

Caring for the Crown:

Taking Stock of the Future and a Renewed Call for Action

**A Report Prepared for
The Aroostook Partnership**

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FOREWORD

The original ‘Tarnished Crown’ report was completed in 2003 resulting in a ‘call to action’ for the private sector in Aroostook County to engage and organize to ‘take bold action’ to tackle the ‘enormous challenges’ the County was facing following the previous decade of population loss. That report was the impetus for the formation of the Aroostook Partnership for Progress which eventually merged with the small business based Leaders Encouraging Aroostook Development or LEAD to form the current Aroostook Partnership.

Today, 14 years later, we’ve seen a great deal of positive progress and growth in the forestry, energy, agriculture and niche manufacturing sectors in Aroostook. We attribute that in part to the Mobilize Northern Maine strategic planning process that has provided our focus on economic sectors as well as the drive of the companies within those sectors to innovate and grow their businesses to expand their profitability. In fact, over the last five years we’ve experienced over \$900M in investment and saw the creation of over 900 new and better jobs. This kind of investment and progress is not indicative of an area that ‘is dying’ as some in the region suspect but illustrates an area that is taking advantage of its strengths and resources to grow in areas that changing market conditions mandate.

However, we are still experiencing significant challenges as population and labor force continue to decline and energy and other cost of living factors rise as a result. Thus, the Partnership requested an update analysis of the County’s current economic conditions and challenges to re-examine the significance of the demographic and economic conditions we face today to evaluate and determine future strategies, focus efforts, and engagement requirements. Our sense going into this analysis is that conditions are changing at an insidious rate and that our demographic trends could create additional challenges, particularly with respect to our labor force, services, and cost of living.

Aroostook County or the ‘Crown of Maine’ remains a wonderful place to live with tremendous natural resources, an abundance of natural beauty, a very successful forest and agricultural setting with potential for further growth, an outstanding outdoor recreational region, and an excellent quality of life. Many recommendations from the original Tarnished Crown report remain valid today such as ‘retaining our people’ and the Partnership is very focused on raising the awareness of employment opportunities here in the County.

The purpose of this report update, as with the original report, remains to enlighten and promote discussions about the County’s future and to promote a broader engagement, strengthen actions and encourage even greater collaboration across multiple elements and organizations within our region to make ‘the Crown’ an even better place to live, work and play.

Robert D. Torrey

Introduction

Aroostook County has a long and proud history built around its abundant natural resource based and agrarian heritage. Like many rural regions across the United States, Aroostook County (“the County”) is struggling to find its way in an increasingly global economic landscape that favors large urban areas rather than dispersed rural regions. For the “Crown of Maine”, the economic headwinds facing the County are rooted in a declining and aging population and workforce that challenge the region’s economic competitiveness.

These challenges are not necessarily new and are highlighted in the 2003 report titled “Tarnished Crown: Building a Future for the Children of Aroostook County”. The report, commissioned by the Northern Maine Development Commission and Maine Public Service Company, charted the major economic and demographic challenges that have come to characterize Aroostook’s fortunes in the second half of the last century, and what the future may hold. To address the County’s new reality, the report called for bold regional collaborative action that charts a new course towards greater economic prosperity. Ultimately, this motivation culminated in the formation of the Aroostook Partnership for Progress, now known as the Aroostook Partnership or “the Partnership”, whose mission is to enhance and promote Aroostook County’s economy through coordinated public and private sector assets in a more comprehensive and sophisticated approach to economic development.

Since its initial establishment in 2003, the Partnership’s efforts have made tremendous impacts across Aroostook County by helping to attract and secure necessary infrastructure and private sector investments, promoting business expansion and job creation, enhancing the competitiveness of the region’s industry clusters, and enhancing the skills of the region’s workforce. The efforts of the Partnership and the region have helped disrupt the steep downward trends of population loss that characterized previous decades. The County has also seen an increase in the educational attainment levels of its populous and increases in personal income levels; both important economic indicators.

Despite making big strides over the past 15 years, challenges still remain. The population of Aroostook continues to age and decline resulting in a smaller workforce and fewer taxpayers. Younger aged populations continue to leave, municipal tax bases are getting smaller all the while municipal costs continue to rise. There is still a great necessity for Aroostook to take charge of

its fate as global economic pressures intensify and rekindle the early motivation that surrounded the formation of the Aroostook Partnership.

