UPDATING STATE COMPREHENSIVE OUTDOOR RECREATION PLANS, AN APPLICATION OF GEOGRAPHIC INFORMATION SYSTEMS AND CENSUS DATA

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Abstract
Modeling supply and demand data is useful for regional outdoor recreation planning. At the statewide level, State Comprehensive Outdoor Recreation Plans (SCORPs) are prepared to satisfy the requirements of the Land and Water Conservation Fund (LWCF). In Massachusetts, the most recent SCORP was prepared in 2006. Two of the primary tasks were updating the recreation resource inventory statewide and developing an extensive GIS data base. For the demand side, the Commonwealth of Massachusetts utilized data collected in 1995 that focused on recreation site usage patterns, assessed satisfaction with outdoor recreation areas, and evaluated unmet needs. This paper presents an example of updating SCORPs using current demographic data (US Census) and geographic supply data (MassGIS).

1.0 Introduction

Statewide Comprehensive Outdoor Recreation Plans (SCORPs) are fundamental for regional recreation planning in each state (Smith 1989). The federal Land and Water Conservation Fund (LWCF) program requires a SCORP from each state prior to receiving LWCF financial assistance for the acquisition and development of outdoor recreation resources:

> The LWCF Program provides matching grants to States and local governments for the acquisition and development of public outdoor recreation areas and facilities. The program is intended to create and maintain a nationwide legacy of high quality recreation areas and facilities and to stimulate non-federal investments in the protection and maintenance of recreation resources across the United States. (National Park Service, 2011a)

Since its inception in the mid 1960s, the LWCF has provided nearly $14.5 Billion to procure state and federal land. In the New England Region, nearly one billion dollars has been made available to acquire and develop lands for parks and protected areas (Commonwealth of Massachusetts 2011). In 2010, Massachusetts received $841,858 dollars in LWCF funding, but the state had identified $42 million in needs for such funds. Similarly across the nation, the LWCF provides only about 1% of the funding needed for the provision of recreation, parks, and protected areas (National Park Service 2011b).

Statewide planning of outdoor recreation has a long history. In the late 1950s, President Eisenhower created the Outdoor Recreation Resources Review Commission (ORRRC) to plan for conservation and outdoor recreation in the United States. As a result of this comprehensive study, 27 volumes of reports were published in 1962. Recommendations included providing funds for state and local recreation. The ORRRC report led to the LWCF and other state assistance programs for recreation.

After fifty years of studies and projects, the ever-changing nature of recreation supply and participation requires continued updating and assessment. Twenty years after the ORRRC report, Irland and Rumpf (1980) noted the lack of recreation supply data. There was a sense of what people were doing and what they wanted, but not where they recreated. Even in Massachusetts, a small state compared to the western states in the country, the supply of recreation opportunities was not well understood. Part of the explanation for this is that in most areas, supply data are known only by the managing agency. That is, the National Park Service knows only about the parks it manages, and communities such as Bolton Landing, NY know only about their local parks and recreation areas. This fragmentation has caused a major dearth in supply characteristics and is an issue being pursued by the National Recreation and Parks Association with their Parks GIS Data Project (National Recreation and Parks Association 2011, Confer et al. 2011).

On the demand side, given that the most recent SCORP in the Commonwealth is over five years old and utilizes recreation demand data from 1995, can Massachusetts update its recreation data using current demographic data? That is, can the 2010 Census provide a portion of the needed data? This paper explores the potential of updating SCORPs with new census figures in order to project up-to-date demand figures.

2.0 Literature

Statewide Comprehensive Outdoor Recreation Plans have become one of the most important tools for planning and managing recreation and recreational opportunities at the regional or state level. In 2010, President Obama established the *21st Century Strategy for America's Great Outdoors: A Promise to Future Generations* (AGO). The full title recognizes the need to incorporate changing demographics into recreation planning. The final report, published in February 2011 proposed several

goals, including "Invigorat[ing] the LWCF to better meet conservation and recreation needs." For this goal, "Recommendation 5.3: Broaden guidelines for Statewide Comprehensive Outdoor Recreation Plans (SCORPs)" sought to align SCORPs with AGO priorities (AGO 2011) as an appropriate example. This was a theme discussion of the 31st Annual National Association of Recreation Resource Planners Conference held in Colorado in May 2011. Sheaffer and Sung (2005) had earlier noted the need to build these bridges in their assessment of SCORP in Indiana. It is clear that there is a need to link recreation planning at all levels: federal, state, and local.

