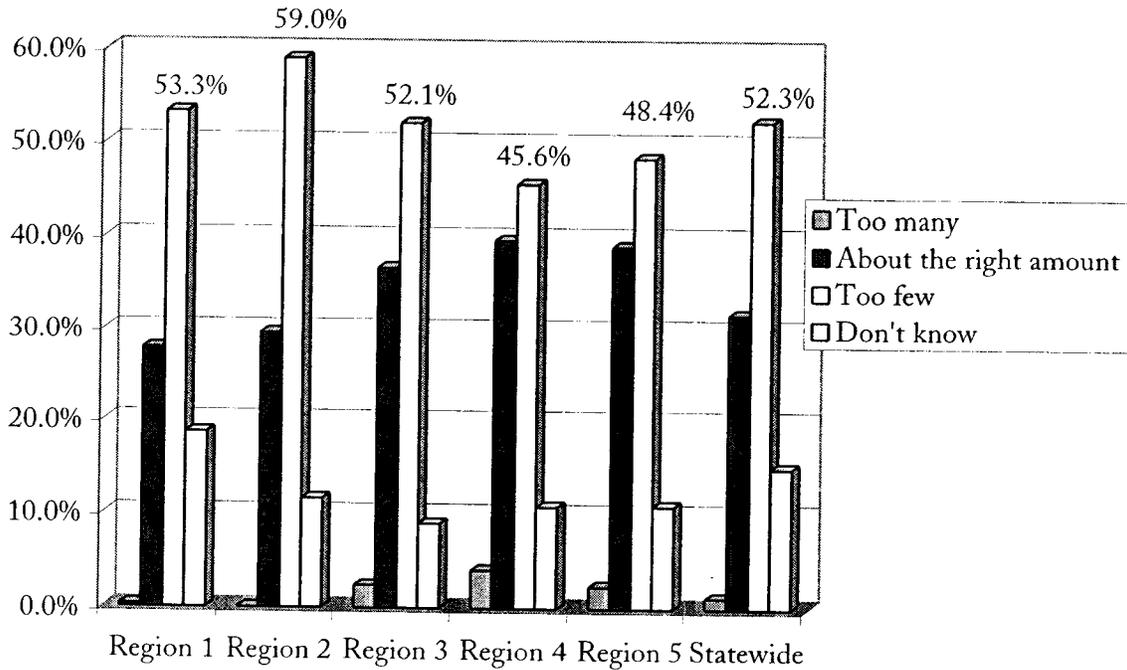


Chart 6.8 Opinion on Wetland Landscapes in Delaware

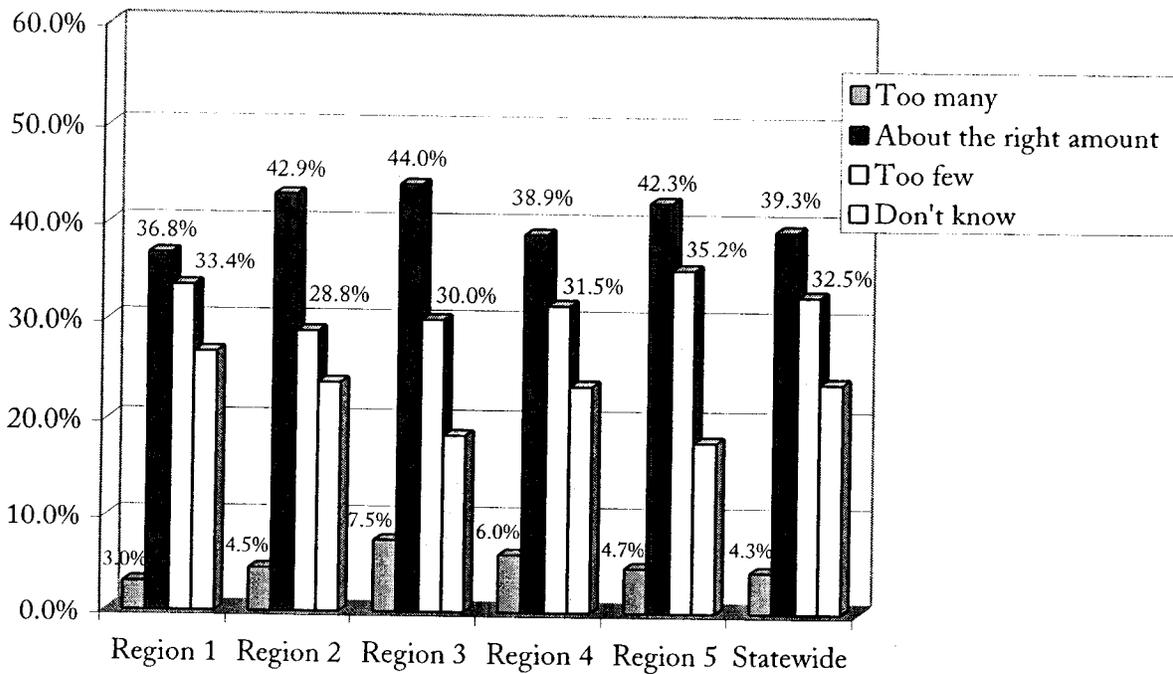


Chart 6.9 Opinion on Farmland Landscapes in Delaware

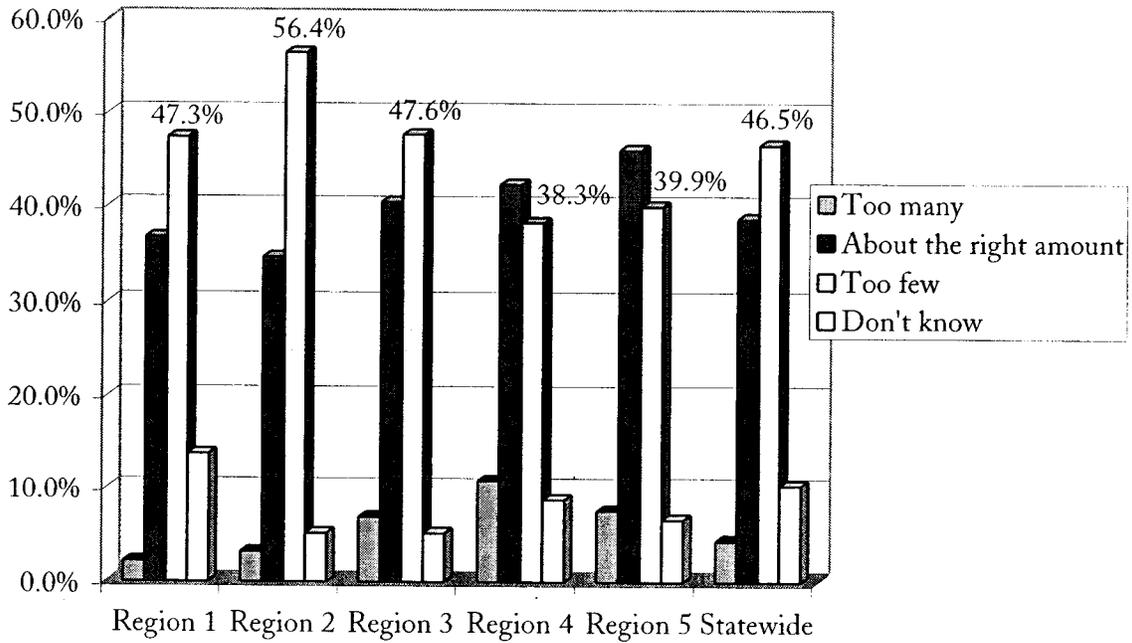


Chart 6.10 Opinion on Open Natural Areas and Green Space in Delaware's Suburban and Urban Areas

