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An Economic Impact Analysis Of The Belgrade Lakes Watershed

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2014 Senior Honors Thesis
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I. Abstract

Environmental amenities such as lakes are often important drivers of local and regional economic activity (Bergstrom et al., 1990). An economic impact analysis is a common method used by economists and policymakers to estimate the direct and ripple effects of expenditures in an area. In my analysis of the Belgrade Lakes Region, I use consumer expenditure data collected from 445 year-round and seasonal residents of the Watershed. Based on the results of the Impact Analysis for Planning (IMPLAN) model, spending by year-round and seasonal residents has an annual impact of $6.84 million, including multiplier effects, and supports 68 full and part-time jobs in the Watershed. In terms of sales revenue and number of jobs created, the impact of household spending is greatest in the property maintenance, retail, and food and dining industry sectors.
II. Introduction

The Belgrade Lakes Watershed is composed of seven interconnected lakes that together form a dynamic social-ecological system. A Watershed refers to the land from which water flows into a particular water body (U.S. Geological Survey, 2013). As one of Maine’s unique destinations for outdoor recreation and tourism, there exists a tight interconnection between human activity in the Watershed and the quality of the lakes. The Watershed covers 29,067 acres (45.4 square miles) and is located in Kennebec County. This lakes region developed as a summer community in the late nineteenth century in the context of a growing trend for outdoors vacationing in the United States (Burgess, 2009). Visitors come from all over to enjoy the unspoiled beauty of these lakes, and enjoy fishing, camping, boating, hiking, golf and other activities. The area also supports a wide variety of local businesses related to the lakes in dining, lodging, and retail. The summer home culture combined with a deep sense of place amongst people in this region continue to make the Belgrade Lakes a vibrant center for summer tourism.

However, in recent years the Belgrade Lakes have been listed on Maine’s list of water bodies most at risk from development (Burgess, 2009). Burgess (2009) provides perspective on the tight interconnection between the economic and environmental dimensions of this area. She states, “The environmental consequences resulting from the increased development of the Watershed are tightly linked to the economic reasons for sustaining the summer community in the Belgrades… A drop in tourism would negatively affect the town economically, for those who do have small businesses in the area cater mainly to summer people, and a small amount of local residents.” Therefore,
these communities must find a balance between preserving the health of both the region’s economy and the environment.

This study examines the economic impact of year-round and seasonal residents of the Belgrade Lakes Watershed, Maine. The analysis is based on 445 household surveys conducted in 2013. The survey collected expenditure information from homeowners and renters relating to spending on food and dining, outdoor recreational activities, property maintenance and other relevant areas of household consumption. Additionally, this survey captured information on the demographics of year-round residents and seasonal visitors to the Watershed.

When interpreting the findings of this study, it is important to note that an economic impact assessment is only one measure of value, and many critical attributes of environmental resources cannot be easily monetized into this type of modeling. While expenditure data alone does not fully capture the total economic value of a specific area, it does provide critical insight into how money gets distributed and the value that is generated by businesses tied to the presence of the lakes. Therefore, an economic impact analysis can provide policy-relevant information that can help communities determine appropriate policies to balance economic development with conservation goals. For the Belgrade Lakes Watershed, the results of this economic impact study may be used to inform legislation that will continue to sustain this unique environment and underscore the value of the seasonal community, in particular. In addition, information related to household demographics and knowledge of the lake related issues may help lake associations and conservation groups like the Belgrade Lakes Association and the
Belgrade Regional Conservation Alliance better target their community outreach and awareness initiatives.

III. Literature Review

i. Regional Input-Output Analysis

Input-output analysis is a common tool that has been applied in numerous economic impact studies to assess the value of different environmental and natural resource based economies. This form of analysis is especially useful in describing current and potential economic contributions of outdoor recreational activities to the local economy (Xie, 2012). Impact Analysis for Planning (IMPLAN) is a widely utilized input-output modeling software that shows the linkages between different sectors of the economy, and is able to assess the direct, indirect and induced effects produced from them.