The purpose of the present report is to recognize the economic successes over the past 15 years that were supported by the Partnership and take stock in the challenges that the County still faces. This report is comprised of two sections. It first highlights the key economic wins in Aroostook County since 2003 and demonstrates the results of collaborative action. Section II provides an updated look at Aroostook County's demographic and economy trends since the 2003 report and discusses the key challenges and assets affecting economic prosperity looking forward.

Section I: The Aroostook Partnership and Regional Economic Successes

Since its formation, the primary task of the Aroostook Partnership is to enhance and promote the County's economy by marketing the region to external domestic and international markets, facilitating an effective economic development dialogue in the region, and to coordinate efforts around issues that influence economic development. Over the last 15 years, the Partnership has emerged as the primary advocate for catalyzing public and private sector investment and tracking success as a result of their efforts. The Partnership has led the Mobilize Northern Maine initiative that focuses on asset based economic development strategies, testified and advocated for favorable legislation (such as LD-1670 the "Loring Tax Support Bill" and LD-1606 "Diesel Tax Elimination for Forestry"), and featured numerous times in Maine media outlets for achievements and activities.

Reflective of the people of Aroostook County, the Partnership carries great passion, pride and commitment to the region and strives for it to succeed. The impact of this collaborative effort is real. Since 2003, efforts from the Partnership have led over \$3 billion of investment helping to create or save over 2,300 jobs, while laying the groundwork for several billions more in potential investments in the County. In just the last five years alone, collaborative efforts by the Partnership have resulted in almost \$1 billion of investment and close to 1,000 jobs in Aroostook County. An overview of the regional activities and successes the Partnership has been engaged in are described below.

Securing major investments in transportation infrastructure

The Partnership has helped advocate and bring significant transportation infrastructure investments and upgrades to the region over the last 10 years. These include approximately \$20 million for the Caribou Road bypass, \$25 million for the Presque Isle bypass, and close to \$10 million in upgrades to airports in Presque Isle and Caribou. Perhaps most significantly, efforts by the Partnership in collaboration with other stakeholders and the federal delegation helped secure two federal TIGER transportation infrastructure grants (totaling \$28 million) that helped save and upgrade the Northern Railroad, now one of the best rail systems in New England. The railroad services more than 20 major mills and manufacturers. Without the rail line firms would have faced downsizing or complete closures.

Driving investment and growth in the forest products sector

The forest product cluster remains a critical industrial base for the County and is a key priority for the Partnership exemplified by the creation and lead of the Northern Forest Products Industry Cluster. The initiative includes every major forestry business in the County and is focused on expanding the forest economy in Aroostook and the broader state. Overall, there has been over \$200 million of new investment and close to 400 jobs added or retained over the last 5 years alone in Aroostook's forest economy. These include several hundreds of jobs either added or called back at Maibec, Irving, ReEnergy Ashland, and Louisiana-Pacific Corp. This also includes a new Irving plant and two upgrades at Twin Rivers, (\$25 million and \$12 million respectively).

In addition, there have been several initiatives and activities geared towards building and maintaining the forest products workforce, such as providing recruitment and training services to Irving for their new Ashland mill and support for other community college training programs. The Partnership has also been heavily engaged in the legislative arena, including engaging policy representatives and advocating for legislation that bolsters the forest products sector, such as the Diesel Tax Elimination for Forestry bill and the Maine Biomass Power Purchase bill that helped save two plants and hundreds of forestry jobs. The Partnership is also active in the Maine Forest Economic Growth Initiative that resulted from the federal Economic Development Assessment Team process around addressing the critical issues related to losses in the sector statewide.

Diversification and expansion in the agriculture and food manufacturing sectors

Agriculture in the County has always been a key economic driver and the Partnership has been active in promoting investment and diversification in the sector. In 2012, the Partnership formed the Diversified Agriculture Working Group to identify opportunities for sector growth. The sector has experienced significant investments in recent years in both expansion and new production operations that are estimated at over \$30 million resulting in strong employment growth. The largest of these investments was the \$20+ million expansion of Pineland Farms that resulted in close to 75 new jobs in the County and leading to the eventual purchase by Bob Evans and most recently purchased by Post Holdings. The Partnership assisted Naturally Potatoes with tax financing support leading to investments of \$8.5 million. Other major investments in the County were the establishment and rapid expansion of Maine Malt House and the expansion and new market diversification by Jay LaJoie Growers.

