Commuter Travel Times from the Belgrade Lakes Region to Augusta and Waterville, Maine
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ABSTRACT

Communities in the Belgrade Lakes Region of central Maine are “bedroom communities” where residents live in rural areas and commute to work in metropolitan areas including Waterville and Augusta, Maine. How much time does a resident of the Belgrade Lakes Region spend commuting? What are the most efficient routes from populated rural locations to city centers? We used ArcGIS Network Analyst to calculate travel times and routes from six town centers in the Belgrade Lakes Region to Waterville, Augusta-Capitol and University of Maine at Augusta. The mean travel times and distances from town centers to Waterville, Augusta-Capitol and University of Maine at Augusta were 27, 27 and 24 minutes and were 16.1, 21.8 and 19.0 miles, respectively. In the Belgrade Lakes Region there are approximately 13,000 people that live within 40 minutes and 33 miles of the education and employment opportunities in Waterville and Augusta. Our sample model estimates that the average Belgrade Lakes Region resident travels between 24 and 27 minutes and 16 to 21 miles to Augusta and Waterville.

INTRODUCTION

Municipalities in the Belgrade Lakes Region are “bedroom communities”, where residents live in rural lakeside communities and work in nearby metropolitan areas. The towns in the Belgrade Lakes Region offer limited employment opportunities, many of which are seasonal. The economy is centered around industry, timber, agricultural and seasonal tourism. The town of Belgrade has two lumber companies, a manufacturer of concrete products and small businesses including restaurants and a country store. In the summer, there are several children’s camps, rental cottages and a golf course that employ locals (1).

According to the 2000 US Census Bureau, 908 residents of Belgrade, approximately 58% of the labor force, worked outside town boundaries and traveled an average of 30 minutes from home to work (2). In 2000, Waterville employed 5,459 people that lived outside city limits and Augusta employed 16,811 people that lived elsewhere (2). More people work in Augusta than live in Augusta, suggesting that “bedroom communities” may be relatively common in central Maine (2).

The goal of this study was to calculate commuter travel times, distances and routes from towns in the Belgrade Lakes Region to employment, commercial and education centers in Waterville and Augusta.

METHODS

We used ESRI’s ArcGIS 9.3 to analyze and map the data and results for this study. The road data, including speed limits in miles per hour (MPH), were obtained from ESRI. Network Analyst was used to calculate the most efficient routes based on travel time from six town centers in the Belgrade Lakes Region, Maine to Waterville, Augusta at the capitol building and University of Maine at Augusta. Belgrade Lakes Region towns are: Oakland, Belgrade, Smithfield, Mercer, Mount Vernon and Rome. We calculated time in Network Analyst calculated travel time using road length and speed limit data. Town center locations were chosen based on locations with a high density of commercial and residential buildings. Population data were obtained from 2000 US Census Bureau. Municipal stop locations were selected at major intersections in city centers near places of high employment and educational institutions. The Waterville location is at the intersection of Main Street and College Ave. Augusta locations are at Capitol and State Street and in front of U. Maine-Augusta at Townsend Rd, and Civic Center Drive.

RESULTS

The mean travel times and distances from town centers to Waterville, Augusta-Capitol and University of Maine at Augusta were 27, 27 and 4 minutes and 16.1, 21.8 and 19.0 miles, respectively. Figure 1A, B and C shows the routes from town centers to U. Maine at Augusta, Augusta-Capitol and Waterville. Travel times to Waterville varied the most, ranging from 8 to 39 minutes and 4.9 to 23.5 miles. The longest travel time to Waterville is from Mount Vernon, the shortest from Oakland. Commutes from towns to Augusta-Capitol in Figure 1B ranged from 13 to 39 minutes with a mean time of 27 min and 10 to 25 miles with of mean of 21.8 miles. Commutes to U. Maine at Augusta ranged from 9 to 36 min with a mean of 19 min and 7.9 to 29.6 miles with a mean of 19 miles. Only 2 out of the 18 routes used Highway 95 and none of these were routes to Waterville.

DISCUSSION

Residents living throughout the Belgrade Lakes Region have less than 40 minute travel times for commuting to jobs in Waterville and Augusta. These results are similar to 2000 US census data for mean commute times from Belgrade Lakes Region towns. The 2000 US census data reported a 30 min mean commute time for residents of Rome, Belgrade, Oakland, Mt. Vernon, Smithfield and Mercer (2). We found a mean time of 26 min. Residents living in the north part of the Belgrade Lakes Region had longer travel times to Augusta stops than to Waterville. Only commuting routes to Augusta locations used Highway 95, which may be why the route with the longest travel time was to Waterville. All other routes used non-major highways with stop signs and stop lights. These roads may also have a more variable surface quality than Highway 95, which may limit car speed. Stop signs, stop lights, road condition and traffic were not included in Network Analysis and may affect actual travel time. Also, travel times may vary for each resident because start locations were intersections, not driveways. Residents in the Belgrade Lakes Region drive within 40 minutes of commercial, employment and education centers. The Belgrade Lakes region offers a rural lakeside lifestyle that is in proximity to Waterville and Augusta, which may increase future growth of the area.

CONCLUSION

• Mean travel times from town centers to Waterville, Augusta-Capitol and University of Maine at Augusta were 27, 27 and 24 minutes, respectively.
• Mean travel time from town centers to Waterville, Augusta-Capitol and University of Maine at Augusta were 16.1, 21.8 and 19.0 miles, respectively.
• Longest and shortest routes were to Waterville.
• Two out of the eighteen commuting routes used Highway 95 and none of these were routes to Waterville.

Table 1. Travel time (minutes) and distance (miles) from town centers in the Belgrade Lakes Region to the University of Maine at Augusta, the Augusta-Capitol Building, and downtown Waterville.

<table>
<thead>
<tr>
<th>Town</th>
<th>Population</th>
<th>Augusta-Capitol</th>
<th>U. Maine at Augusta</th>
<th>Waterville</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgrade</td>
<td>2,478</td>
<td>13.7</td>
<td>14.0</td>
<td>14.9</td>
<td>14.3</td>
</tr>
<tr>
<td>Mercer</td>
<td>667</td>
<td>12.7</td>
<td>13.0</td>
<td>14.7</td>
<td>13.5</td>
</tr>
<tr>
<td>Mt. Vernon</td>
<td>1,515</td>
<td>22.8</td>
<td>23.4</td>
<td>27.5</td>
<td>24.4</td>
</tr>
<tr>
<td>Oakland</td>
<td>1,439</td>
<td>21.3</td>
<td>22.1</td>
<td>29.6</td>
<td>23.7</td>
</tr>
<tr>
<td>Rome</td>
<td>1,840</td>
<td>22.7</td>
<td>22.3</td>
<td>29.7</td>
<td>23.4</td>
</tr>
<tr>
<td>Smithfield</td>
<td>900</td>
<td>21.2</td>
<td>21.0</td>
<td>27.1</td>
<td>21.5</td>
</tr>
<tr>
<td>Average</td>
<td>13,018</td>
<td>20.9</td>
<td>20.9</td>
<td>29.2</td>
<td>22.1</td>
</tr>
</tbody>
</table>

REFERENCES


METADATA

Road data, including speed limits are from ESRI. GIS data, DEM, geographic features and political boundaries are from Maine Office of GIS, MEGIS.

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