For Massachusetts, the current SCORP was published in 2006 (Commonwealth of Massachusetts 2006). One of the primary tasks of the 2006 SCORP was to update the outdoor recreation supply inventory in the Commonwealth and build a geographic information system database of these resources. MassGIS has become the depository for these data, and are freely available for communities, as well as the public, to download from government servers (http://www.mass.gov/mgis/). For the demand side, the Commonwealth of Massachusetts utilized data collected in 1995 that emphasized usage patterns, tested satisfaction with outdoor recreation areas, and evaluated unmet needs. These data also included some basic socio-economic and demographic characteristics of Massachusetts citizens. For recreation planners to forecast recreation participation it is important to indentify the relationship between participation and the resource supply. Socioeconomic characteristics are often used to make these projections (Bowker et al. 1999).

Data fifteen years-old may seem a bit out-of-date. With the potential changes in both recreation patterns and residents' ages, the possibility of building on these data with current distributions of population is worthy of further exploration. For example, Scott and Willits (1998) have linked youth recreation participation into adulthood. As a population ages, many of the recreation activities learned at one age are likely to continue into the next age cohort. A more recent study in Oregon found that residents continue many of the same activities into their later years, including trail-related recreation (Robinson 2007). Of the characteristics like gender, marital status, education attainment, and income, age is one constant and predictable change common to all.

Strain et al. (2002) also found that a variety of recreation pursuits continue into one's later years and recommended leisure education as a means of introducing opportunities that could improve older adults' involvement in activities. While it is clear that an aging population may not be able to participate in activities that demand physical agility, many passive pursuits are popular with seniors in the U.S such as hiking and fitness walking. While participation may decline as one ages, research has found the activities done prior to retirement are likely to continue (Cordell et al. 1999). Knowing what outdoor recreation activities are done by 50 year-olds in 1995 can tell planners what to expect from 65 year-olds today.

3.0 Data and Methods

Data for this study come from two primary sources. Park resource supply data are provided by MassGIS and demand data comes from the results of the 1995 demographic study executed in the earlier SCORP. Trends are extrapolated using updated demographic data from the 2010 Decennial Census. Facts have become apparent. While the population in the United States is getting older, the proportion of the population 45 years or older in Massachusetts is much greater than the national average. Figure 1 shows the current population characteristics of citizens 45 years of age and older in Massachusetts and notes the growth in numbers.

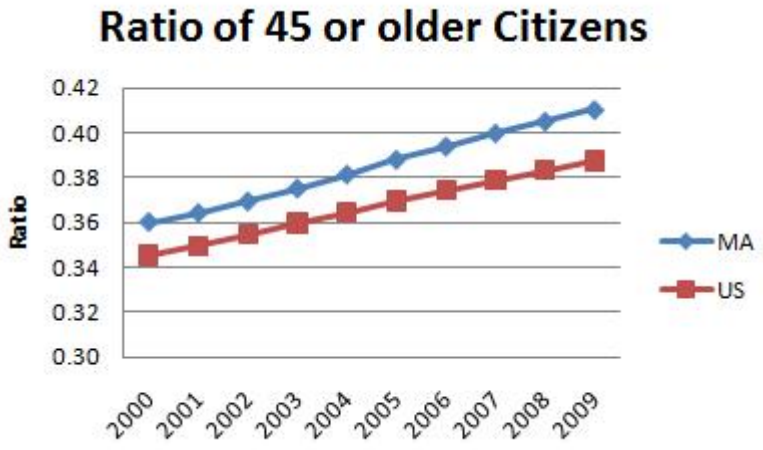

Figure 1

This aging trend in the United States supports the need to identify, plan for, and provide recreation opportunities for an older population. It is also apparent that the population has grown in some areas of the U.S. but not others over the past ten years. Figure 2 illustrates the changing population in Massachusetts between the 2000 and 2010 Censuses by county. Western Massachusetts and the Cape Cod area have experienced a decline in population over the 10 years while the population in the rest of the state has increased.

