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Angela Daley

University of Maine, angela.daley@maine.edu

Andrew Crawley

University of Maine, andrew.crawley@maine.edu

Muntasir Rahman

muntasir.rahman@maine.edu

Jake Demosthenes

jacob.demosthenes@maine.edu

Erin Lyons

erin.lyons1@maine.edu

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How Well Is Maine Doing? Comparing Well-Being across Maine Counties

by Angela Daley, Andrew Crawley, Muntasir Rahman, Jake Demosthenes, and Erin Lyons

Abstract

Maine has experienced major challenges over the last decade including recession, stagnant recovery, and industrial and population decline. But by some measures, Maine is still seen as one of the best in the United States for well-being. In this paper, we critique the notion of what well-being is and how it is measured. Based on the Organisation for Economic Co-operation and Development's Better Life Initiative, we then propose and construct an index to compare well-being across Maine counties. Our work gives new insights on the types of challenges counties are facing and provides policymakers a new way of empirically understanding these problems.

the national average (<https://www.kff.org/other/state-indicator/opioid-overdose-death-rates>). Perhaps related, the percentage of Maine children living in deep poverty—defined as less than \$10,000 per year for a family of three—has increased at a rate that is eight times greater than the national average (Myall 2017).

How do we reconcile these issues with the favorable ranking by Gallup Healthways? In this paper, we do so by arguing that (1) well-

INTRODUCTION

A recent report by Gallup Healthways found that Maine ranked fourth in the United States for well-being, not far behind Hawaii, Alaska, and South Dakota (Gallup Healthways 2016). This ranking appears to be at odds with certain facts. For example, Maine was the last state to return to prerecessionary levels of economic growth. Indeed, since the Great Recession of 2008–2009, Maine has experienced considerable economic turbulence, including a sharp decline in extractive and processing industries (e.g., logging, pulp and paper). Demographic challenges also abound; Maine has the highest median age in the United States at 44.6 (US Census Bureau 2017). As such, the state is dealing with a shrinking workforce (i.e., retirement of the older population with insufficient replacement by new, younger workers) and growing healthcare costs, which are persistently higher than the national average (MSCOC, MDF, and Education Maine 2018). In addition to an aging population, healthcare costs are affected by high rates of obesity, smoking, and drug use. For example, the opioid overdose death rate in Maine is almost twice

being is multidimensional and (2) there is considerable variation in well-being across the state. When considering well-being in one dimension, such as economic growth, we ignore the reasons that led to that particular outcome and how that outcome affects various aspects of people's lives. To fully understand well-being, we must move beyond one dimension and consider it as a composite of different characteristics—things that matter to people and shape their lives. Indeed, this has been the tendency in recent work, such as that by Gallup Healthways and the Organisation for Economic Co-operation and Development's (OECD) Better Life Initiative.¹ For example, the Gallup Healthways ranking is based on five dimensions: purpose in life; supportive social relationships; minimal economic stress; safe, strong communities; and good physical health. Likewise, the OECD uses 11 dimensions to compare well-being across member countries: housing; income and wealth; jobs; community; education; environment; civic engagement; health; life satisfaction; safety; and work-life balance (<http://www.oecdbetterlifeindex.org/>). Both initiatives advance our understanding of well-being by embracing multidimensionality; however, they do not consider differences below the state or country levels.²

Indeed, most well-being rankings mask disparities that exist at lower levels of spatial aggregation.

In this paper, we compare well-being across Maine counties using the multidimensional approach developed by the OECD, which is widely recognized in the developed world. In doing so, we provide a tool that policymakers and community organizations can use to target resources in counties that need them most and in dimensions of well-being that have the potential to significantly affect people’s lives. While policymakers and community organizations tend to focus on specifics (e.g., education, environment), presumably their intent is to improve overall well-being, and they use the policy levers available to them. In this sense, this tool can be used in two ways: (1) to understand county-level differences in specific dimensions of well-being, which fits the traditional approach to policy making; and (2) to understand how different dimensions affect relative well-being across counties, optimization of which is presumably the main goal of policymakers and community organizations.