Created in 1993 through a collaborative effort between researchers at the University of Minnesota and the U.S. Forest Service Land Use Planning Unit in Colorado, IMPLAN can be utilized to conduct economic impact statements with detail to the zipcode level. The embedded theoretical input-output framework of this model includes the trade flows as well as regional purchase coefficients for the specified region (Bonn and Harrington, 2008). Trade flows measure the level of inter-industry interaction within a regional economy, specifically how outputs in one sector are used as inputs in another and so on (Bonn and Harrington, 2008). A regional purchase coefficient is equal to the proportion of the total demand for a commodity that is purchased within or supplied by producers within the study area or specific region of interest (IMPLAN, 2013).
Unlike traditional input-output models, IMPLAN is built using social accounting matrices (SAM), which can capture non-market transactions such as tax payments that can also be considered as an important source of economic flow (IMPLAN, 2013). SAMs can be utilized to measure the economic impacts of a given change in an economy and its relative distribution in terms of the direct, indirect and induced effects. In this particular study, they are being applied to estimate the economic impact of current spending in the Belgrade Lakes Watershed. When applied in this form, they are referred to as a multiplier model, in that they reflect the region’s unique economic structure and trade situation.

Direct effects are the primary or first-round effects that occur based on changes in production in the directly impacted industry. Indirect effects are based on the economic interactions among industrial sectors and result from industries purchasing or supplying inputs to each other. Finally, induced effects occur through linkages between the affected sector and households in the model based on labor linkages between households and other economic sectors and its relationship to changes in household spending. The induced effects on household consumption expenditures can be attributed to the direct and indirect effects. The aggregate value of these three differentiated effects reveals the total economic impact of the visitor expenditures that were captured in the survey.

Input-output models assume linear production functions, which implies constant returns to scale and constant production functions for each firm within an industry. This software essentially assumes that a small firm and a large firm within the same industry utilize the same proportion of the inputs. This also assumes that firms purchase the same proportion of their goods locally. Likewise, the software assumes homogeneity of
output—firms operating in the same industry produce the same proportion of goods and services regardless of size.

**ii. Economic Impact Studies Utilizing IMPLAN**

Cline and Seidl (2010) integrated non-market valuation approaches with input-output approaches to help inform community-scale tourism development oriented towards the natural resource base in an area in rural Colorado. They designed and implemented a visitor survey that captured information on observed and contingent spending behavior of tourists. They estimated the impact of three different tax policy scenarios and impose a shock in the appropriate sectors in IMPLAN to represent the tax. The results of their study found that the benefits of maintaining environmental quality in the region far outweighed the additional costs associated with the proposed tax policies.

Bergstrom et al. (1990) estimated the economic impact of recreational activities utilizing a Public Area Recreation Study (PARVS) on five representative state parks in Georgia. All of the parks in their study are located in rural counties within the state. The results of their IMPLAN analysis of park visitor expenditures indicated that recreational activities produced a significant level of economic activity within their area of study. The estimated effects of gross income and employment were relatively large suggesting that spending on recreational activities at these state parks generated a considerable amount of economic stimulus in the area (Bergstrom et al. 1990). An interesting finding of this study was that the more developed recreational activities offered at the park generated the greatest value.

Xie (2012) conducted a study on the economic impact of birdwatching along Lake Erie. Birdwatching is an expanding eco-tourism sector that brings in a lot of money to
rural economies that gets distributed to food, lodging and other goods and services. Xie (2012) suggests that significant positive economic impacts related to birdwatching may lead to increased support for the protected areas where birds are located. This study quantifies the total employment, income, value added, taxes, and total sales to aid natural resource and tourism agencies, land use planners, and policy makers in estimating the benefits accrued from various land management options related to birdwatching. Similar research by Heinrich and Craven (1992) estimated the net economic impact of a population of Canada Geese given the costs associated with the crop damage that they cause. They found that nearly all of the goose related income accrued to businesses in the area while most of the costs fell on the farmers.

Hughes et al. (2008) estimated the net economic impact of money spent at regional farmers markets. This study relies on the assumption that farmers markets benefit local economies through enhanced retention of local dollars. The authors of this study used a combination of vendor survey data and an IMPLAN-based input-output model of the West Virginia economy to estimate the net impact of farmers markets to the regional economy. In their analysis, they factored in the opportunity cost of spending a dollar at a farmers market versus a traditional commercial store. They found the net economic impact to be positive given the additional spillover effects of farmers markets on the tourist economy.

Nielsen and Moseley (2010) conduct two different economic impact estimates: the effects of forest and watershed restoration contracting; and the effect of forest and watershed restoration projects. Public land managers and policy makers have focused on the need to restore forest and watersheds as a strategy for sustainable land management
and economic transition. This study focused on job creation and economic stimulus produced by these new economic sectors in Oregon. They created economic impact models for 6 types of common forest and watershed restoration projects. They collected survey data from project contractors and grant recipients to estimate the employment and economic output effects of public investments in these restoration projects. Based on the results of their IMPLAN model, they predict that $1 million invested in forest and watershed restoration contracting will create between 15.7 and 23.8 jobs (Nielsen and Moseley, 2010).