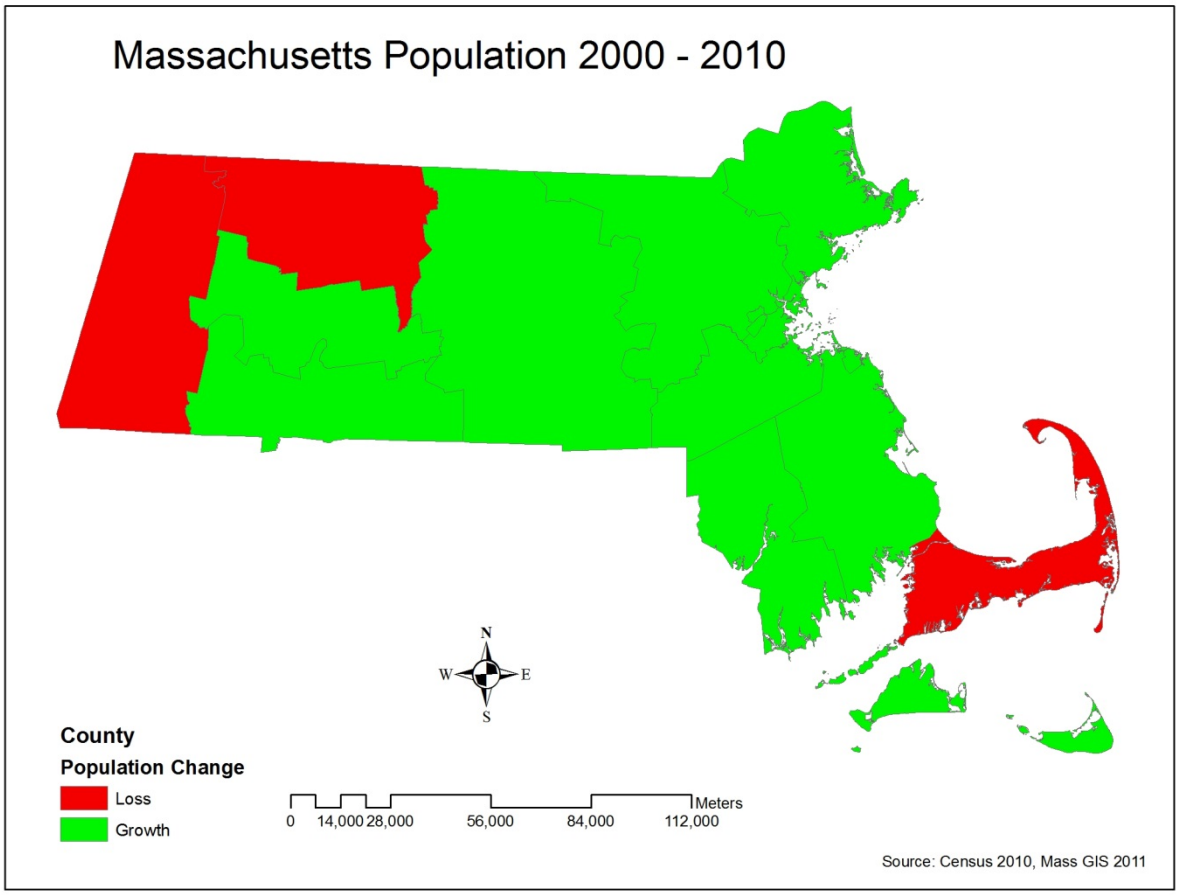

Figure 2

While it is clear that demographics across the Commonwealth do vary, the coarseness of the total numbers does not provide enough information for recreation planners. Demographic descriptions must be at a finer (smaller area) level, and for the purpose of this illustration should include information about the age of residents. According to the 1995 SCORP data, outdoor recreation activities enjoyed by older citizens include activities along rivers, trails and greenways. Agricultural lands, presumably as viewed by driving for pleasure, are also popular for this age cohort. If we extrapolate these trends based on the location of citizens some fifteen years later using current Census data, and link them to the resources, a simplistic measure of supply and demand may be depicted.

