

Abstract

We assess the drive times and the number of potential tourists and Maine residents that could visit the proposed Katahdin Woods & Waters National Park in Northern Maine. We used ArcGIS to calculate the drive times from potential North and South park entrances to eight locations: Acadia National Park, LL Bean (Freeport), Kennebunk, Bangor Airport, Portland Jetport, Boston Airport, Montreal Airport, and Quebec Airport. We also analyzed the number of households in Maine within a one, two, and three hour drive time of the proposed park. We conclude that there are 153,000 households within a three hour drive time of the park, which is 27.6% of all households in Maine. Of that percentage, about 74% live between two and three hours away. Visitors traveling from Portland Jetport have a 4:24 drive time to the proposed park, while visitors to Acadia National Park have a 2:35 drive time. These results may have implications for whether or not people would take day or overnight trips.

Introduction

In 2011, Elliotsville Plantation proposed 150,000 acres of forestland east of Baxter State Park in Northern Maine to be preserved as Katahdin Woods & Waters National Park. The most recent revised proposal includes half of the land as a protected National Park and half to be utilized for a National Recreation Area¹. Proponents of the park say that it will not only bring "national recognition to a special part of Maine", but will also be good for the state's economy².

The questions we are analyzing are as follows: What are the drive times from various tourist locations in the Northeast? How many Maine households live within a 1-3 hour drive time from the park and what is their income? Through looking at both tourists and Maine citizens, we hope to get a better idea of what the potential visitation to the proposed park may be.



Figure 2. Location of proposed Katahdin Woods & Waters National Park.

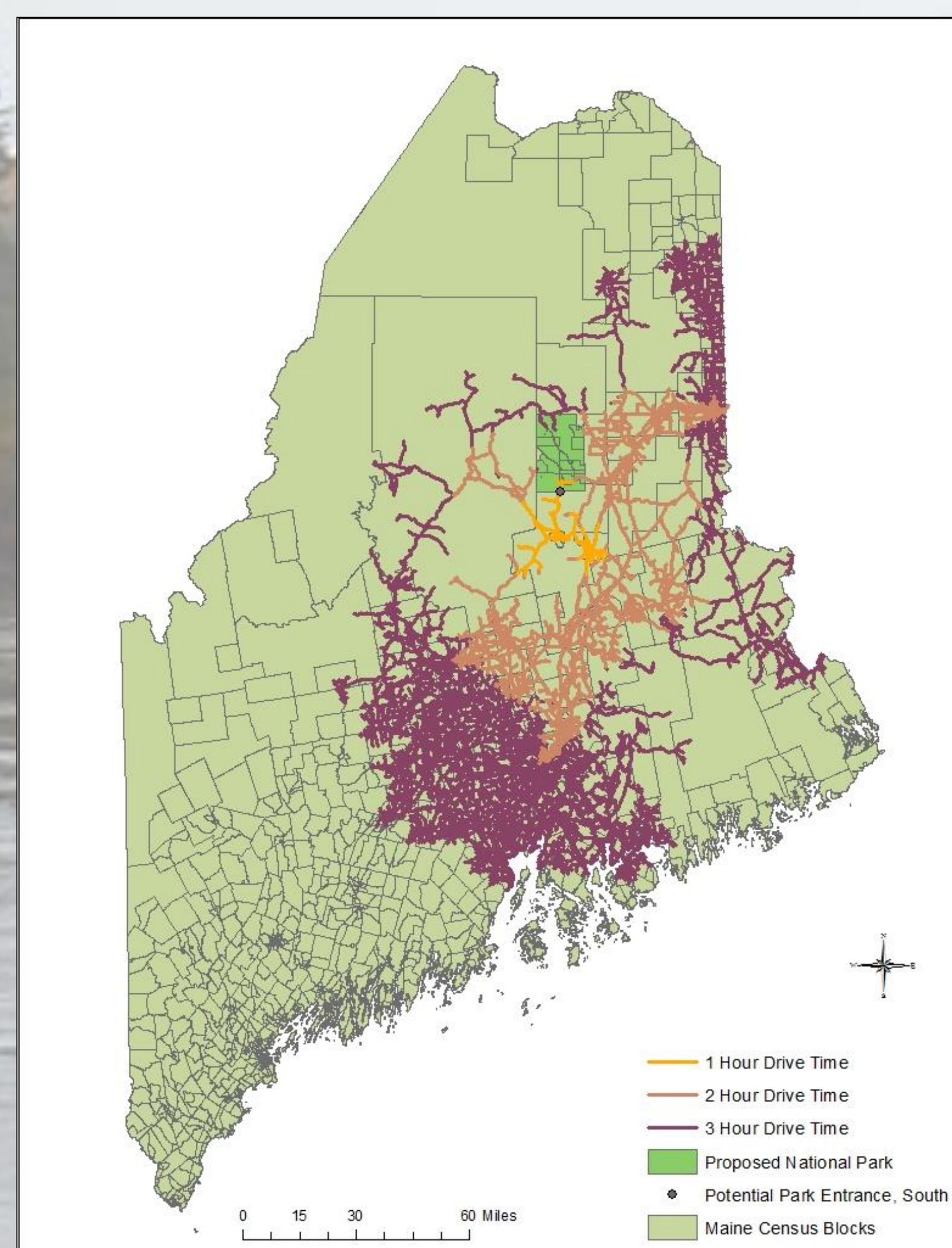


Figure 3. Road network with three drive time zones.