The Maine Potato Board has directed focus towards diversification and growers are already working to identify new markets and emerging areas of demand. These include increased consumer focus on organic food and identifying opportunities to diversify nontraditional crops and animal protein to meet market demands in metropolitan population centers in Boston and southern New England. The Partnership also participated in the Maine Food Strategy Steering Committee that has raised awareness of more than 250,000 acres of underutilized land in the County for future expansion. The County has a long history in agriculture and it is encouraging to see opportunities to build on historical strengths to meet evolving consumer demands.

Capitalizing on renewable energy potential and improvements in regional energy infrastructure

One of the major assets in Aroostook County is an abundance of renewable energy in the forms of woody biomass, wind, and solar resources. The Partnership has been busy promoting biomass opportunities in the region through business and public education activities which have led to over 20 major industrial conversions to biomass use and thousands of residential installations of pellet stoves and boilers. Recent biomass investments in the region have eclipsed \$20 million in an industry closely tied with the region's forest economy. In addition, the Partnership was directly responsible for working with state policymakers in Augusta to change rules allowing for Compressed Natural Gas (CNG) to be supplied to the County, resulting in millions of dollars in fuel cost savings for hospitals and manufacturers that converted. Likewise,

promotion of heat pump technologies have resulted in thousands of new installations leading to significant residential and business energy cost savings.

Aroostook County has great wind and solar resource availability and there have been several notable successes in this space with assistance from the Partnership, including the Oakfield Wind project and investments in infrastructure upgrades and solar projects totaling upwards of \$500 million in investments, with the potential for \$2 to \$4 billion more of additional development in the future. Several projects have been planned in recent years that include over \$1 billion in investments, such as large commercial scale wind energy projects in the #9 Mountain, King Pine, and Horse Mountain Wind projects. Likewise a major transmission infrastructure project that would deliver renewable power to southern New England named the Maine Renewable Energy Interchange (Maine REI) has been planned and includes hundreds of millions of dollars of investment in the region. More recently, \$90 million of investments in new and upgraded electric grid improvements have been made by Emera Maine.

Investment and expansion in regional manufacturing

The County is also rich in other manufacturing outside of the forest product and food manufacturing sectors. Partnership activities have helped catalyze over \$25 million in investment and expansion resulting in close to 100 new jobs throughout the County, including at CAM Manufacturing, Porvair, S&W, ACME Monaco, and Bison Pumps.

Bolstering regional tourism

One of the initial priorities of the partnership was to attract and establish a tourism resort in the County that was badly needed. Efforts by the Partnership helped to bring a new, modern hotel to Presque Isle. This capacity enabled the County to host three Worldwide International Biathlon Championship events bringing international attention and attracting significant revenue into the County. The Partnership also recently contributed \$5,000 towards upgrading the new Aroostook County tourism map.

Retention and expansion of high paying government jobs

The federal Defense Finance & Accounting Service (DFAS) was kept from leaving the County. Instead of facing significant loss of jobs, DFAS has more than doubled its employment

base since 2006 from approximately 300 to 630 employees. These high paying jobs have contributed to over \$1.5 billion in personal earnings in the County since 2006 and has been an anchor for a strong cluster of high paying government jobs.

Education and workforce training

The workforce, in particular workers with skills in demand, is critical to any industry in the region and has been in short supply as Aroostook's population has continued to shrink. The Partnership recognizes the critical nature of this issue and has been highly active in building the education to workforce pipeline. To this end, the Partnership created the Education to Industry effort that focused on linking educational institutions with businesses to work together towards building the County's future workforce. Employment opportunities across key sectors are being promoted to high school educators and students to raise awareness of career paths for students, as well as supporting job matching through the Opportunities Aroostook website. The Partnership has supported several programs that highlights student achievements (Junior Achievement Program), job shadowing (including virtual shadowing program investments for the County's 16 high schools), and paid internships.

The Aroostook Partnership has served a vital role in helping to mobilize and organize regional assets to counter the dire demographic and economic challenges facing the County over the past decade and a half. The engagement and promotion of collaborative efforts by the Partnership have had a major, tangible impact helping to secure both private and public sector investments. The result has been hundreds of millions of dollars of investment in the County and thousands of jobs directly and indirectly supported.