4.0 Results

With the assumption that recreation participation for residents 55-64 years of age will likely continue into their retirement years, the paper explores the relationship between these older citizens and the supply of water-based recreation, trail related activities, and the presence of agricultural lands in Massachusetts. Given the physiography of Massachusetts, a wealth of water-based opportunities are found state-wide (Figure 3). There appears to be no shortage of water-based recreational opportunities for the aging population throughout the Commonwealth.

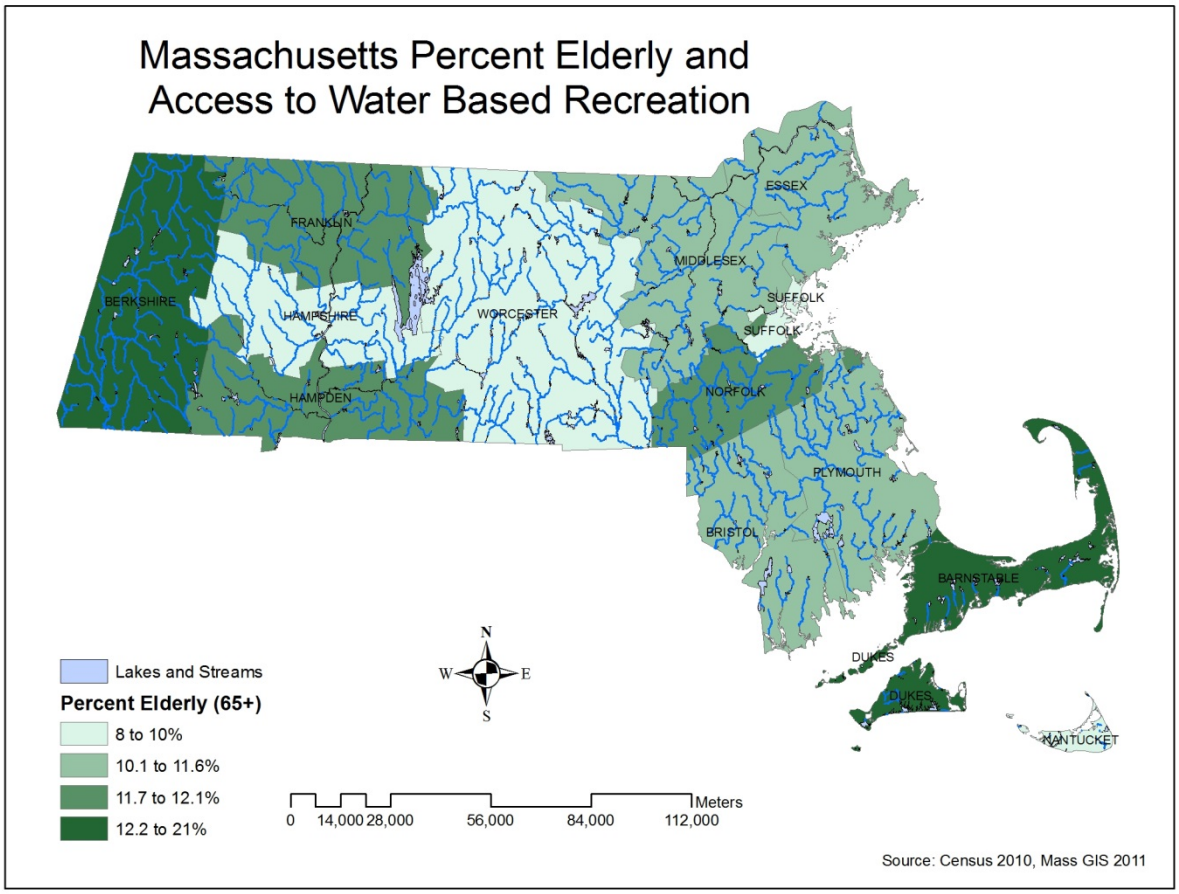

Figure 3

Yet it is also clear in Figure 3 that county-level "geography" is too broad to accomplish any real localized planning. The demographics of counties can vary significantly, especially since they are different sizes in terms of land area. Massachusetts county populations range from 11,000 and 1.5 million. A smaller geographic area, such as Census tract or zip cde, may provide us with the higher level of detail needed to explore the local variation in demand and supply. To illustrate this potential, Hampden County in the lower Connecticut River Valley can serve as an example. In Figure 4, the 2009 population is shown by age in proximity to the resources that the population age 55-64 reported enjoying in the 1995 recreation demand study.

