

The Massachusetts Regional Conservation Forum



Wellesley College
February 8, 2019



High Peaks Initiative Colby College Projects

Introduction

Maine's High Peaks region is home to extensive recreational opportunity, from alpine summits to virgin forest to tranquil ponds. Snowmobile, ski, mountain bike, and especially hiking trails serve as conduits for those seeking a unique outdoor experience (Maine Appalachian Trail Land Trust, 2017). However, trailheads in the High Peaks region of Maine are scattered across both public and private land on a road network with varying levels of maintenance. These factors, in combination with long drive times and unplowed roads often keep potential visitors away from hiking centers (Clawson and Knetsch, 2011). The objective of this study is to analyze the region's accessibility to Maine's population through drive-time calculations and trailhead classification.

Methods

I obtained data road polylines and census block group polygons from the Maine Office of GIS. I also downloaded U.S. Census Bureau statistics for 2006-2010 population and area at the census block group level from Social Explorer's website. Finally, I acquired aerial imagery from the USGS. In combination with information from Google Maps and Maine Trail Finder, I identified both hiking trailheads and corresponding, unmapped access roads using the aerial imagery.

In ArcGIS, I created a map using the NAD 1983, UTM Zone 19N projected coordinate system. The primary feature was a network of Maine's public roads, trailheads, and their access roads. For each of the 21 trailheads I recorded, I added information regarding winter accessibility and road ownership from personal knowledge. I then generated a network dataset, which enabled me to calculate roads within a certain driving time of the trailheads as well as the approximate time to a specific location. In this case, I calculated times to important border crossings to Québec, New Brunswick, and New Hampshire, as well as all locations within two hours of the trailheads at 30 minute intervals.

After joining the block group shapefiles with the census data, I was able to identify which routes within a given drive time overlaid specific block groups. By summing the total population of these groups, I could then roughly calculate the percentage of Maine's population residing within a given drive time in addition to their general location.

Results

73.11% of all Mainers live within two hours of one or more trailheads in the High Peaks region, which also represents the bounds of the analysis (Table 1). 33.12% of the population lives within 90 minutes (Table 1). Meanwhile, Route 27's entry into Québec was the closest measured border crossing at almost 82.6 minutes away, while the drive time to New Brunswick on Route 1 was 2 hours and 15 minutes (Table 2). While 57.1% of these trailheads lie on publicly accessible land, 47.6% of all trailheads are accessible in winter (Table 3).

Driving Time (min)	Pop. in Range	Percentage of Population	Total Percentage
< 30	40,507	3.05%	3.05%
30 - 60	94,824	7.14%	10.19%
60 - 90	305,743	23.03%	33.12%
90 - 120	529,633	39.89%	73.11%
120 +	356,958	26.89%	100%

Table 1. Drive Time Summary for Maine Residents

Mean Times to State Borders	
Québec (ME Rte. 27)	82.6 minutes
New Hampshire (I-95)	166.8 minutes
New Brunswick (US Rte. 1)	255.1 minutes

Table 2. Drive Time Summary to Borders

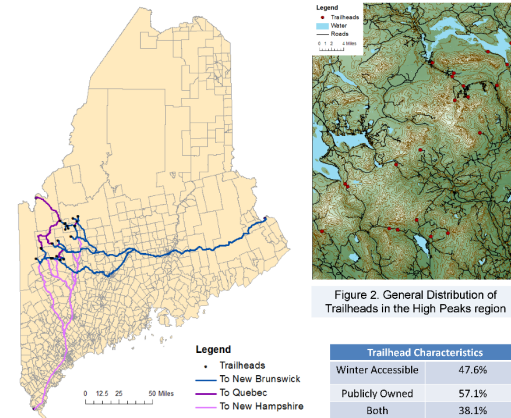


Figure 1. Fastest Routes by Trailhead to Selected Border Crossings

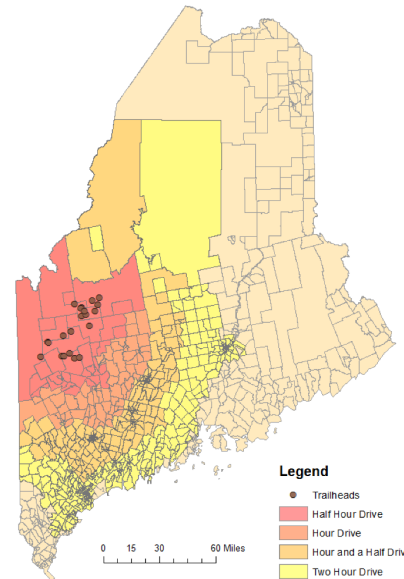


Figure 3. Approximate Drive Times to High Peaks Trailheads for Census Block Groups

Discussion

Overall, the population living 90 to 120 minutes from the group of trailheads dominated the results. The population of the greater Portland area is likely at the root of this peak, as illustrated in Figure 3. Like Portland, almost three quarters of Maine's 2010 population live within a two hour drive of some or all of the trailheads. Additionally, the relatively brief 82 minute drive to the Canadian border at Route 27 represents access to the major population centers of Québec City and Montréal (Figure 1). This comes in contrast to the remote nature of the High Peaks. On the other hand, drive times to New Hampshire (towards Boston) and New Brunswick (towards St. John) are on the longer side at 166 and 255 minutes, respectively, and that only represents travel from the border (Table 2).

Given these figures, the most pressing questions of accessibility lie in the trailheads themselves. Though the majority of the recorded trailheads lie on publicly accessible land, only 47% of them are plowed in the winter. This effectively halves the options for the winter hiker, barring the addition of longer road walks. Public acquisition and maintenance of these roads would not necessarily grant winter access in the context of today's trail access. In comparing winter accessibility to public ownership, it becomes evident that publicly owned trailheads are only winter accessible about 2/3 of the time (Table 1).

Though the analysis is limited by some aspects, it achieves its main goals. Disparate census block group sizing was an issue, especially in northern Maine. Note the group in the western part of the state near Jackman surrounded by "closer" blocks, for instance. Though discrepancies like this may seem confounding, the effect is muted given the generally lower populations of these areas. Similarly, road networks were absent for adjoining land in New Hampshire and Québec, but the rural nature of these regions limits the effect on the results.

Conclusion

Maine's High Peaks region offers exceptional opportunity for outdoor activity within two hours of 73.11% of the Pine Tree State's citizens. Mid-coast and central Maine residents represent the bulk of this population. However, accessibility is significantly limited by the uncertainty from private road ownership. Additionally, access is dictated by the season, as winter snow and spring mud combine to restrict full access to the region to the summer and autumn months. Though they pose significant concerns of their own, road improvements would open up the High Peaks to a wider audience and greater use.

Acknowledgements

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References

Clawson, M. and J. N. Knetsch. (2011). Economics of Outdoor Recreation. RFF: New York.
Maine Appalachian Land Trust. (2017). High Peaks Initiative [Cited April 30, 2018] available from <http://matlt.org/high-peaks-initiative/>

Franklin County survey to gauge recreational, ecotourism impact

BY MAUREEN MILLIKEN

9/12/2018



PHOTO / MAUREEN MILLIKEN

Kingfield, in Franklin County's High Peaks region, is one of the towns being looked at as part of a study by Colby College and the High Peaks Initiative on tourism and economic impact in the region.

Preliminary Observed Trends: High Peaks Surveys, Summer 2018

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Lily Wong, Sally Burke



Q1: In the past 12 months which activities have you done in the High Peaks Region?