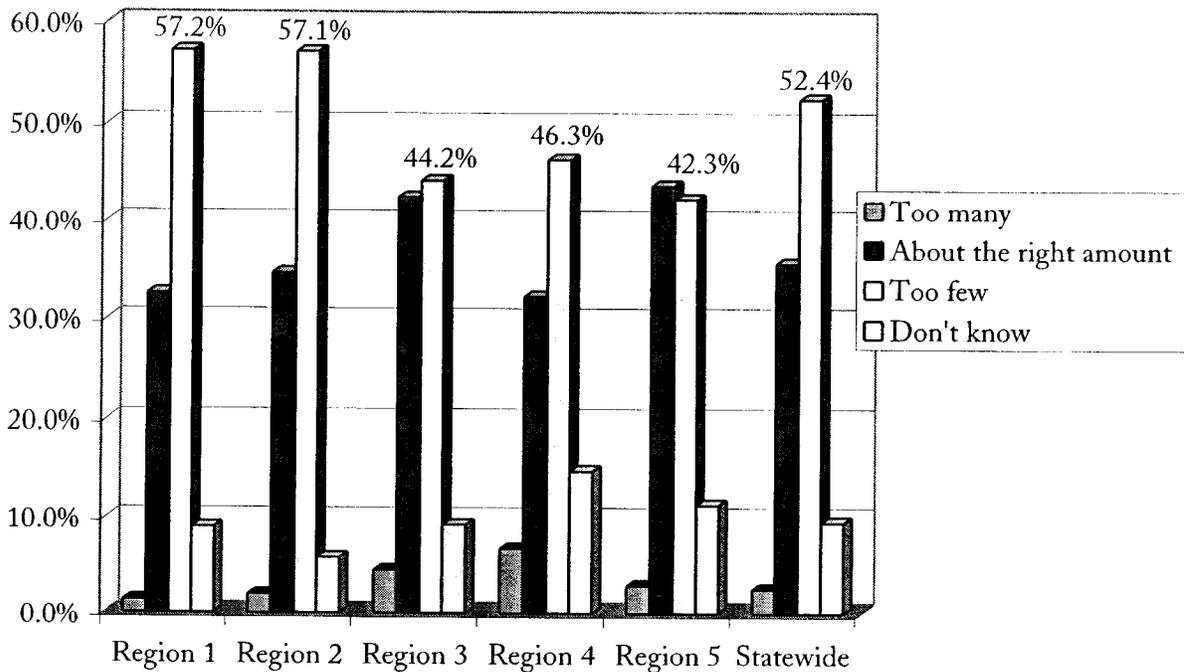
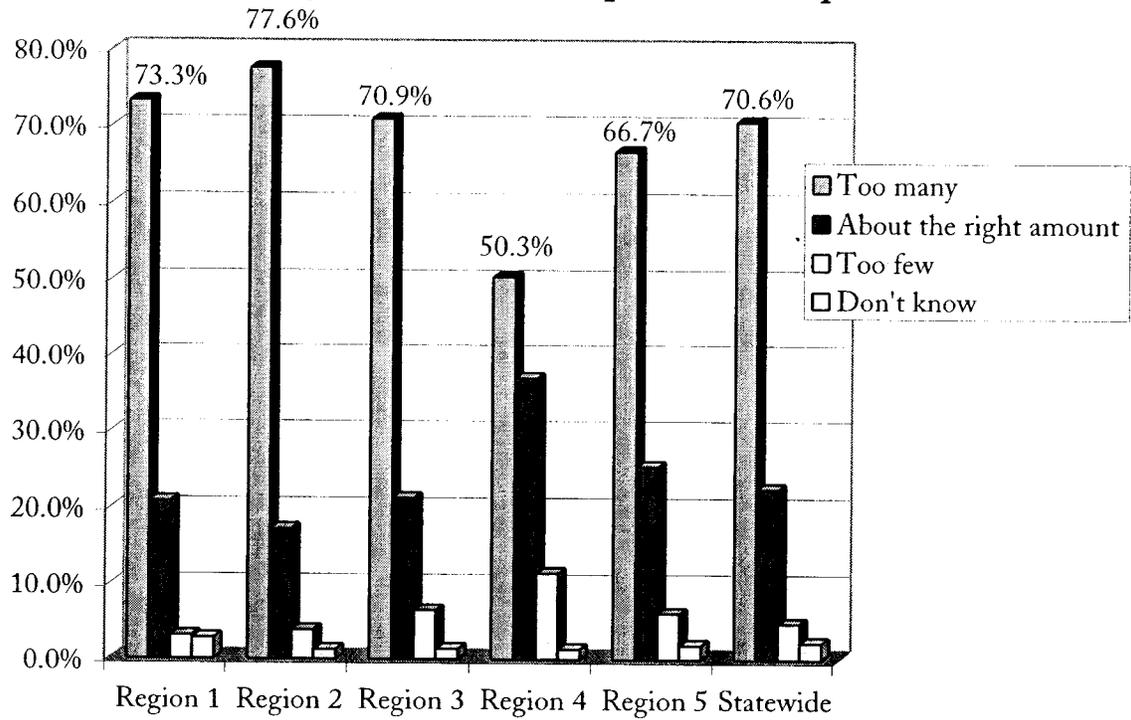


Chart 6.11 Opinion on Developed Landscapes in Delaware



## APPENDIX

- A Phone Survey Methodology
- B Phone Survey Instrument
- C Phone Survey Comments
- D Demographics of Delaware Residents
- E Local Official Survey
- F Public Workshop Questionnaire
- G Facility Needs Methodology
- H Emergency Wetlands Act of 1986

## APPENDIX A

### Phone Survey Methodology

This study was conducted for the Delaware Department of Natural Resources and Environmental Control, Division of Parks and Recreation (hereinafter referred to as “the Division”) to assess Delaware residents’ (16 years and older) outdoor recreation patterns and their future outdoor recreation needs. The survey questionnaire was developed cooperatively by Responsive Management and the Division. A pre-test of the questionnaire was conducted on March 29, 2002, and revisions were made to the questionnaire based on the pre-test. The survey was administered between April 26 and June 12, 2002.