Still, Aroostook County continues to face economic and demographic headwinds and there is an urgent need to rekindle that early motivation of the Partnership and collectively address the issues facing Aroostook communities. As a catalyst for rekindling momentum, the next section of this report provides an update relative to the 2003 "Tarnished Crown" report. Section II takes stock of important social and economic trends in Aroostook County over the last 15 years and identifies the issues, like the 2003 report, that are most critical to Aroostook's future economic prosperity.

Section II: Current Socioeconomic Trends in Aroostook County

The 2003 Tarnished Crown report provided a historical review of demographic and economic trends of Aroostook County over the second half of the last century and provided an outlook if trends continued. Since the 2003 report, almost 15 years have passed, as did the worst US economic downturn experienced in decades. Overall, the findings and predictions of the original report proved fairly accurate. Yet, new challenges have emerged including eroding labor force participation in middle aged workers and issues in public health, including drug addiction and increased poverty levels. This section provides an update to the Tarnished Crown report. It first begins with population and age demographic trends since the 2003 report and provides updated population forecast scenarios. This is followed by the economic implications of continued population loss and the impacts on municipal budgets and taxpayers. It then provides an update to labor force and employment trends, followed by a discussion of challenges in housing, income and poverty, and health care currently facing County residents.

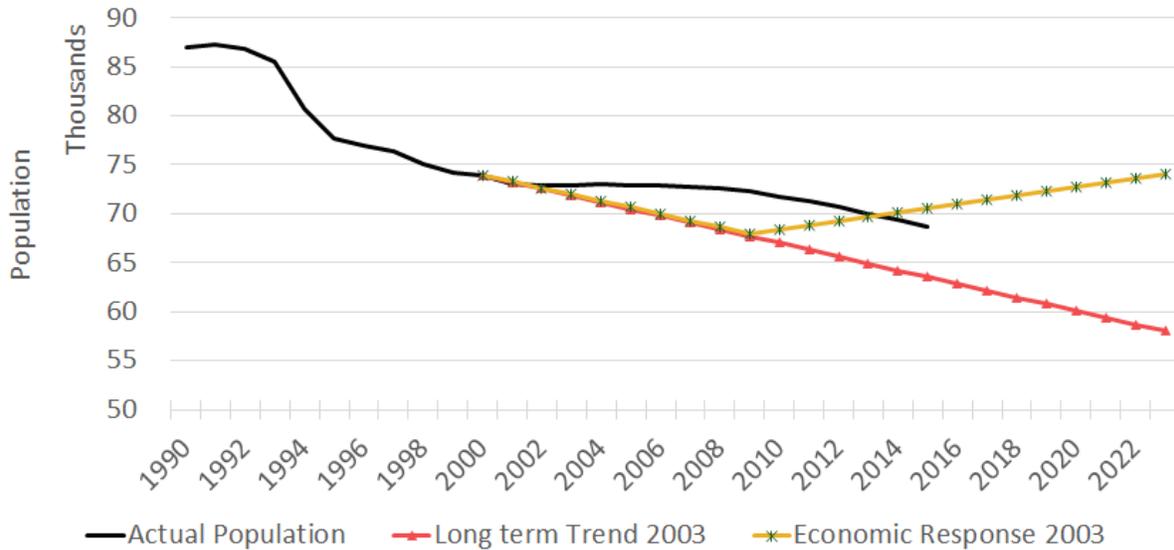
Population trends and updated forecast

Population change and its demographic components underlie a region's economic vitality. Aroostook County has long faced two population related challenges, a declining and aging population, that have persisted for several decades largely stemming from major changes in the County's industrial bases of potato farming and forestry, as well as the closure of Loring Air Force Base in the early 1990's. Since peaking in 1960 at 106,000, Aroostook's population has fallen to about 68,000 in 2016 or about 36 percent.

The 2003 report considered two scenarios for the County's demographic future. The first scenario assumed population growth to be driven by an "economic response" in which population levels in 2025 would land at or about the County's 2000 population (about 74,000). The second, more pessimistic scenario projected a continuation of "long term trends" of decline resulting in a loss of about 650 people per year leaving the 2025 population around 58,000. Both scenarios are depicted in Figure 1. The actual population trend since the 2003 report has been a mix of these scenarios (Figure 1). For most of the 2000's, steep annual declines characteristic of previous decades had slowed and population remained somewhat level from 2000 until 2009. Since 2010 out-migration and population loss has picked up, resulting in an average decline of

614 people per year through 2016 or a total of 3,700 people; a path more in line with longer-term trends.