This literature provides context for some of the current applications of economic impact studies that have focused specifically on the effects of expenditures on outdoor recreational activities, tourism revenues, and natural resource conservation spending. Similar to my economic impact analysis of the Belgrade Lakes Watershed, the majority of these studies used survey data to create their input-output model. Additionally, many of these studies leverage their findings to examine the benefits and costs of future regional planning options.

iii. IMPLAN Studies Evaluating the Economic Impact of the Cruise Ship Industry in Maine

There have been studies conducted by the University of Maine to estimate the economic impact of cruise ship tourism in Maine using IMPLAN. One study by Gabe et al. (2003) analyzed the economic impact of cruise ship passengers in Bar Harbor. Tourism and the cruise industry, in particular, is a major source of economic activity in Bar Harbor. This study is based on 1800 passenger surveys conducted between August and October of 2002. However, the economic impact figures are based on a 97,190
passengers, the equivalent of the total capacity of the 64 cruise ships that visited Bar Harbor that year. They aggregated expenditures over multiple categories such as food, gift shops, and local tours, to come up with a composite expenditure value for each individual. They then took an average of the total expenditure value and used this to calculate the total tourism expenditures of 97,190 passengers while at port, assuming that every ship is operating at full capacity. Finally, they used this scaled up value to input into their IMPLAN model. Model results indicated that passengers had a $12.1 million impact on sales revenue, including multiplier effects, and supported 275 full and part-time jobs in Bar Harbor in 2002.

In a similar economic impact analysis of the cruise ship industry in Portland, Maine, Gabe et al. (2009) estimated that the total economic impact of cruise ship passenger spending is between $5.8 and $8.0 million in sales revenue. The spending information utilized to conduct this study was collected through a consumer survey comparable to the Bar Harbor study survey. They estimated that the average cruise ship passenger spends about $80.51 on goods and services in Portland, and then extrapolated this figure to generate a total expenditure value for the estimated 47,841 cruise ship passengers that came through the City in 2008. The economic activity associated with cruise passenger spending additionally supported between 69 full and part time jobs, and provided between $2 million and $3.2 million in wages and salaries.
IV. Methods

i. Data Collection

The foundation for this economic impact analysis of the Belgrade Lakes Watershed was a household economic survey that was facilitated through mailings and in-person interviews with year-round and seasonal residents. A randomized sampling of households located within the Watershed boundaries was conducted to facilitate the mailed survey portion of this study. Geographic information system (GIS) software was used to extract out those property addresses located within the study area that were eligible to receive a survey. There were 2,053 surveys mailed during the Spring and Summer of 2013 and 365 completed surveys were mailed back, an 18% response rate. The mailed survey captured data on the spending behavior of both year-round and seasonal residents of the Watershed. The mailed survey contained a demographic questionnaire and a section on household expenditures over a variety of categories. The information collected in this section ranged from typical spending on food and dining to spending on outdoor recreation activities. The end of the survey contained a brief questionnaire to assess a respondent’s knowledge of environmental issues affecting the Belgrade Lakes.

In-person surveys of seasonal residents were collected in conjunction with the mailed survey data collection. Data collection from members of the seasonal population of the Watershed was undertaken over the Summer 2013 period. We conducted the surveys in downtown Belgrade outside a local general store and the Maine Lakes Resource Center. This is a central hub for visitors of the Belgrade Lakes Watershed to collect information on the area, enjoy community events, and attend the weekly farmers
market. Our research team conducted 89 surveys of seasonal residents in this area and as an incentive to participate in the survey respondents received a coupon for a free donut at Day’s Store in Belgrade. Seasonal residents are defined in this study as individuals who either own or rent a seasonal home. The in-person survey was a modified version of the mailed household survey and included the main spending relevant to households that only reside in the region during the summer.