Telephones were selected as the preferred sampling medium because nearly all residents of Delaware have a telephone. In addition, a central polling site at the Responsive Management office allowed for rigorous quality control over the interviews and data collection. Responsive Management maintains its own in-house telephone interviewing facilities. These facilities are staffed by interviewers with experience conducting computer-assisted telephone interviews on the subject of natural resources and outdoor recreation for state fish and wildlife agencies. The data were collected using Questionnaire Programming Language 4.1 (QPL), which is computer software specifically for telephone survey data collection. The Survey Center Managers randomly monitored telephone workstations without the interviewers’ knowledge to evaluate the performance of each interviewer.

Responsive Management has designed a telephone interviewing facility that stresses the importance of highly trained telephone interviewers who work under the close supervision of Responsive Management senior staff. To ensure that the data collected are of the highest quality, the interviewers are trained according to the standards established by the Council of American Survey Research Organizations. Methods of instruction include lecture and role-playing. The Survey Center Managers conduct project briefings with the interviewers prior to the administration of the survey. Interviewers are instructed on type of study, study goals and objectives, handling of survey questions, interview length, termination points and qualifiers for participation, interviewer instructions within the survey instrument, reading of the survey instrument, skip patterns, and probing and clarifying techniques necessary for specific questions on the survey instrument. After the surveys are completed by the interviewers, the Survey Center Managers and statisticians edit each completed survey to check for clarity and completeness.

Interviews were conducted Monday through Friday from 9:00 a.m. to 9:00 p.m., Saturday 11:00 a.m. to 5:00 p.m., and on Sunday from 3:00 p.m. to 7:00 p.m., all local time. A five-callback design was used to maintain the integrity of the sample, to avoid bias toward people easy to reach by telephone, and to provide an equal opportunity for all to participate. In some instances, numbers were called back up to eight times. When a respondent could not be reached on the first call, subsequent calls were placed on different days of the week and at different times. This intensive call-back procedure is a good technique for ensuring the highest response rate feasible.

## APPENDIX A

As indicated previously, the software used for data collection was QPL. The survey data are entered into the computer as the interview is being conducted, eliminating manual data entry after the completion of the survey and the concomitant data entry errors that may occur with manual data entry. The survey instrument is programmed so that QPL branches, codes, and substitutes phrases in the survey based on previous responses to ensure the integrity and consistency of the data collection.

Throughout this report, findings are reported at the 95% confidence interval. For the entire sample of Delaware residents, the sampling error is at most plus or minus 2.301%. This means that if the survey were conducted 100 times on different samples that were selected in the same way, the findings of 95 out of the 100 surveys would fall within plus or minus 2.301% of each other. Sampling error was calculated using the formula described on the following page, with a sample size of 1,809 and a population size of 783,600 (16 years of age and older). Due to rounding, percentages may not sum exactly to 100.

### Sampling Error Equation:

$$B = \left( \sqrt{\frac{\frac{N_p(.25)}{N_s} - .25}{N_p - 1}} \right) (1.96)$$

Where: B = maximum sampling error (as decimal)

$N_p$  = population size (i.e., total number of applicable licenses)

$N_s$  = sample size

Derived from formula: p. 206 in Dillman, D. A. 2000. *Mail and Internet Surveys*. John Wiley & Sons, NY.

**Note:** This is a simplified version of the formula that calculates the maximum sampling error using a 50:50 split (the most conservative calculation because a 50:50 split would give maximum variation).

## APPENDIX B

### Phone Survey Instrument

Responsive Management Inc. is a Virginia-based public opinion polling and survey research firm specializing in natural resources, fisheries, wildlife, outdoor recreation and environmental issues. This study was conducted for the Delaware Department of Natural Resources and Environmental Control, Division of Parks and Recreation to assess Delaware residents' (16 years and older) outdoor recreation patterns and their future outdoor recreation needs. The study entailed a telephone survey of 1,809 Delaware residents. Telephones were selected as the preferred sampling medium because nearly all residents of Delaware have a telephone. The data were collected using Questionnaire Programming Language 4.1 (QPL), which is computer software specifically for telephone survey data collection. Surveys were conducted with scientific rigor according to the standards of the Council of American Survey Research Organizations.

The survey was administered between April 26 and June 12, 2002. Interviews were conducted Monday through Friday from 9:00 a.m. to 9:00 p.m., Saturday 11:00 a.m. to 5:00 p.m., and on Sunday from 3:00 p.m. to 7:00 p.m. A five-callback design was used to maintain the integrity of the sample by avoiding a bias toward people easily reached by telephone. In some instances, numbers were called back up to eight times. When a respondent could not be reached on the first call, subsequent calls were placed on different days of the week and at different times. This intensive call-back procedure is a good technique for ensuring the highest response rate feasible and provides an equal opportunity for all to participate.

The survey focused on a number of issues facing the future of outdoor recreation in the state including competition for recreational resources, changing land use patterns, and funding for operation and maintenance of recreation resources. The questions are stated below.

6. In general, how important is outdoor recreation in Delaware to you personally?

8. Now I'm going to read you a list of outdoor recreation activities. Please tell me if you expect any member of your household, including yourself, to participate in each activity in Delaware during the next 12 months.

(CHECK ALL THAT APPLY)

- 1. All-Terrain Vehicle Use (ATVs)
- 2. Baseball or Softball
- 3. Basketball
- 4. Bicycling
- 5. Boating (by canoe or kayak)
- 6. Boating (by power boat)
- 7. Camping
- 8. Disc Golf
- 9. Fishing

## APPENDIX B

- 10. Football/Soccer/Lacrosse
- 11. Golf
- 12. Hiking
- 13. Horseback riding
- 14. Hunting
- 15. Mountain Biking

- 1. Picnicking
- 2. Using playgrounds
- 3. Rollerblading/Roller Skating
- 4. Roller Hockey
- 5. Participating in nature programs
- 6. Passive rec. in the outdoors (birding/painting/enjoying nature)
- 7. Skateboarding
- 8. Swimming at the beach
- 9. Swimming in a pool
- 10. Tennis
- 11. Visiting historic sites
- 12. Volleyball
- 13. Walking or jogging
- 14. DNR: None of these
- 15. DNR: Don't know

12. In which of those activities do you personally participate most often?  
(CHECK ONLY ONE ANSWER FROM ALL THREE LISTS!!!)

(same list as above)

14. And how important is this activity to you personally? Would you say it is very important, somewhat important or not at all important?

15. How many days do you think you will participate in this activity over the NEXT 12 months?

16. Overall, how would you rate the facilities available to you in your community for participating in this activity? Would you say they are excellent, good, fair or poor?