DATA AND METHODOLOGY

The OECD Better Life Initiative was launched in 2011 and comprises 11 dimensions of well-being that are deemed important in member countries and cultures. Each dimension is defined by several indicators, which were selected based on policy relevance and data quality (e.g., comparability across countries). For example, the housing dimension is made up of housing expenditure, dwellings with basic facilities, and rooms per person. We used the OECD approach to determine the ideal dimensions and indicators and then included only those dimensions and indicators that were available at the county level in Maine (or

for which suitable proxies were available). We also referred to the literature on self-reported well-being and housing (see Diaz-Serrano 2009; Grzeskowiak et al. 2006; Hu 2013).

Unfortunately, we lack county-level data for all dimensions and indicators included in the OECD approach. Thus, we focus on eight of the eleven dimensions; we do not consider community, life satisfaction, and work-life balance.³ Moreover, we use proxies for, or omit, some indicators. For example, in the OECD approach, the environment dimension consists of water quality and air pollution. However, we only have information on air pollution. Table 1 summarizes the dimensions and indicators that we used to compare well-being across Maine counties, as well as our data

TABLE 1: Dimensions and Indicators of Well-Being for Maine Counties

Dimensions	Indicators
Housing ^a	Percentage of dwellings without complete plumbing
	Percentage of dwellings without complete kitchens
	Number of habitable dwellings per capita
	Percentage of dwellings with more than one occupant per room
	Median monthly housing expenditure
Income and Wealth ^a	Mean annual income per capita (before taxes, after transfers)
	Percentage of population below the poverty level
	Percentage of owner-occupied dwellings
Jobs ^a	Unemployment rate
	Mean annual earnings (before taxes)
Education ^a	Percentage of population with less than a high school diploma
	Percentage of population with a bachelor’s degree or more
Environment ^b	Air pollution based on PM2.5 emissions
Civic Engagement ^c	Voter turnout in 2016 presidential election
Health ^d	Life expectancy
	Mortality rate
Safety ^c	Non-violent burglary rate
	Aggravated assault rate

a Source: <https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=#none>

b Source: <http://www.countyhealthrankings.org/app/maine/2018/measure/factors/125/data>

c Source: <https://www.policymap.com/maps>

d Source: <https://vizhub.healthdata.org/subnational/usa>

sources. Most data come from 2016; however, indicators related to environment and health come from 2012 and 2014, respectively.

Our goal is to calculate county-level scores for each dimension of well-being using the relevant indicators, which allows us to understand how each dimension varies across counties and to compare overall well-being by combining the eight dimensions. Of course, this calculation is made difficult because our indicators are measured in different units. For example, the jobs dimension is based on unemployment (percentage) and earnings (dollars). In the next sections, we explain how we combine indicators into a meaningful score for each dimension. We then explain how we combine the eight dimensions to compare overall well-being across counties.

Comparing Dimensions of Well-Being across Counties

Following the OECD approach, we normalized our indicators before combining them into a county-level score for each dimension. To normalize positive indicators (e.g., percentage of population with a bachelor's degree or more, life expectancy), we used the following formula:

$$\frac{\text{value for the county} - \text{minimum value across counties}}{\text{maximum} - \text{minimum value across counties}}$$

Similarly, we normalized negative indicators (e.g., unemployment rate, aggravated assault rate) using the following formula:

$$1 - \frac{\text{value for the county} - \text{minimum value across counties}}{\text{maximum} - \text{minimum value across counties}}$$

As a result, we made all indicators unit free, ranging from zero to one. We then constructed a county-level score for each dimension by averaging across the indicators within it (e.g., unemployment and earnings for the jobs dimension). As the indicators did, our dimension scores ranged from zero to one, with higher scores indicating a more favorable position relative to other counties. It is important to note these scores are not absolute measures of well-being, but are relative to the best and worst counties under consideration. That is, a county's low score in a particular dimension of well-being may not be because it is intrinsically bad, but because it

performs worse than other counties in that respect. This is an important contribution of this work; we make comparisons within Maine rather than using national or international benchmarks.