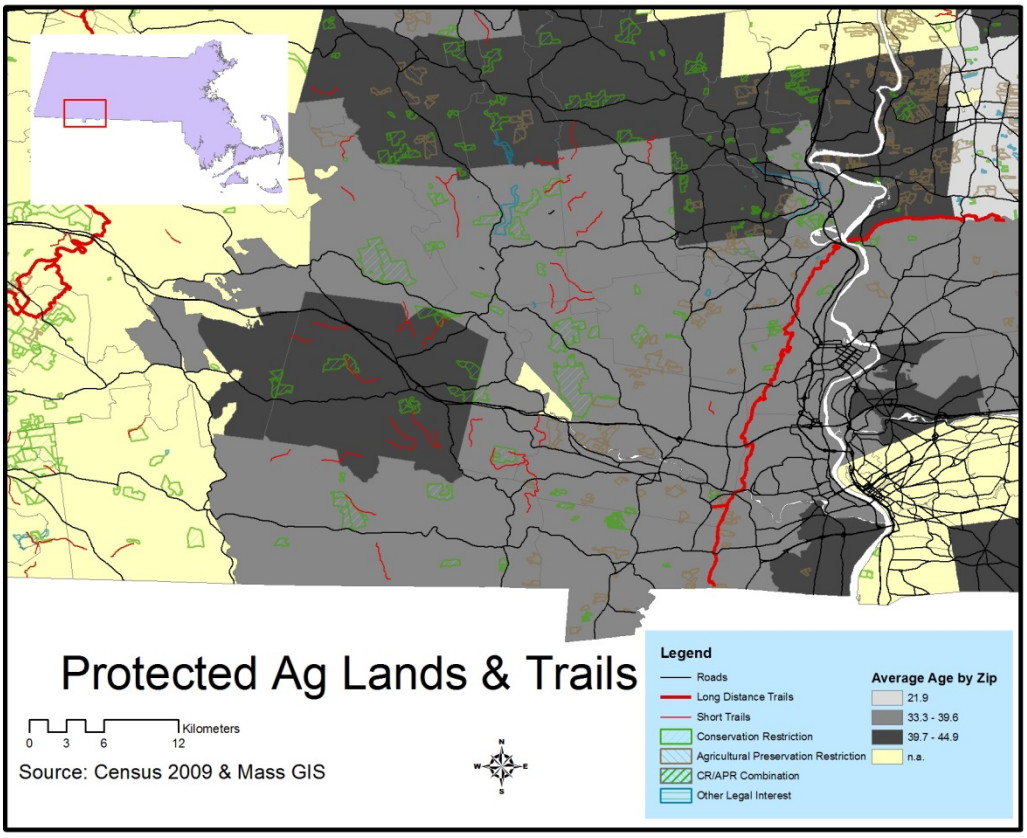

Figure 4

A concentration of older residents by zip codes is found in the northern portion of Hampden county, the west, and in downtown Springfield to the east. Younger populations are found elsewhere. Trails (in red) and the related greenways are found throughout the county, and can provide multiple opportunities for trail-related recreation. Agricultural lands are found on the periphery and could be enjoyed by those who drive for pleasure in these areas. Scenic highways or bikeways may be suggested use areas in these regions.

It should be noted that when dealing with multiple age cohorts, we decided to calculate the average age of residents in each zip code. Ideally recreation planners could use Census Tract data since each tract has between 1,500 and 8,000 people. Census tract-level data have become standardized units of area for demographic studies. However, at the time of this research project, the 2010 Census tract-level data are not yet available, so zip code data from the 2009 American Community Survey (Census 2010) were used. Also, if community outdoor recreation planners want to sample the local citizens for their demand preferences, a zip code is well known. Realistically, how many people know their Census Tract number?