17. Overall, how would you rate the facilities available to you in the state of Delaware for participating in this activity?

19. What are the top three public outdoor recreation areas you visit most frequently?

24. Now thinking about the public outdoor recreation area you visit the most; what are the main reasons you chose this area?

(DNR LIST; CHECK ALL THAT APPLY)

## APPENDIX B

- 1. Live close by/No other parks in the area
- 2. Aesthetics/Like the look of it
- 3. It has facilities for activities of interest
- 4. It has facilities for children
- 5. It has convenient hours
- 6. Friendly/knowledgeable staff
- 7. Clean
- 8. Safe
- 9. Don't know
- 10. Other

26. And thinking about the area you visit the most, approximately how many miles from your home is this area located?

27. How do you usually get to the area that you visit the most?  
(DNR LIST; CHECK ONLY ONE ANSWER)

- 1. Invalid answer. Select another.
- 2. Walk/Jog
- 3. Bike
- 4. Automobile
- 5. Motorcycle
- 6. Public transportation
- 7. Don't know
- 8. Other (GO TO QUESTION 28)

29. What is the main reason why you do not walk, jog or ride a bike to the area that you visit most?

31. Now please tell me the MOST IMPORTANT reasons you participate in outdoor recreation activities in Delaware.

(DNR LIST; CHECK ALL THAT APPLY)

- 1. I live close to a park
- 2. It is affordable
- 3. To be with family and friends
- 4. To spend time by myself
- 5. To enjoy the scenery
- 6. For my mental well being
- 7. For my physical fitness
- 8. For relaxation
- 9. For the challenge
- 10. To be close to nature
- 11. Because of the variety of opportunities available in Delaware

## APPENDIX B

12. Don't know

13. Other

34. Which of the following would encourage you to participate or to participate more actively in outdoor recreation activities in Delaware?

(CHECK ALL THAT APPLY)

1. More outdoor FACILITIES AND OPPORTUNITIES close to where you live

2. More INFORMATION about facilities and opportunities

3. Better REPAIR of facilities

4. Better SECURITY within facilities

5. Increased ACCESSIBILITY for persons with disabilities

6. More opportunity to participate in ORGANIZED ACTIVITIES

7. DNR: Don't know

36. Approximately how many miles from your home is the closest public outdoor recreation area located?

37. Now I'm going to read you a list of outdoor facilities and I'd like to know whether you think each should be a very important, a somewhat important or not an important priority for STATE AND LOCAL FUNDING in Delaware.

First, do you think more playgrounds for ages 2-5 should be a very important, a somewhat important or not an important priority for state and local funding in Delaware?

1. Invalid answer. Select another

2. Very important priority

3. Somewhat important priority

4. Not an important priority

5. Don't know

38. What about more playgrounds for ages 6-12?

39. What about more campgrounds?

40. What about more fishing areas?

41. What about more football or soccer fields?

42. What about more outdoor public swimming pools?

43. What about more biking paths?

44. What about more paved walkways?

45. What about more hiking/walking trails?

46. What about more boating access in coastal waters?

47. What about more boating access in fresh water, such as

48. What about more access for canoes and kayaks?

49. What about more fishing piers?

50. What about more public tennis courts?

51. What about more outdoor basketball courts?

## APPENDIX B

- 52. What about more public golf courses?
- 53. What about more baseball or softball fields?
- 54. What about indoor recreation facilities such as indoor basketball courts, volleyball courts and swimming pools?
- 55. What about off-leash dog areas?

56. Now I'm going to read a you list of programs and I'd like to know whether you think each item should be a very important, a somewhat important or not an important priority for STATE AND LOCAL FUNDING.

First, do you think that more historic education programs should be a very important, a somewhat important or not an important priority for state and local funding?

- 1. Invalid answer. Select another.
- 2. Very important priority
- 3. Somewhat important priority
- 4. Not an important priority
- 5. Don't know

57. Do you think that more nature education programs should be a very important, a somewhat important or not an important priority for state and local funding?

58. What about more organized leagues for team sports?

60. For which team sport(s) would you like to see more organized leagues?  
(DNR LIST; CHECK ALL THAT APPLY)

- 1. Soccer
- 2. Baseball
- 3. Football
- 4. Basketball
- 5. Softball
- 6. Volleyball
- 7. Hockey
- 8. Lacrosse
- 9. Field Hockey
- 10. Don't know
- 11. Other

62. What about more outdoor recreation programs for senior citizens, that is, those citizens which are 65 years of age or older?

63. What about more outdoor recreation programs for teens?

64. What about outdoor recreation programs for persons with disabilities?

65. What about more cultural and arts programs?

66. What about programs for children ages 4-12?

## APPENDIX B

67. Next please tell me whether you think each of the following items should be a very important, a somewhat important or not an important priority for STATE AND LOCAL POLICY MAKERS in Delaware.

First, do you think funding for public parks should be a very important, a somewhat important or not an important priority for state and local policy makers?

(CHECK ONLY ONE ANSWER)

- 1. Invalid answer. Select another.
- 2. Very important priority
- 3. Somewhat important priority
- 4. Not an important priority
- 5. Don't know

68. What about acquiring more land for parks and open space in your community?

69. What about acquiring more land for parks and open space in the state of Delaware?

70. What about bike and pedestrian pathways between places of work, schools and shopping areas?

71. Now I'd like for you to rate parks and outdoor facilities in Delaware as excellent, good, fair or poor in each of the following areas.

Overall, how would you rate handicapped accessibility at parks and outdoor facilities in Delaware? Would you say it is excellent, good, fair or poor?

(CHECK ONLY ONE ANSWER)

- 1. Invalid answer. Select another. (GO TO QUESTION 71)
- 2. Excellent
- 3. Good
- 4. Fair
- 5. Poor
- 6. Don't know

72. Overall, how would you rate the upkeep of parks and outdoor recreation areas in your community?

73. Overall, how would you rate the upkeep of parks and outdoor recreation areas in the state of Delaware?

74. Overall, how would you rate crime prevention at parks and outdoor facilities in Delaware?

75. Overall, how would you rate the availability of parking at parks and outdoor facilities in Delaware?

76. Finally, I have a series of questions regarding your attitudes toward the environment, natural resources and green spaces in Delaware.

## APPENDIX B

In your opinion, how would you rate the number of Delaware's wetlands? Would you say there are too many, about the right amount or too few wetlands in Delaware?

77. In your opinion, how would you rate the amount of forests in Delaware?

78. In your opinion, how would you rate the amount of open natural areas or green space in Delaware's suburban and urban areas?

79. In your opinion, how would you rate the amount of farmlands in Delaware?

80. In your opinion, how would you rate the amount of development such as housing developments and shopping areas in Delaware?