In order to scale up the total expenditures reported by the seasonal residents in the survey segment of this study, I contacted a local real estate agent to receive an estimate for the total number of renters that occupy the Belgrade Lakes area during the summer. The real estate agent reported that there were 281 renters during the 2013 season, with the average length of stay in the region being 1 to 2 weeks. Our survey sample captured a total of 21 renters, 7.4% of the total rental population for 2013. Given this information, I applied the average expenditure data from the 21 renters that were captured, to the 260 renters that were not captured in our survey. I assumed total expenditures of each renter not captured were equivalent to the average expenditures of the renters that I surveyed. Since the typical cost of a one-week rental is between $1200 and $1400, I assumed that each non-captured renter spent $1300 on rental fees during their vacation in the Watershed. This was a reasonable assumption given that the average weekly rent based on collected survey data was $1,233.33. By extrapolating the spending information to include those seasonal renters not captured during the initial data collection, I was able to expand the expenditure information from 89 seasonal residents to reflect the spending behavior of 349 seasonal residents.
ii. Constructing IMPLAN Models

The expenditure data from the 445 usable surveys was coded and organized for the purpose of constructing an economic impact model for the Belgrade Lakes Watershed using IMPLAN software. Since the Belgrade Lakes Watershed is almost entirely within Kennebec County, I used IMPLAN data for this county as the base of the structure for the impact model.

I defined the type of activity for my model as an Industry Change. The next step of building the IMPLAN model was matching the expenditure categories with the related IMPLAN industry types. In the IMPLAN software, industries are uniquely identified by their NAICS codes. Individual events were created that correspond to the aggregate expenditure statistic for a specific survey question (see table 1 in Appendix). Since IMPLAN does not have a specific sector for outdoor recreational activities like birdwatching or hiking, expenditure data pertaining to these activities was allocated to spending in related markets. Since birdwatching is an inherently free activity, any costs associated with it were attributed to spending on goods and services such as food, lodging, and fuel. I made these decisions based on information collected through conversations with in-person survey respondents and current literature on Input-Output studies.

Within each activity, individual events were created that correspond to the aggregate expenditure statistic for a specific survey question. Table 1 shows the expenditure values as passed into IMPLAN for the in-person survey and mailed survey data model. Finally, once I imputed all of the relevant consumer expenditure data into
IMPLAN, I ran the impact analysis to reveal the total impact of these expenditures for both models.

V. Results

i. Economic and Demographic Profile of Survey Respondents

Figure 1 presents information on the annual household income of survey respondents. The average household income for respondents with a primary address inside the Watershed was $97,818. The average household income of respondents that have a primary address outside of the Watershed was $136,975. The majority of respondents (58%) had a total annual household income of between $50,000 and $150,000. In terms of the education level of respondents, Figure 2 displays the highest level of education achieved by members of their household. This graph reveals that 87% of survey respondents indicated having a member of their household with a college degree or higher.

Figure 1. Household Income of Survey Respondents
Figure 2. Highest Level of Education Achieved by Member of Household

Figure 3 below shows information on the survey respondents state-of-residence. Approximately 58% of the survey respondents were from New England. Florida (7%) and New York (6%) were also well-represented states of origin.

Figure 3. Number of Respondents with Address Outside of the Belgrade Lakes Watershed
Table 2 shows the distribution of the 356 returned mailed surveys in terms of the relative proportion that were completed by towns located in the Watershed or by households that own property in the Watershed, but live primarily outside of this region. The majority of mailed survey respondents (72%) were from inside of the Watershed.

Table 2. Distribution of Responses for Mailed Household Survey

<table>
<thead>
<tr>
<th>Area</th>
<th>Number of Respondents</th>
<th>Percent of Total Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgrade</td>
<td>84</td>
<td>24%</td>
</tr>
<tr>
<td>Belgrade Lakes</td>
<td>14</td>
<td>4%</td>
</tr>
<tr>
<td>Oakland</td>
<td>70</td>
<td>20%</td>
</tr>
<tr>
<td>Sidney</td>
<td>48</td>
<td>13%</td>
</tr>
<tr>
<td>Smithfield</td>
<td>25</td>
<td>7%</td>
</tr>
<tr>
<td>Other Towns in the Watershed</td>
<td>14</td>
<td>4%</td>
</tr>
<tr>
<td>Outside of Watershed</td>
<td>101</td>
<td>28%</td>
</tr>
<tr>
<td>Total</td>
<td>356</td>
<td>100%</td>
</tr>
</tbody>
</table>

ii. Spending on Outdoor Recreation and Other Activities

Figure 4 highlights the distribution of spending on major outdoor recreational activities represented in the Belgrade Lakes Watershed. Not surprisingly, the majority of expenditures are related to motorboating, which is the most common activity in the area. Other areas where respondents indicated spending a lot of money on were golfing, open water fishing, and souvenirs and giftshops. These activities have well-developed markets in the Watershed and, in general, there are a lot more costs associated with these activities. For example, the major costs associated with motorboating include paying for storage, maintenance, fuel, and buying permits. In comparison, people do not have to pay for biking, hiking, or wildlife viewing, so people often consider these activities as having no cost. In the survey, we recorded expenditures associated with these lower cost activities.
activities in terms of how much they pay for food and fuel during the time when they are participating in these activities.