Figure 1: Aroostook County Population and Growth Scenarios from 2003 Report



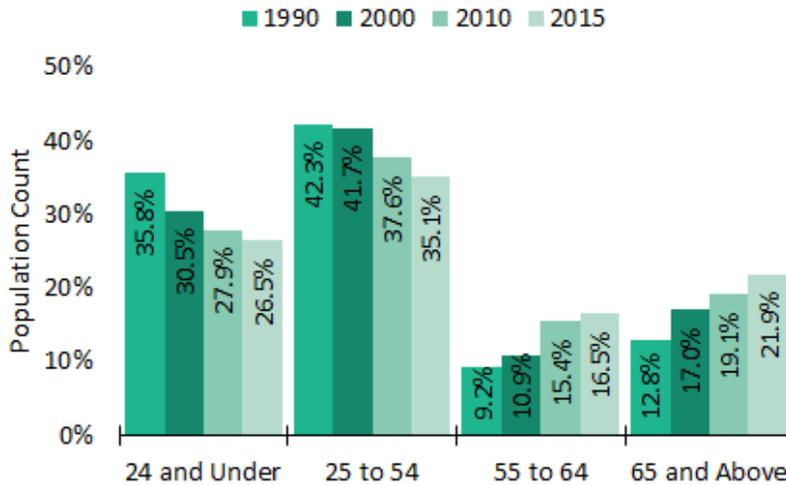
Source: U.S. Census Bureau, Population Estimates Program

Age Demographics

The second challenge facing Aroostook County is that of an aging demographic. Aroostook County’s population, like the rest of Maine, has continued to get older. Maine is now the oldest state in the nation, measured by median age at 44.5 in 2016, up from 37.6 in 2000. Although above the statewide median age, Aroostook County (47.5 in 2016) is not the oldest county in the state ranking 6th, and is far from the oldest county in the country, although it does fall within the oldest 15 percent of the country’s 3,100 counties.

Since the 1990’s the share of population aged 54 and under decreased while the share of the population ages 55 and above increased (Figure 2). As this trend continues, there will be fewer younger age population to support the labor force and tax base, as well as shrinking pools of disposable incomes and increased dependence on fixed incomes and social services, such as health care.

Figure 2: Age Distribution of Aroostook County Population

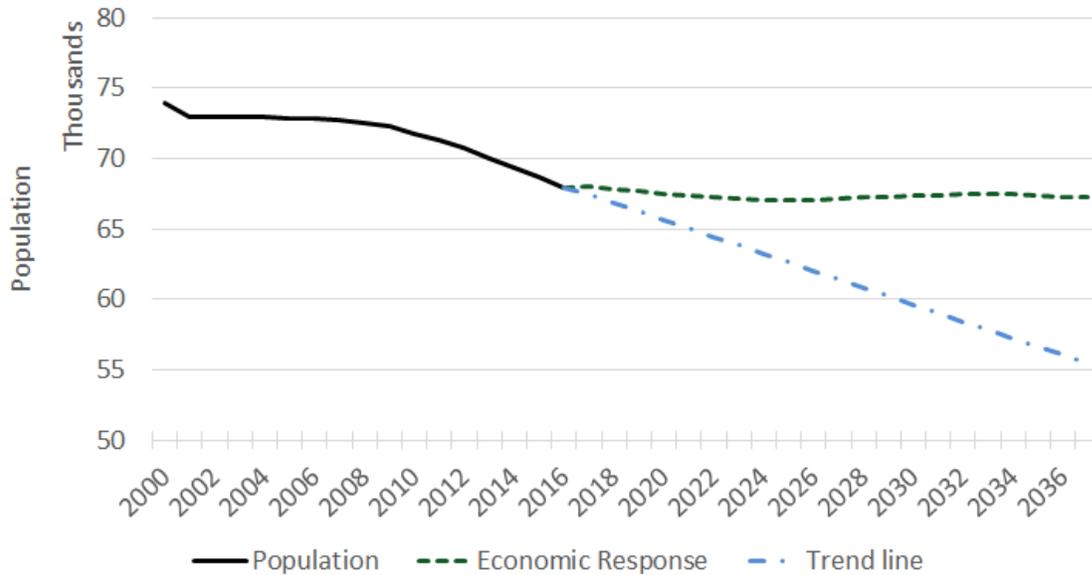


Source: U.S. Census Bureau, Decennial Census, American Community Survey (ACS)