81. Do you agree or disagree that Delaware's natural areas, open spaces and farmlands should be developed even if it results in adverse impacts on the environment?

83. Do you consider your place of residence to be in a large city, a suburban area, a small city/town, or a rural area?

85. Including yourself, how many people live in your household?

86. And how many of these people are under age 18?

87. Does any member of your immediate household have a physical disability?

88. What is the highest grade level you have completed in school?

89. What race or ethnic background do you consider yourself?

91. Which of these categories best describes your total household income before taxes last year?

92. And finally, may I ask your age?

## APPENDIX C

### Phone Survey Comments

Question 93 of Responsive Management's phone survey asked respondents if they had any comments. The following are additional comments by survey respondents in no particular order.

Q93. Additional Comments
Bike lanes between work, school and places of shopping is very, very, very important.
The state is concentrating too much on outdoor recreation; they need to have more indoor facilities for youth to gather, so not on streets.
I'm concerned about air pollution in the state.
Area has changed badly in last 30 years; not enough security; I'm becoming afraid.
[The state should] continue buying land for preservation and parks and stop the development.
Don't develop anymore!
[There needs to be] more handicapped accessibility throughout state.
I'm concerned about poor environmental quality causing health problems in state.
Governor is doing a great job.
Dredge Indian River—there is no channel. Drop the speed limit on Route 26; [it is] too narrow for bikes—accidents!
Forests are being destroyed rapidly in Delaware; soon there will be too few.
I think taxes from boat gas should go to the Bay.
Funding for facilities seems to be good. I feel overzealous environmental policy considerations should not impact development.
I'm concerned about too much chemical pollution in state.
[The state] needs to provide more information about services and parks, especially for handicapped individuals.
Give raises to state workers rather than spending so much money on parks, etc.
[There are] no recreational services or parks in my community; need some for our youth.
Biking and walking paths are needed!!! Like in California.
I have a real issue dealing with skateboarding—being that it is illegal, but there are no facilities to do the activity.
I think there should be more facilities for indoor soccer.
[There needs to be] more handicapped access year round.
The state needs to preserve natural resources and be careful that development doesn't ruin them.
In New Castle county, soccer fields are horrible, but baseball/softball fields are great; however, there are more soccer players.
Increase the income tax for open spaces to prevent overdevelopment; make the environment a priority. Unsafe areas are a big problem.

## APPENDIX C

Q93. Additional Comments
[There needs to be] more free space.
I'm concerned about damage to environment; the state needs to do better.
Keep sports and woods going, and wildlife.
[There is a] major need for indoor soccer facilities in Dover area; the city [should] donate land to private company to build non-professional soccer facility.
[There needs to be] more handicapped accessibility.
I would like to see more areas for fields instead of just the high schools for like lacrosse and indoor areas.
[Playgrounds need] more merry-go-rounds and more seesaws.
[The state] needs more public restrooms in outdoor facilities.
[There need to be] more natural parks, fewer organized parks, because they turn into sporting events.
I would like to see more public skateboarding areas.
[There need to be] more parks in Sussex County, more landscaped tracts, also with a pond.
More sidewalks would be helpful in developments where kids are walking to school.
[There need to be] more trees and more social dance activities.
[The state] needs less development and more open space areas.
[The state] needs more community programs to acknowledge and support people who are disabled and those who work with them.
[There is] lack of access for horses in many places. [There are] very few refuge areas. [There is a] lack of bike paths on roads, and [a lack of] sidewalks.
[The state] needs more parks and activities for kids.
[The state] needs to lift restrictions on sharks and needs to increase limits for rockfish.
The new system of having people use park garbage bags to take trash home is not working, should have garbage cans.
No more housing developments, [there are] too many.
[There are] no paths for all-terrain vehicles—a dirt-bike park is needed.
Off-leash dog parks [are] very important, and clean rivers. [There should be] more security at facilities.
[There needs to be] proper and affordable housing for girls hockey events.
We need an ice skating rink.
Services and facilities in urban areas are very poor; city children need better access to safe recreation.

## APPENDIX C

Q93. Additional Comments
[There] should be more places to ride ATVs in Delaware.
The state is doing a great job with parks and recreation.
[There are] not enough parks!!
Stop the destruction of our forests.
[There] needs [to be] more tennis facilities and leagues in my area.
Stop the development and building!
[There need to be] swimming pools closer to my home.
The marina money has been neglected, and there is going to be accidents, and they are going to be sued.
The state should continue to expand its recreational opportunities to help existing neighborhoods that are overpopulated.
The state shouldn't worry about outdoor recreation; [the state should] focus on more education.
There needs to be more focus on the younger age groups in organized sports, for example, tee-ball.
There needs to be more skateboarding parks to keep kids off the streets.
There should be more restrooms at parks.
I think changes should be made below the canal.
This particular area, zip code 19709, needs a lot more parks and outdoor recreation facilities. We have nothing.
We need stricter laws on development.
I am for nature and history programs.
Traffic is terrible; it's getting worse. We need fewer cars.
I am very concerned about overdevelopment—stop it now, especially Sussex County.
We are doing away with the natural environments, killing habitats by making housing and shopping areas.
What are they doing about urban sprawl?
Why are there no opportunities in Delaware to advance children's potential in the visual and entertainment arts?
I would like an outdoor shooting facility. [The state should] clean the boat ramps once in a while.
I would like to have the ponds dredged for fishing around the state.

## APPENDIX D

### Demographics of Delaware Residents

<u>Demographic Characteristics</u>	<u>2000 Census Percent (%)</u>	<u>2002 Responsive Management (%)</u>
Gender		
Male	47.87	39.52
Female	52.13	59.92
Race/Ethnicity*		
White, Non-Hispanic	75.22	78.62
Black, Non-Hispanic	17.36	9.39
American Indian, Non-Hispanic	0.31	0.44
Asian/PI, Non-Hispanic	2.11	1.27
Hispanic	4.03	1.66
Age*		
16-24	17.28	9.74
25-34	17.53	14.28
35-44	20.55	20.53
45-54	16.75	18.76
55-64	11.52	15.05
65+	16.38	16.49
Total Family Income		
<\$15,000 (Less than \$20,000)	7.33	4.70
\$15k-\$24,999 (\$20,000 to \$39,999)	9.03	13.10
\$25k-\$49,999 (\$40,000 to \$59,999)	27.79	16.92
\$50k-\$74,999 (\$60,000 to \$79,999)	23.97	12.88
\$75k-\$99,999 (\$80,000 to \$99,999)	14.6	8.13
\$100,000+ (\$100,000 to \$149,999)	17.27	7.57
(\$150,000+)		3.21
Refused to answer (or didn't know)		33.50
Educational Attainment*		
Less than H.S.	17.4	8.46
High School Graduate	31.43	25.77
Some College	26.12	19.75
College Degree	15.62	27.93
Post-Graduate Degree	9.43	15.10