Comparing Overall Well-Being across Counties

After calculating a county-level score for each dimension, we combined them to assess overall well-being. As a starting point, we took a simple average across dimensions. This would imply that all dimensions were similarly important to overall well-being, which, of course, is not necessarily true. For example, do housing and environment matter equally in shaping people's lives? How about education and safety? The relative importance of these and other dimensions depends on personal perspective. Indeed, an advantage of the OECD approach is that, through an interactive online tool, it allows end-users to determine the relative importance of the dimensions. Perhaps not surprisingly, the relative importance of dimensions can have a considerable impact on overall well-being. Therefore, for this paper, we explored how well-being scores changed across Maine counties under different scenarios. In addition to taking a simple average across dimensions (implying that all were similarly important to overall well-being), we explored how the ranking changed when certain dimensions were more heavily favored. We did so using weighted averages. For example, in one scenario, we assigned housing a weight of five and all other dimensions a weight of one. Combining the eight dimensions into an overall well-being score, housing received a weight of $\frac{5}{12}$, while all other dimensions received a weight of $\frac{1}{12}$. We similarly considered scenarios in which income and wealth, jobs, and health were more heavily weighted.

RESULTS

Figure 1 depicts overall well-being by county when the dimensions were equally weighted (i.e., simple average across dimensions). The highest-ranked county was Sagadahoc, followed by Cumberland. Their overall scores were 0.74 and 0.69, respectively. It is interesting to note that these counties and others at the top of the list, such as Lincoln and Knox, are located in southern Maine. On the other hand, the lowest ranked counties are in the northwest; Somerset and Piscataquis had scores of 0.22 and 0.35, respectively.

FIGURE 1: Overall Well-Being by County, Dimensions Equally Weighted

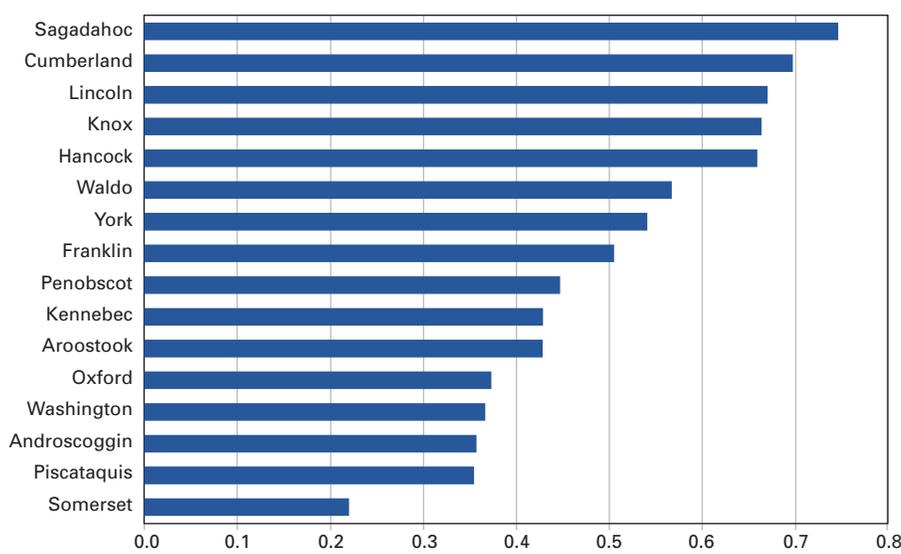
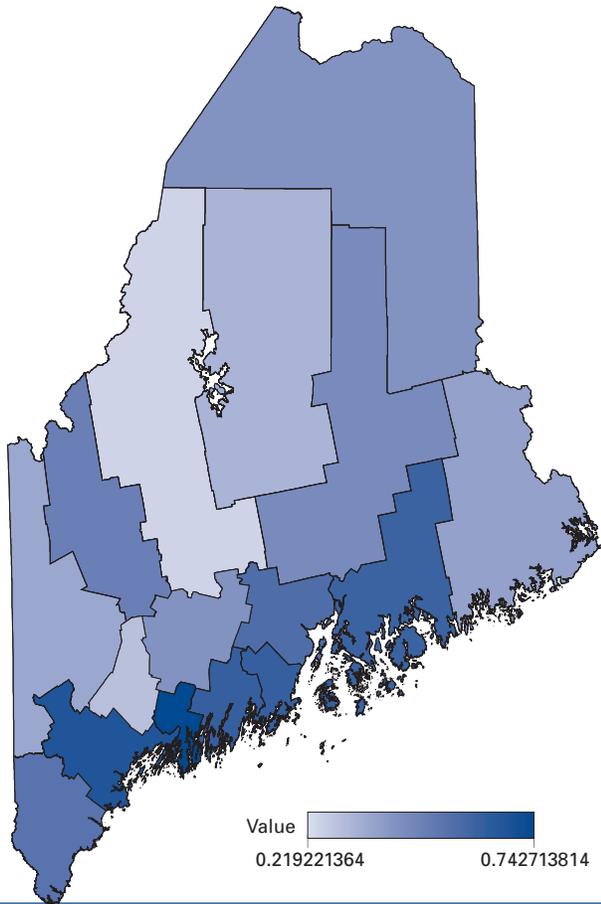