Methods

We used ArcGIS (ESRI, Inc) and projected our data in Universal Transverse Mercator, North American Datum 1983, Zone 19N. Elliotsville Plantation provided us with the proposed park shapefile, the Baxter State Park outline came from the Maine office of GIS (MEOGIS), and the streets layer came from ESRI. For our tourist destinations, we chose three popular tourist hotspots in Maine (Kennebunk, LL Bean, and Acadia National Park) as well as five nearby airports (Portland, Bangor, Boston, Quebec, and Montreal).

Our first analysis focused on the drive time from our designated tourist destinations to the relative potential North or South Park entrance. Using the Network Analyst we built a road network with routes to measure distance in miles and drive time from each location (Table 1). We measured routes from Quebec to a potential North and South entrance to the park (Figure 1), and all the other destinations were routed to the South entrance (Figure 2).

The second analysis used the same road network as the previous analysis. We collected US household income census data from the American Communities Surveys of the years 2009-2013. Using the Network Analyst we set three time zones (60, 120 and 180 minutes) to run three different analyses (Figure 3). Each analysis counted the number of households in the blocks that the streets went through, giving us the number of households living within each of those time zones from the park, including the prospective incomes of those households (Table 2). We then ran a t-test of the income levels to determine if there was a significant difference between the drive time zones.



Figure 1. Driving routes from designated points to park entrances.

Table 1. Drive time and distance.

Point to Proposed Katahdin Woods & Waters National Park South Entrance	Distance (miles)	Drive Time (hours: minutes)
Bangor, ME	82.2	1:58
Acadia National Park	129.9	2:35
LL Bean (Freeport, ME)	194.5	4:00
Portland Jetport, ME	214.7	4:24
Kennebunk, ME	241.6	4:56
Boston, MA	319.8	6:22
Quebec Airport (South Park Entrance)	340.0	6:59
Quebec Airport (North Park Entrance)	316.6	7:33
Montreal Airport	438.8	9:12

Table 2. Income level and number of households.

Income level	Households within 1 Hour	Households within 2 Hours	Households within 3 Hours
All Income levels	4,097	50,748	152,977
Below Poverty Line			
\$0-10,000	320	4,419	12,705
At Poverty Line			
\$10,000-15,000 ³	235	3,998	11,144
\$15,000-30,000	1,109	11,502	31,767
\$30,000-45,000	624	8,482	25,436
NP Visitor Median Income ⁴			
\$45,000-49,000	211	2,659	7,062
\$50,000-100,000	1,308	14,045	45,645
\$100,000-200,000	249	4,585	16,602
\$200,000+	41	1,058	2,616

Results

Our first analysis found that the drive time (hours:minutes) to the proposed park from Bangor Airport is 1:58, from Portland Jetport is 4:24, and from Boston Airport is 6:22. For visitors coming from Canada, the drive time from Montreal Airport is 9:12, and from Quebec Airport to the South entrance is 6:59 and to the North entrance is 7:33. Lastly, the drive times from our three selected tourist destinations are: about 2:35 from Acadia National Park, 4:00 from LL Bean in Freeport, and 4:56 from Kennebunk.

Our second analysis found that roughly 153,000 Maine resident households live within a three hour driving distance of the proposed park. The number of households within a two hour driving distance decreases to about 50,000, while only 4,000 households live within a one hour driving distance. The income levels were relatively consistent across the three zones; there was no statistically significant difference ($p > 0.05$).

Discussion

When considering Maine resident visitation, 27.6% of all households in Maine live within a three hour drive of the proposed park. Of that percentage, about 74% live between two and three hours away. One weakness in our analysis is that we did not consider all of Maine when calculating drive time, which is significant since 72.4% of all households within Maine live farther than three hours away from the park.

We initially included both a North and a South park entrance with the thought that visitors from Canada would be coming from the north. However, due to the specific border crossing locations, the drive time to the North entrance was 7:33 as opposed to 6:59 to the South entrance, indicating an excess drive time of 0:34.

Our analysis is preliminary. The three tourist destinations that we selected appeal to a variety of interests (shopping, beaches, and outdoor recreation), however this is a limited selection and does not reflect all tourism in Maine. We also evaluate drive time rather than potential visitation; therefore, a survey would be useful to assess willingness to drive to the park. Furthermore, income could be an indicator for park visitation, however, this would require deeper analysis.

Conclusion

In conclusion, we tested drive times from highly visited tourist destinations. Visitors traveling from Portland Jetport have a 4:24 drive time to the proposed park, while visitors to Acadia National Park have a 2:35 drive time. These results may have implications for whether or not people would take day or overnight trips.

The total number of households in Maine according to the 2014 U.S. Census American Community Survey is 553,823. Our analysis did not include 72.4% of these households, therefore future analyses would be helpful to further investigate the potential for the success of this park.

Acknowledgments

We would like to thank Elliotsville Plantation for providing the shapefile for the proposed park.

Sources

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