\*Survey categories not adding to 100 are due to refusal to answer (or did not know)

# APPENDIX E

## Local Official Survey

The local official survey was conducted by Delaware's Division of Parks and Recreation for the purpose of including the perspective of elected local officials in the planning process. A total of 342 surveys were sent to town mayors, town managers, council members and commissioners from the 57 municipalities and three counties in Delaware as well as municipal parks and recreation directors. The three-part survey included sections on needed facilities, municipal comprehensive plans and funding sources. The surveys were mailed on June 22, 2002 and returned by July 16, 2002. Statewide, 32% returned a completed survey on or before the due date. Regional responses varied from 21% in Region 1 to 43% in Region 5. Because so many of the issues from the public are heard and resolved at the local level, input from local officials is important in developing the statewide plan. The survey information provided by the local officials helps the Division of Parks and Recreation assess recreational needs in Delaware's communities. The Division can better serve communities with funding and technical support by understanding their issues.

## Instrument

The intent of this survey is to gain an important perspective of outdoor recreation needs and to gain a better understanding of community plans for parks and open spaces. Responses are a vital part in accurately reflecting the public's outdoor recreation needs. These findings will be combined with other forms of public input and will be reflected in the Statewide Comprehensive Outdoor Recreation Plan.

1. For the following outdoor activities, please rate the need for facilities in your jurisdiction on a scale of 1 to 5, with 5 being much needed and 1 being not needed at all:

	Not needed			Much needed	
	1	2	3	4	5
<u>All – terrain vehicle sites (ATV)</u>	1	2	3	4	5
<u>Baseball or softball</u>	1	2	3	4	5
<u>Basketball courts</u>	1	2	3	4	5
<u>Bike paths</u>	1	2	3	4	5
<u>Canoe/kayak access areas</u>	1	2	3	4	5
<u>Power boat access areas</u>	1	2	3	4	5
<u>Campgrounds</u>	1	2	3	4	5
<u>Disc golf</u>	1	2	3	4	5
<u>Dog parks</u>	1	2	3	4	5

## APPENDIX E

Football fields	1	2	3	4	5
Golf courses	1	2	3	4	5
Hiking trails	1	2	3	4	5
Equestrian trails	1	2	3	4	5
Hunting areas	1	2	3	4	5
Jogging/walking paths	1	2	3	4	5
Lacrosse fields	1	2	3	4	5
Mountain biking trails	1	2	3	4	5
Picnic areas	1	2	3	4	5
Playgrounds	1	2	3	4	5
Skate facilities (roller blades/skateboards)	1	2	3	4	5
Soccer fields	1	2	3	4	5
Swimming pools	1	2	3	4	5
Tennis courts	1	2	3	4	5
Volleyball courts	1	2	3	4	5
Others (specify)	1	2	3	4	5
	1	2	3	4	5

2. Does your jurisdiction have a recreation or open space master plan?  
(circle one) Yes / No / Not sure

If yes, what year was it completed? \_\_\_\_\_

When will the next revision of this plan be? \_\_\_\_ (Year)

If no, is someone developing a plan? Yes / No  
explain

---



---

## APPENDIX E

3. Does your jurisdiction plan to construct an outdoor recreation facility within the next five years? (circle one) Yes / No / Not sure

If yes, which parks? \_\_\_\_\_

If no, why not?  
\_\_\_\_\_  
\_\_\_\_\_

4. Does your jurisdiction plan to acquire additional parkland within the next five years? Yes / No / Not sure

If yes, is it new park area or an addition to an existing park?  
\_\_\_\_\_

If no, why not?  
\_\_\_\_\_  
\_\_\_\_\_

5. Are the ordinances/policies in your jurisdiction effective in protecting open space and environmental resources? Yes / No / Not sure

If no, why not?  
\_\_\_\_\_  
\_\_\_\_\_

6. Does your local jurisdiction have an open space requirement? Yes / No / Not sure

If yes, what percentage (or range of percentages) is required for residential subdivisions?  
\_\_\_\_\_

7. Please read each of the statements below carefully and then indicate how you feel about them by circling a number to the right of the statement. Circle 1 if you strongly disagree with the statement or circle 5 if you strongly agree. If you have no opinion or lack information necessary to give an opinion, circle 3. Circle 2 if you somewhat disagree or 4 if you somewhat agree with the statement.

## APPENDIX E

Strongly  
Disagree

Strongly  
Agree

More lands should be purchased for recreational needs by

local government. _____	1	2	3	4	5
county government. _____	1	2	3	4	5
state government. _____	1	2	3	4	5

More lands should be purchased for open space by

local government. _____	1	2	3	4	5
county government. _____	1	2	3	4	5
state government. _____	1	2	3	4	5

More money should be spent on developing existing parks by

local government. _____	1	2	3	4	5
county government. _____	1	2	3	4	5
state government. _____	1	2	3	4	5

More money should be spent on public park operations and maintenance by

local government. _____	1	2	3	4	5
county government. _____	1	2	3	4	5
state government. _____	1	2	3	4	5

Public/private partnerships should be considered to expand and develop recreational facilities.

1      2      3      4      5

Public/private partnerships should be considered to further protect open spaces and natural resources.

1      2      3      4      5

Your jurisdiction: \_\_\_\_\_

Please return by July 16<sup>th</sup>

Contact Bob Ehemann by phone 302 739-5285 or email robert.ehemann@state.de.us with questions or comments.

## APPENDIX F

### Public Workshop Questionnaire

Another way to reach the public is by conducting public workshops. The State Division of Parks and Recreation held 14 public workshops throughout the state in September and October of 2002 to give Delawareans an opportunity to help guide outdoor recreation development in the state for the next five years. The workshops were also an opportunity to inform the public about the LWCF and the Trust Fund providing funding to communities around the state. The workshops allowed Delaware citizens, decision makers, outdoor recreation providers in both the private and public sectors, user groups and interest groups to participate in the SCORP planning process. The workshops were an opportunity for the public to voice their issues, concerns and preferences about outdoor recreation and land conservation. The public was notified of the workshops through newspaper advertisements, the Division of Parks and Recreation website under "Things to Know", a segment on the local TV evening news as well as on NPR radio. Most of the attendees (124 in all) filled out and returned a questionnaire.

### Instrument

The intent of this survey is to gain an important community perspective of outdoor recreation needs. Responses are a vital part in accurately reflecting the public's outdoor recreation needs. These findings will be combined with other forms of public input and will be reflected in the Statewide Comprehensive Outdoor Recreation Plan.