FIGURE 2: Map of Overall Well-Being by County, Dimensions Equally Weighted



We further examined differences in overall well-being across counties by mapping the scores. Again, the dimensions were equally weighted. Figure 2 shows that coastal counties fared best, with the exception of Washington. It ranked near the bottom, along with most western counties. Moreover, counties located in the middle of the state tended to be in the middle of the ranking. Taken together, these findings suggest a well-being gradient that declines from southeast to northwest.

Of course, counties have strengths and weaknesses in different dimensions, which are not reflected in the composite

score. Thus, Table 2 shows counties with the highest and lowest scores, respectively, in each dimension of well-being.

We found that Sagadahoc County ranked first in income and safety, while Cumberland County ranked first in jobs and education. Moreover, Lincoln and Knox Counties ranked first in civic engagement and health, respectively. This is not surprising as these four counties had the highest overall well-being scores. Likewise, counties with the lowest overall scores ranked last in several dimensions (i.e., Somerset in housing, education and civic engagement; Piscataquis in income and jobs).

TABLE 2: Highest and Lowest Scores by Dimension of Well-Being

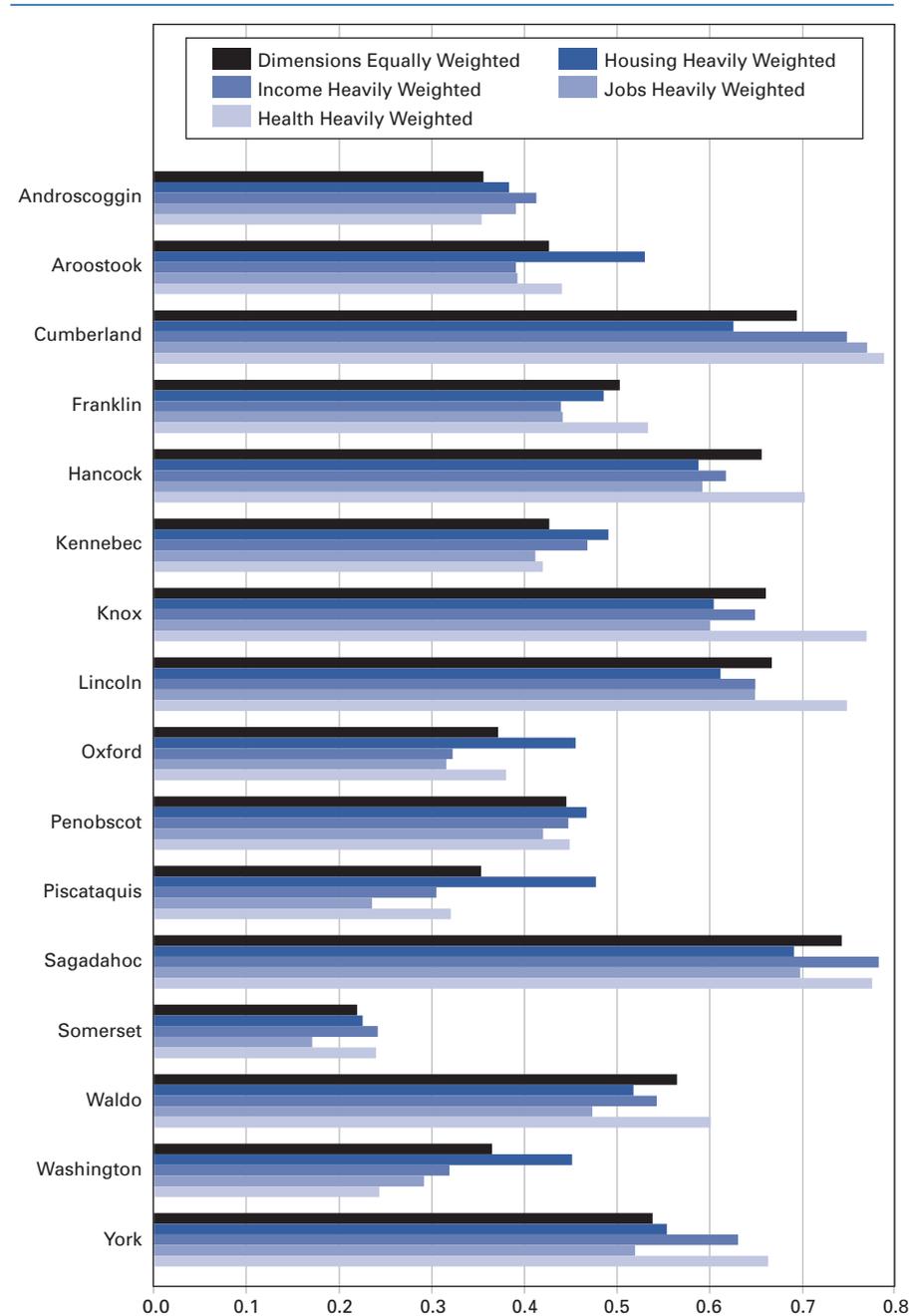
	High	Low
Housing	Aroostook (0.74)	Somerset (0.24)
Income	Sagadahoc (0.86)	Piscataquis (0.21)
Jobs	Cumberland (0.92)	Piscataquis (0.00)
Education	Cumberland (1.00)	Somerset (0.04)
Environment	Washington (1.00)	Cumberland, York (0.00)
Safety	Sagadahoc (0.95)	Kennebec (0.23)
Health	Knox (0.99)	Washington (0.00)
Civic Engagement	Lincoln (1.00)	Somerset (0.00)