For many years, Massachusetts has intended to link the state's trails into a unified greenway system. The Greenways and Trails program of the Massachusetts Department of Conservation and Recreation, while underfunded, still works with communities to build these linkages. So it is likely that future trail systems will provide corridors between towns for recreation and exercise. Assessments such as the present study could help in this effort by showing both where recreation demand exists and where recreation supply is available in the region or area.

5.0 Discussion

One interesting finding of this study was the varying recreation demand characteristics of Massachusetts citizens by age. For example, as one might expect, outdoor recreation participation declines with age (Cordell 2005). Arthritis, a chronic condition that afflicts many elderly individuals, is one of the many causes of this decline (Zimmer 1997). However, other national research has found that seniors typically continue their recreation activities into retirement. That is, while the extent of overall

recreation participation may decline as one ages, the activities done prior to retirement are likely to continue. Cordell (2005) found, for example, that some activities remain popular for all ages including walking, driving for pleasure, picnicking and wildlife observation. Knowing what outdoor recreation activities 50 year-olds engaged in in 1995 can tell planners what to expect in 2010 for those who are now 65.

As recommended by the America's Great Outdoors initiative, updating and aligning SCORPs is important for planning recreation. This paper has suggested that this can be accomplished by expanding on the data and findings from earlier plans and using the current demographics provided by the Decennial Census in the state.

This is a work in progress since data from the most recent Census are still pending. Aggregate data at the state and county level are available as of this writing but more refined data are not. Politically-motivated redistricting data are also available, since the shift in population will move, add, and delete some seats in the U.S. House of Representatives. Currently, the best (and finest-grained) data are from American Community Survey but these are only five-year estimates. Once tract-level data, or better yet block level data, become available, more precise demand projections can be made. At the time of this writing, (June 2011) only Alabama and Hawaii data are available in the detailed "Summary File 1" format (http://2010.census.gov/news/press-kits/summary-file-1.html).

If it is a common goal in recreation planning to anticipate future needs, it is important to have current data. Socio-economic data are collected by the U.S. Census, so if planners concentrate on citizens' recreation needs and the supply of recreation sites and opportunities, they can anticipate the interests of our aging population. Quick and accurate data are necessary for planning decisions, yet most nationwide or even statewide datasets may be several years old before they are published.

Besides Census demographic data, alternative market demand data are widely available for recreation planners. Simmons Market datasets have been explored by Warnick (2009). Analysis from the Simmons Market Research Bureau's *Study of Media and Markets and Standard Rate and Data Service's* (SRDS) *Lifestyle Market Analyst* have shown how different cohorts travel and participate in a variety of recreation opportunities. MediaMark's TopLine Research Reports are another source of valuable data that examine travel behavior (Warnick 2008). Additional data from programs such as SimplyMap™ may provide more enhanced demand data. The SimplyMap™ dataset combines both census and activity interests and links it to geobased data. Finally, every 5-8 years, the Federal Highway Administration sponsors the National Household Travel Survey, which looks at all aspects of travel, not just for recreation (http://nhts.ornl.gov/).

Another source of market data that deserves some investigation is ESRI's Community Tapestry Data. These datasets include spatially linked lifestyle and life stage information that can be used for marketing studies, including those linked to recreation (http://www.esri.com/data/esri_data/tapestry.html). Given that state funding for recreation planning is under tremendous stress during the current economy, recreation planners need to find alternative sources for demand information that they can link to the resources they manage. The authors of this paper plan to further explore these alternative demographic databases in future research.

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Figure Captions

Figure 1. Aging population in Massachusetts and the US (Source: Census 2010)

Figure 2. Changing Massachusetts Population 2000-2010 by County

Figure 3. Percent of Massachusetts Population 65 years or older and the Proximity of Rivers

Figure 4. Map of Hampden County's population by age by zip code plus trails and agricultural land in the county