For the following outdoor activities, please rate the need for facilities in your community on a scale of 1 to 5, with 5 being much needed and 1 being not needed at all:

	Not needed			Much needed	
	1	2	3	4	5
<u>All – terrain vehicle sites (ATV)</u>	1	2	3	4	5
<u>Baseball or softball</u>	1	2	3	4	5
<u>Basketball courts</u>	1	2	3	4	5
<u>Bike paths</u>	1	2	3	4	5
<u>Canoe/kayak access areas</u>	1	2	3	4	5
<u>Power boat access areas</u>	1	2	3	4	5
<u>Campgrounds</u>	1	2	3	4	5
<u>Disc golf</u>	1	2	3	4	5
<u>Dog parks</u>	1	2	3	4	5
<u>Fishing areas</u>	1	2	3	4	5

## APPENDIX F

Football fields	1	2	3	4	5
Golf courses	1	2	3	4	5
Hiking trails	1	2	3	4	5
Equestrian trails	1	2	3	4	5
Hunting areas	1	2	3	4	5
Jogging/walking paths	1	2	3	4	5
Lacrosse fields	1	2	3	4	5
Land/open space preservation	1	2	3	4	5
Mountain biking trails	1	2	3	4	5
Picnic areas	1	2	3	4	5
Playgrounds	1	2	3	4	5
Skate facilities (roller blades/skateboards)	1	2	3	4	5
Soccer fields	1	2	3	4	5
Swimming pools	1	2	3	4	5
Tennis courts	1	2	3	4	5
Volleyball courts	1	2	3	4	5
Others (specify)	1	2	3	4	5
	1	2	3	4	5

Please read each of the statements below carefully and then indicate how you feel about them by circling a number to the right of the statement. Circle 1 if you strongly disagree with the statement or circle 5 if you strongly agree. If you have no opinion or lack information necessary to give an opinion, circle 3. Circle 2 if you somewhat disagree or 4 if you somewhat agree with the statement.

Strongly  
Disagree

Strongly  
Agree

More lands should be purchased for recreational needs by

local government.	1	2	3	4	5
county government.	1	2	3	4	5
state government.	1	2	3	4	5

## APPENDIX F

More lands should be purchased for open space by

local government.	1	2	3	4	5
county government.	1	2	3	4	5
state government.	1	2	3	4	5

More money should be spent on developing existing parks by

local government.	1	2	3	4	5
county government.	1	2	3	4	5
state government.	1	2	3	4	5

More money should be spent on public park operations and maintenance by

local government.	1	2	3	4	5
county government.	1	2	3	4	5
state government.	1	2	3	4	5

Your zip code: \_\_\_\_\_

Please fill out the survey and leave it with us.

Thank you for taking the time to share your opinion with us.

Comments:

## APPENDIX G

### Facility Needs Methodology

Three major forms of public opinion were collected for the comprehensive plan and able to be quantified. The three sources are the phone survey conducted by Responsive Management Inc., a local official mail-in survey, and a similar survey provided to workshop attendees. The needs for facilities and open spaces will always exceed the funding required to support those needs. Although anticipated participation is a good indicator in assessing and prioritizing needs, participation alone is not the only factor to consider. A more thorough assessment for prioritizing activities requires looking at both relative participation and the relative satisfaction (needs for facilities). Since the foundation of this plan is public opinion, we can formulate a priority list based on the survey information.

The phone survey conducted by Responsive Management, Inc. provided meaningful information about (1) participation in specific activities (question 8), (2) most often participated in activity (question 12) and (3) rating the facilities in your area for that specific activity (question 16). These three questions are activity specific so we can use them as factors in ranking the regional needs.

#### Factor Q8

Question 8 asks if you expect any member of your family, including yourself, to participate in the specified list of activities in Delaware during the next 12 months. This question helps rank activities based on participation.

#### Factor Q12

Question 12 asks "In which of those activities do you participate most often"? This question further identifies high use activities.

#### Factor Q16

Question 16 asks "How would you rate the facilities available to you in your community for participating in this activity? Would you say they are excellent, good, fair or poor? This question is asking the experts (those who participate in a specific activity most often) their opinion about facilities in their community.

#### Factor LO

The Local Official Survey asks about the need for facilities for specific activities in their jurisdiction. The local officials were asked to select a range between 1 (not needed) and 5 (much needed) facilities for each activity. This survey incorporates the demand (what people want) with the supply (what facilities are available). This data source provided 108 responses from elected officials around the state who know what the needs in their jurisdictions are.

## APPENDIX G

### Factor Workshop

The workshop survey is similar to the Local Official survey and was handed out and completed by most workshop attendees. Again, this survey incorporates the demand and supply for each specific activity. A total of 124 people took the time to fill out the survey providing us with the fifth and final factor in the formula.

### Formula

The five factors are used in a single formula to rank the regional needs of all activities.

The general formula is expressed as follows:

NEED for Specific Activity (in specified region) = (a\*Q8) + (b\* Q12) + (c\*Q16) + (d\*LO) + (e\* Workshop)

Where

- Q8 = Household participation factor
- Q12 = Most often participated factor
- Q16 = Level of satisfaction of facilities
- LO = Local official's need for facilities
- Workshop = Workshop attendees responses to facility needs

Where a,b,c,d and e are weighted values based on each factor's level of importance

First, each factor's activity was classified into a scale from 1 to 1.9. For example, factor Q8 is given by percent of Households who will participate in a specific activity over the next 12 months. The proportion of responses ranged from ATV= 0.156354 (15.6%) of households to Walking or Jogging Paths = 0.878386 (87.8%) of households statewide. The range is divided into 10 equal increments and each activity is assigned a value between 1 and 1.9 based on the proportion of participation responses. The higher the assigned value, the more popular the activity is. This process, for determining the factor values between 1 and 1.9, is repeated for all 5 regions.

## APPENDIX G

Low (ATV)	0.156354
High (Jogging)	0.878386
Range (high-low)	0.722032
Tenth Increments	0.072203

Factor Value	low	high
1.0	0.156354	0.228557
1.1	0.228557	0.30076
1.2	0.30076	0.372963
1.3	0.372963	0.445166
1.4	0.445166	0.51737
1.5	0.51737	0.589573
1.6	0.589573	0.661776
1.7	0.661776	0.733979
1.8	0.733979	0.806183
1.9	0.806183	0.878386

In order to match the categories of activities between the three surveys, Rollerblading/Roller Skating, Roller Hockey and Skateboarding were combined as one category...Skate Facilities. The percentage for these three activities were added together to create a single skate facility category. It is possible that the resultant ranking for Skate Facilities may be skewed high.

In the same manner, Q12 data is displayed by percentage of the total. In this case however, the respondent must choose his/her most often participated in activity. Since jogging/walking is by far the most participated in activity, scaling the range from 0.003 to 0.400 would skew all the activities low. The next highest participated in activity is less than 0.078 statewide so jogging/walking is assigned a value of 2 for each region and the scale is setup between 0.003 (lowest) and 0.078 (second highest). Again, more value is given to those activities most participated in. Values are assigned to each activity based on the specific scale from each region.