There were, however, a few surprises. First, Aroostook County ranked eleventh overall but first in housing. It is also interesting to note the highest and lowest scores in the environment dimension. Washington County, which was near the bottom of the overall ranking, had the highest environment score. Cumberland County, which was near the top of the overall ranking, had the lowest environment score. This likely reflects differences in population and economic activity; Washington County is more sparsely populated and reliant on resource-based industries (e.g., fishing), while Cumberland County is more densely populated and reliant on jobs in management and administrative activities.

Given these differences by dimension of well-being, we considered how the overall ranking changed when some dimensions were more heavily weighted. For example, what happens when housing is more heavily weighted than other dimensions? We might expect Aroostook to move up in the ranking. Similarly, how does overall well-being change when income and wealth, jobs, and health are more heavily weighted, respectively? Results are summarized in Figure 3.

As expected, Aroostook County fared better when housing was more heavily weighted. The same was true for Oxford, Piscataquis, and Washington Counties. When housing was more heavily weighted, Aroostook and Piscataquis Counties moved up in the ranking, with Aroostook moving from eleventh to seventh place and Piscataquis moving from

FIGURE 3: Overall Well-Being by County, Dimensions Weighted Differently



fourteenth to eleventh place. We also found improvements for Hancock, Knox, Lincoln, and York Counties when health was more heavily weighted. This scenario is associated with a better ranking for Knox and York Counties,

which moved from fourth to third and seventh to sixth, respectively. Regardless of weighting, there was little change in overall well-being for Androscoggin, Kennebec, Penobscot, Sagadahoc, Somerset, and Waldo Counties. Of course, these were arbitrary scenarios. Weights used to assess overall well-being should reflect the priorities of policymakers and their constituents.

CONCLUSION

We started by discussing the favorable ranking by Gallup Healthways, which appears to be at odds with recent economic, demographic, and health-related challenges in Maine. We argued that to reconcile these findings, we must recognize the multidimensional nature of well-being. That is, well-being should be measured as a composite of different characteristics—things that matter to people and shape their lives. We must also recognize that considerable differences exist within the state, and these differences are generally not addressed in well-being rankings such as those by Gallup Healthways. Indeed, we often hear talk of two Maines. In this paper, we show that while there is a north-south dichotomy, there are also differences from east to west. In fact, there appears to be a well-being gradient that declines from southeast to northwest. Of course, this depends on how well-being is measured. Considering the multidimensional nature of well-being, counties have different strengths and weaknesses. Not surprisingly, counties with the highest overall well-being ranked first in several dimensions, while those with the lowest overall scores often ranked last. However, this was not a steadfast result. For example, Aroostook County ranked eleventh overall but was first in housing. Similarly, Washington County was near the bottom of the overall ranking, but had the highest environment score. These findings suggest that in addition to looking at overall well-being, it is important to consider how counties fared in different dimensions; a county can rank relatively low overall, but this ranking may mask areas in which it is excelling. Relatedly, we must consider which dimensions of well-being matter most to people and how changing their weight in the composite score can affect our understanding of well-being across the state.