Current population forecast

The updated forecast prepared for this report offers two scenarios based on similar projection methods as the 2003 report for the 20 year forecast period from 2017 through 2037 (Figure 3). The first scenario (the “economic response”) shows a general flattening of the population trend line that holds somewhat level through 2037. The second scenario (the “trend line”), much more pessimistic, shows the continuation of recent population decline that would result in a 20 percent loss in population over the 20 year period through 2037. It should not go without saying, this level of population loss will have widespread implications for the provision of municipal services and healthcare access. Likewise, extreme labor market shortages and higher tax rates will create very difficult environments for firms to compete.

Figure 3: Population Forecast Update, 2000-2037

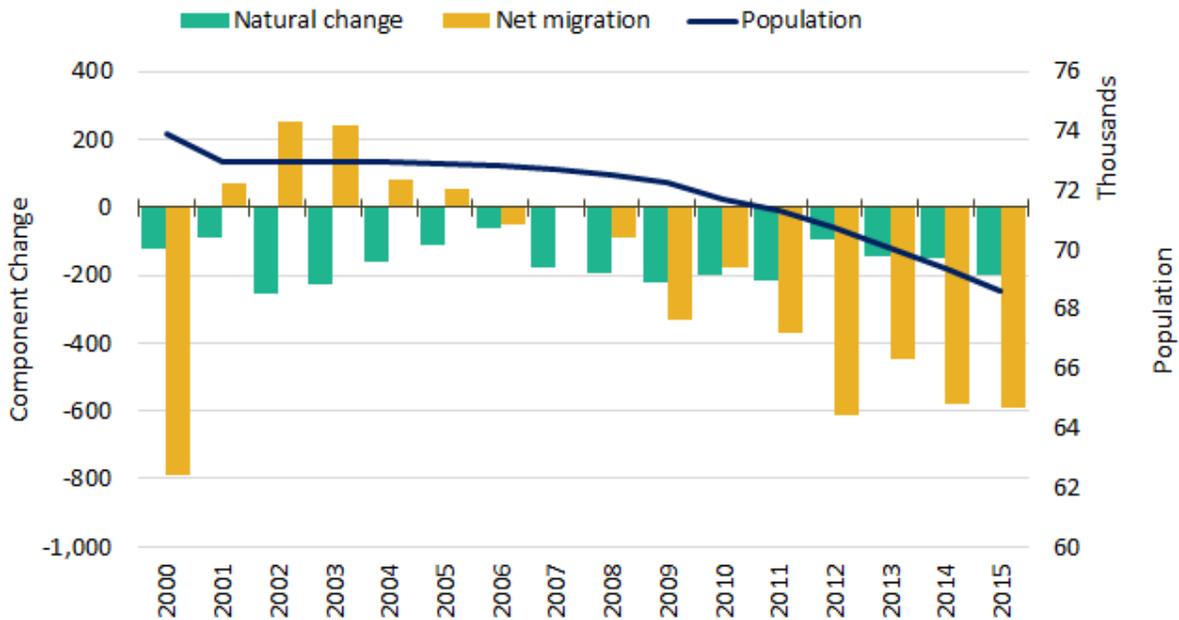


Source: U.S. Census Bureau, Population Estimates Program; Regional Economic Models Inc; author calculations

Given the current age demographics of the County, which scenario plays out will be driven almost entirely by the migration of people to and from the County. The natural population rate of change in the County is negative, meaning there are more deaths than births and given that birth rates are unlikely to increase, especially because of the older ages of the population, the fate of Aroostook County rests entirely on which direction the migration flows move (Figure 4). For the population to remain steady at current levels, at a minimum there will need to be enough in-migrants to replace the natural population loss while out-migration is brought to a standstill.

One uneasy sign is that out-migration that was prevalent in previous decades, appears to have picked up. The County has faced the issue of out-migration, particularly from youth, for decades. Although out-migration has been tempered since steep annual declines experienced in the 1990's and even positive migration in the first few years of the 2000's, rates of outmigration have picked up since the Great Recession and have averaged approximately -550 net migrants per year in the County since 2012 (Figure 4).

Figure 4: Components of Population Change, 2000 to 2015



Source: U.S. Census Bureau, Population Estimates Program. Note: 2015 most recent year available for components of change.