Q16 adds a level of complexity. The question asked for a rating of facilities as excellent, good, fair or poor. Although the range values must be modified, the factor values will still range from 1 to 1.9. In this case, we summed the excellent and good responses as well as the fair and poor responses. Then we created a ratio of (excellent + good)/(fair + poor) for each activity. If only excellent or good responses were given for a specific activity in a specific region, the value assigned to that activity was "1". These people are the most satisfied and therefore assigned the lowest possible value. In a few cases, a specific activity was not chosen by anyone in a given region to be the most often participated in. For this case, a "1.1" value was assigned to the activity. As the ratio of (excellent + good)/(fair + poor) gets smaller, less people are satisfied and the value assigned to the activity increases. If only fair or poor

## APPENDIX G

responses are given, then the highest value, “1.9”, is assigned to the activity. This scale is used for all regions.

	Low	high
1.0		If Ex, no Poor
1.1		If nothing
1.2	4.0	>4.0
1.3	3.0	3.99
1.4	2.0	2.99
1.5	1.5	1.99
1.6	1.0	1.49
1.7	0.5	0.99
1.8	0.01	0.49
1.9		If Poor, no Ex

The local official survey and workshop survey are similar with all responses between 1 and 5. Again we took the range of the average responses for each activity. In this case, ATV had the lowest average statewide response of 1.79 on the 1 to 5 scale and Jogging/Walking had the highest response of 4.03. Each activity is assigned a factor value based on the average response for each region. Each region has a unique range based on the high and low average responses. Fishing is the only activity not specifically asked in the local official survey and therefore assigned a Factor Value of “1.4”. The reason this activity was left off the list was that little can be done to create a fishing site where none presently exists.

		Factor Value	low	high
		1.0	1.790	2.014
Low	1.79	1.1	2.014	2.238
High	4.03	1.2	2.238	2.462
		1.3	2.462	2.686
Range	2.24	1.4	2.686	2.910
Tenth Increment	0.224	1.5	2.910	3.134
		1.6	3.134	3.358
		1.7	3.358	3.582
		1.8	3.582	3.806
		1.9	3.806	4.030

As described above, each activity is assigned a value in each region for each factor (Q8, Q12, Q16, LO and Workshop). Each factor is multiplied by a weighted value and summed.

## APPENDIX G

Although we did not want any single factor to dominate the equation, we also felt that each factor had a different level of importance, requiring a weighted value. It was determined that the household activities (Q8) deserved the heaviest weight. Because Q8 captures the participation of the entire household including the younger Delawareans not otherwise surveyed, Q8 is assigned a weight of 1.4. The next important factor is the local official responses (LO). The local officials should have a good grasp of what facilities are needed in their jurisdictions. In addition, their responses are more global in nature (jurisdiction needs) than the other public inputs (household or individual needs) and therefore are given a weight of 1.3. The remaining factors are individual responses and have less weight assigned to them. Q12 was assigned a weight of 1.2. This factor identifies the most often participated in activities and is an indicator of which activities are and will be in most demand. The workshop factor was assigned a weight of 1.1. Although the workshop provided valuable information on regional and statewide recreation issues/concerns, the questionnaire results were included but given a low weight because they represented such a small proportion of individual responses. Q16 was assigned the lowest weight; 1. Since the distribution of responses in Q16 is skewed toward walking and jogging and nothing else, many activities are lacking sufficient data. The result of assigning a factor value and weighted value for each survey variable allows us to compute and rank the most needed facilities for each region.

An example of calculating soccer fields is shown below. Since the weighted values do not vary from one calculation to the next, the formula

$$\text{Need for Activity} = (a*Q8) + (b* Q12) + (c*Q16) + (d*LO) + (e* \text{Workshop})$$

Becomes

$$\text{Need for Activity} = (1.4*Q8) + (1.2*Q12) + (1*Q16) + (1.3*LO) + (1.1* \text{Workshop})$$

Next, the assigned factor values for specific activities are added. In this example, soccer fields in region 2.

$$\begin{aligned} \text{Need for Soccer fields in Region 2} &= (1.4*1.4) + (1.2* 1.4) + (1*1.6) + (1.3*1.8) + (1.1* 1.2) \\ &= 8.9 \end{aligned}$$

$$\begin{aligned} \text{Need for Soccer fields in Region 5} &= (1.4*1.2) + (1.2* 1.2) + (1*1.6) + (1.3*1.4) + (1.1* 1.6) \\ &= 8.3 \end{aligned}$$

The actual numbers are only meaningful in the context of ranking among all activities in a specific region. Soccer fields rank the 6<sup>th</sup> most needed facility among all activities in region 2 while it ranked the 12<sup>th</sup> overall need in region 5.

## APPENDIX G

The final step in prioritizing the facilities was to categorize them. Each activity is assigned a high, moderate or low priority based on the following. The range of values statewide was

determined by subtracting the highest calculated value (Walking or Jogging trails, 10.91) from the lowest calculated value (disc golf, 6.51). This range of values (4.4) is divided by three providing three equal increments and the range needed for the following categories.

High priority facilities are categorized by values between 9.44 and 10.91.

Moderate priorities are categorized by values between 7.98 and 9.44.

Low priorities are categorized by values between 6.51 and 7.97.

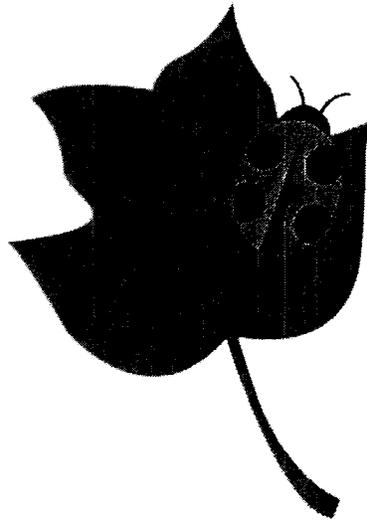
The sole purpose of this exercise is to rank and identify the most needed facilities in each region. The top ten or twelve most needed facilities can now be compared to the spatial coverage of existing facilities to determine the needs and provide recommendations to meet those needs.

## APPENDIX H

### Emergency Wetlands Act of 1986

The following source fulfills the Emergency Wetlands Act of 1986 requirement.

Tiner, R.W. 2001. Delaware's Wetlands: Status and Recent Trends. U.S. Fish and Wildlife Service, Northeast Region, Hadley, MA. Prepared for the Delaware Department of Natural Resources and Environmental Control, Watershed Assessment Section, Division of Water Resources, Dover, DE. Cooperative National Inventory Publication. 19 pp.



Delaware State Parks

302-739-5285

[www.destateparks.com](http://www.destateparks.com)