**Figure 4. Distribution of Spending on Outdoor Recreation and Other Activities**

![Pie chart showing distribution of spending on various outdoor activities and other]

iii. Community Sense of Place and Knowledge of the Belgrade Lakes Environment

One of the most significant cultural characteristics of the Belgrade Lakes Region is the deep sense of place shared by both year-round and seasonal residents. In fact, 45% of all respondents indicated some form of connection to place whether they lived in the area all their life, have had multiple generations of people living in or visiting the area or have been visiting the area since they were young. Approximately 23% of survey respondents indicated that they had multiple generations of people who have been living in the area. Also, the majority of survey respondents (86%) have been visiting the
Belgrade Lakes Region for 10 or more years and 9% have been visiting for 5-10 years. An important indicator of peoples’ connection to the environment is their involvement in the local lake associations. In this study, 54% of survey respondents were members of a lake association in the Watershed. It is interesting to note, however, that only 71% of survey respondents that were lake association members have actually attended a lake association meeting or event, implying that not everyone that pays membership dues is actively involved in this aspect of the community.

Figure 5 summarizes the responses to the question on how well people know some of the key lake related issues. One critical insight from this graph is that while the majority of respondents are familiar with or know a lot about some of the major lake related issues such as algal blooms, phosphorous and nitrogen run-off, and invasive species, they are less aware of the LakeSmart program, a state funded conservation initiative aimed at reducing some of these ecosystem threats.

**Figure 5.** Awareness of Belgrade Lakes Watershed Issues
iii. In-person Survey Model Results

An initial analysis of the expenditure data collected through the in-person survey reveals interesting trends related to general spending behavior. Table 2 in the Appendix provides a detailed summary of statistics for the spending categories included in the in-person survey. Average expenditures by seasonal residents in this model were highest in the categories of property taxes, property maintenance, grocery shopping, and motorboating/sailing. Average spending on local food and average weekly rental fees are also high indicating that these are major areas of spending for seasonal residents of the Watershed.

The total economic impact (output) of the expenditures of 349 seasonal residents to the Watershed is approximately $1.8 million (Table 4). The results indicate that the expenditures generated by the seasonal residents captured in the in-person model ultimately support 27.5 full and part-time jobs. Total output is the accumulation of total revenues, sales, or the total value of the output generated from the direct and secondary effects of the initial economic stimulus. The total value added column shows the value of revenues generated from expenditures in the impacted industries. Labor income is all of the sources of income, including wages and benefits and proprietor income that are produced as a result of the initial change in expenditures (IMPLAN, 2013).

Table 4. Impact Results for In-Person Survey Model

<table>
<thead>
<tr>
<th>Impact Type</th>
<th>Employment</th>
<th>Labor Income</th>
<th>Total Value Added</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Effect</td>
<td>21.4</td>
<td>$600,984.52</td>
<td>$1,009,343.14</td>
<td>$1,144,464.45</td>
</tr>
<tr>
<td>Indirect Effect</td>
<td>2.5</td>
<td>$64,337.33</td>
<td>$118,405.49</td>
<td>$209,656.50</td>
</tr>
<tr>
<td>Induced Effect</td>
<td>3.6</td>
<td>$139,865.10</td>
<td>$254,204.52</td>
<td>$415,971.83</td>
</tr>
<tr>
<td>Total Effect</td>
<td>27.5</td>
<td>$805,186.95</td>
<td>$1,381,953.15</td>
<td>$1,770,092.79</td>
</tr>
</tbody>
</table>
The results of the IMPLAN model also reveal the major industry sectors that are affected by these expenditures in terms of output and employment (Table 5). The top 10 impacted industries in terms of employment are reported in Table 5 in the Appendix. The most greatly impacted industries include food and beverage retail stores, food service and drinking places, and real estate establishments. These results are consistent with the fact that much of the spending information collected in the survey related to the food service industry. Also one of biggest sources of spending for seasonal renters are rental fees, and those expenditures are allocated towards local real estate establishments and related industries. Personal and household goods repair and maintenance is another significantly impacted industry, which intuitively makes sense because seasonal residents invest a lot in the upkeep of their properties.