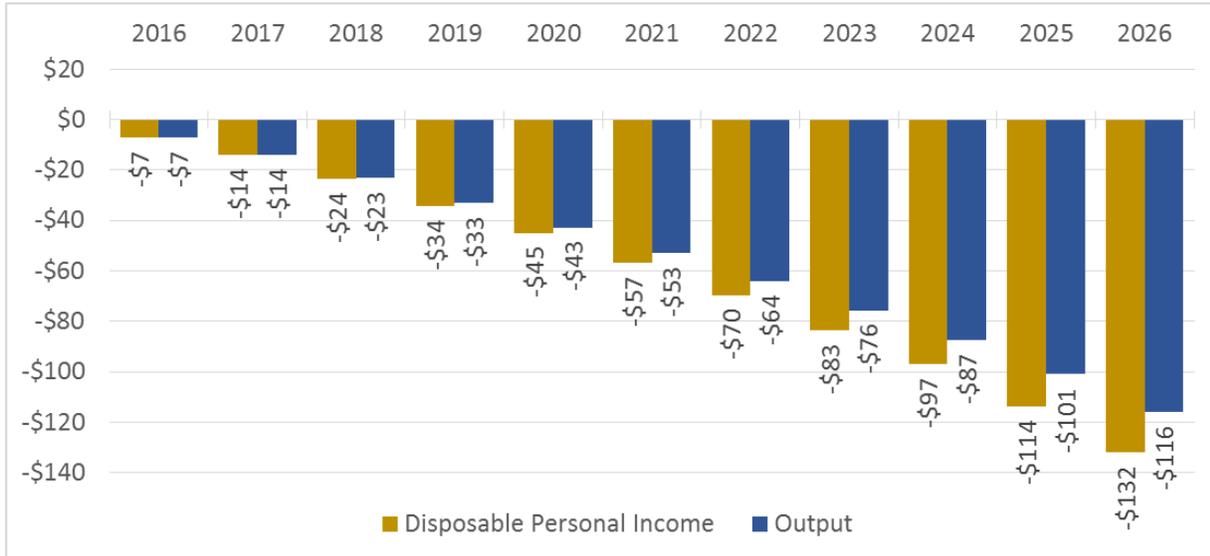
The economic implications of population loss

The economic loss of population decline is very real and translates into significant dollars for the region. Less people in Aroostook County means a smaller workforce which translates into fewer people to create output and fewer people to earn income that supports demand for local goods and services. Figure 5 shows the economic loss in total output and disposable personal income under the continuation of current trends (“trendline” scenario) compared to the “economic response” scenario, which maintains current population levels somewhat flat over the next 10 years.¹ Between 2016 and 2026, a total of \$677 million in disposable personal income and \$617 million in total output will be lost (in 2016 dollars). On average, for every 1,000 people

¹ The economic loss is estimated using an economic model of Aroostook County developed by Regional Economic Models Inc (REMI) and maintained by MCBER. The default forecast in the model is the economic response scenario. The current trendline population forecast is simulated and compared to the economic response baseline. The economic differences between the scenarios is the ‘impact’. Note that these estimates do not account for population differences in specific age cohorts, such as a greater proportion of population decline may be in younger and middle-aged cohorts that comprise a larger share of the labor force. It models an overall decline in population. Given that most outmigration from the County has been in younger, working aged cohorts, the numbers presented here may likely *underestimate* the economic impact.

the region loses a total of \$22 million in disposable personal income and \$20 million in total output per year.²

Figure 5: The Impacts of Population Loss on Total Output and Disposable Personal Income, 2016-2026



Source: Maine Center for Business and Economic Research estimation using REMI economic models. Underlying data is based upon US Census and Bureau of Economic Analysis accounts.

Local government and public services

Smaller and declining populations mean less people to spread the costs of municipal infrastructure and governments at the same levels of service across administrative units. There is a disproportionate amount of governmental units in Aroostook County relative to the population compared to the rest of the state, and it appears to be growing. In 2000 there were approximately 1 unit of municipal government for every 1,300 people. Today that ratio is closer to 1 unit of government for every 1,000 people in the county. Since 2002, the share of the County’s population to the state’s slightly decreased by 1 percent yet the portion of total local government increased by 3 percent.

² These figures can be used as an approximation to estimate past economic loss from population decline as well. Modeling historical impacts of population loss is beyond the scope and effort of this analysis.