Policy Implications and Future Work

We have provided a tool that policymakers and community organizations can use to better understand

well-being in Maine. While policymakers and community organizations tend to focus on specifics (e.g., education, environment), presumably, their intent is to improve overall well-being, and they use the policy levers available to them. In this sense, the importance of our tool is twofold: (1) it can be used to understand county-level differences in specific dimensions of well-being, which fits the traditional approach to policy making; and (2) it can be used to understand how different dimensions affect well-being across counties, optimization of which is presumably the main goal of policymakers and community organizations. In this sense, our tool is complementary to other resources that embrace the multidimensionality of well-being, but are not available below the state-level (e.g., Annie E. Casey Foundation 2018; MDF 2017). It also complements resources that examine differences at lower levels of spatial aggregation, but only focus on one indicator or dimension of well-being (e.g. MaineHousing 2017; Acheson 2010).

...there appears to be a well-being gradient that declines from southeast to northwest.

It is important to note that our work is merely a starting point. The index can be enhanced, for example, by exploring how well-being varies at lower spatial scales, such as the community level. It would also be useful to expand this tool to include other dimensions or indicators of well-being. For example, we could add measures that reflect policy priorities in the state (e.g., broadband access) or other aspects of well-being beyond those included in the OECD approach (e.g., income inequality, labor-force participation, smoking and obesity rates, demographic indicators). Of course, these expansions would require data on these topics at the county level or lower levels of spatial aggregation.⁴ Finally, and perhaps most importantly, a next step is to develop our index into an interactive online tool through which end-users can modify the relative weight of the dimensions (<http://www.oecdbetterlifeindex.org/>). For example, if end-users perceive housing to be more important than environment, they can adjust the weights to see how this affects overall well-being across counties. Instead of simply

telling people which dimensions are most important and how the counties rank, the online tool would allow end-users to choose which dimensions are most important to them, then to see the effect on well-being. However, even in absence of an online tool, our work gives new insights on the types of challenges counties are facing and provides policymakers a new way of empirically understanding these problems. This work may be used to target resources in counties that need them most and in dimensions of well-being that have the potential to significantly affect people's lives. 🐼

ENDNOTES

- 1 These efforts build on Sen (1985), which focuses on *functioning* (things that people want to do and be) and *capabilities* (the ability of people to choose the functioning they value most). This moves beyond the traditional welfarist approach, which only considers outcomes regardless of how they were achieved (Boarini and D'Ercole 2013; Durand 2015).
- 2 Similarly, the Annie E. Casey Foundation's *2018 Kids Count Data Book* (2018) measures child well-being via material situation, education, health, family, community, and other indicators. Moreover, the Maine Development Foundation's *Measures of Growth 2017* measures quality of life using economic, community, and environmental indicators, with comparisons to past performance, New England, and the United States more broadly (MDF 2017). Neither report considers well-being below the state level.
- 3 Differences in these dimensions are not usually pronounced across narrow geographical boundaries (Kasparian and Rolland 2012). Thus their exclusion, while inevitable, may be justifiable.
- 4 Some of these data are available at the county level or lower levels of spatial aggregation, but they are not included in the current index to remain consistent with the OECD approach.

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Angela Daley is an assistant professor in the School of Economics at the University of Maine. She specializes in health and labor economics, with emphasis on social policy.



Andrew Crawley is an assistant professor of regional economic development in the School of Economics at the University of Maine. He specializes in regional economic policy and economic modelling.



Muntasir Rahman is a graduate student and research assistant in the University of Maine's School of Economics. With a degree in economics from East West University, Bangladesh, Muntasir became interested in public health policy research, especially focusing on under-represented populations. His research interests include public health policy assessments and analysis of risky health behaviors.



Jake Demosthenes has a bachelor of arts with a major in economics and minor in political science from the University of Maine.



Erin Lyons has a bachelor of arts with a major in economics from the University of Maine.