ii. Total Impact Model Results

The total economic impact (Output) of the expenditures generated by 705 seasonal and year-round residents to the Watershed is approximately $6.8 million. These expenditures also support a total of 68 full and part-time jobs in this region. The combined impact of the aggregated spending behavior of both year-round and in-person survey respondents is substantially higher, because the sample size is twice that of the in-person sample, and the mailed survey includes more expenditure information. Because more household spending information is captured in this model it provides a more comprehensive assessment of the total economic value generated by the Watershed.
Table 6. IMPLAN Model Results (Total Combined Impact)

<table>
<thead>
<tr>
<th>Impact Type</th>
<th>Employment</th>
<th>Labor Income</th>
<th>Total Value Added</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Effect</td>
<td>47.3</td>
<td>$2,038,248.58</td>
<td>$2,831,482.19</td>
<td>$4,602,662.39</td>
</tr>
<tr>
<td>Indirect Effect</td>
<td>8.4</td>
<td>$259,568.21</td>
<td>$458,994.75</td>
<td>$801,995.86</td>
</tr>
<tr>
<td>Induced Effect</td>
<td>12.5</td>
<td>$483,623.11</td>
<td>$880,275.06</td>
<td>$1,440,075.37</td>
</tr>
<tr>
<td>Total Effect</td>
<td>68.2</td>
<td>$2,781,439.90</td>
<td>$4,170,752.00</td>
<td>$6,844,733.62</td>
</tr>
</tbody>
</table>

Table 7 in the Appendix reports the top 10 impacted industries in terms of employment. The most impacted industry in terms of both total employment and total output generated is the personal and household goods repair and maintenance industry. As previously mentioned, both the in-person and mailed surveys collected a lot of annual expenditure information pertaining to property maintenance and repairs, landscaping, and snowplowing. Other significantly impacted industries in the total expenditure model include food and beverage retail stores, food services and drinking places, as well dry-cleaning and laundry services. The mailed survey contained more detailed questions about spending on laundry, which is pertinent to a lot of seasonal camp owners that may not have the capability to do laundry at their camp. Real estate establishments are heavily impacted by spending on rental commissions and other associated fees. An additional set of economic sectors related to health care services are presented in the impact statement for the total model, a reflection of the health care spending information collected in the mailed survey.

In analyzing the result of these two models it is important to note that property tax revenue was not included in their estimation. Through correspondence with an IMPLAN forum consultant it came to light that property tax information is already embedded into the framework of the model so it cannot be added as event in the model. Another
interesting result in the impacted industry tables for both the in-person survey and total impact model is that spending on local food, at farmers market and farm stands, actually generated a reduction in total labor income and total added value. One would expect that spending on local food would actually generate significant economic stimulus since most of the money is being retained within the regional economy. Since IMPLAN really only has one sector for fruit and vegetable farming, this may not be an accurate estimate of the total effect these expenditures have on the local economy. Fruit and vegetable farming is certainly not a comprehensive category for the types of products that can be purchased locally at one the region’s farmers markets. Since the total annual spending on local food is high for year-round and seasonal residents due to the vibrant local food and artisanal economy that exists in Maine, the final results of the model may not fully represent this segment of the Belgrade Lakes economy.

VI. Conclusion

Based on the results of the Input-Output analysis, it is evident that both year-round and seasonal residents of the Watershed greatly contribute to the value of the Belgrade Lakes Region. The total economic impact of the 445 households that we captured in our survey was $6.8 million, including multiplier effects. The property maintenance and repair sector is the most impacted in terms of the total number of jobs and output generated by this economic activity. It is important to note that this figure is not a comprehensive assessment of the value of the Watershed, as the total economic value of ecosystem services were not factored into this study. Instead, this study provides a glimpse of the economic value that is generated by annual household expenditures of people who live or spend time in the Watershed.
The results of the demographic questionnaire highlight that both year-round and seasonal residents are deeply invested in this region based on family ties or how many years they have been visiting this area. Based on the consistent population of seasonal visitors, there is great potential to expand seasonal ventures that cater specifically to this population. In particular, regional planners may consider combining environmental conservation initiatives with expanding outdoor recreation activities in the Watershed. Also, more private business can focus on sustainable landscaping, for example, which is increasingly becoming an important factor for homeowners.

The people that live in this area contribute to the inherent value of this region, and so it is important that the state provides the necessary resources to maintain the health of this fragile ecosystem. The Belgrade Lakes economy is deeply linked to its environment, which is why it so important that the health of the lakes is prioritized for the benefit of current and future generations.