Total municipal commitments (budgets) have increased by 34 percent on average across the County between 2005 and 2015, similar to other counties in the state, though actual increases in municipal spending is closer to 14 percent when adjusting for inflation. Most municipal spending is supported through property tax revenues generated by locales. On the whole, taxpayers are paying more for municipal services in the County, though it is difficult to assess strictly through changes in municipal property valuations and adjustments to mill rates. Still, both mill rates and valuations have increased in most municipalities in the County between 2005 and 2015. This is to be expected. However, the loss of population means there are less people living in the county to contribute to the tax base and funding municipal services and commitments are spread across fewer people. In addition, the decline in federal support and state cost sharing have placed higher tax burdens on local taxpayers to support these services.

Education funding

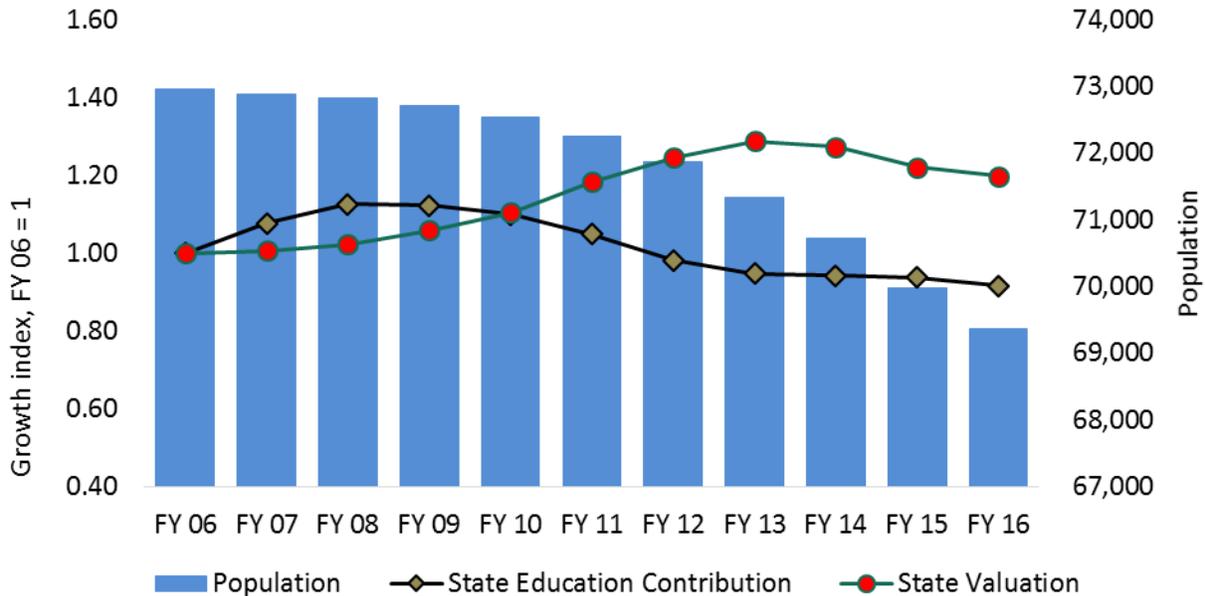
Education funding in particular has been a major challenge as populations have decreased. Today schools in Aroostook County, as well as statewide, continue to struggle with shrinking budgets and declining student populations. There are 20 percent less school aged students enrolled in County public schools in 2016 than there were in 2001. In 2001, the County's public school system had approximately 12,100 school aged children enrolled. As of October 2016, K-12 public enrollments totaled 9,400; a decrease of 29 percent. Meanwhile costs for building maintenance, heating, and teacher salaries remain relatively fixed, thus costing more on a per student basis. Funding for schools is based on a combination of state and local funding which has shifted over the years placing a greater burden on the local tax base.

The formula to determine public school education funding is somewhat complicated and based on a number of factors.³ However, the recent trend has been a shift of the education cost burden from state to local sources. Figure 6 illustrates how the total population has declined in Aroostook County and has been accompanied by a decrease in state cost sharing and increased valuation, representing a shift of costs to taxpayers in the education funding scheme. This shift is

³ The state makes a contribution (55 percent by law) while local districts make up the remainder. An annual full-value education mill rate is set to limit a municipality's required local contribution to education funding.³ The full-value education mill rate is used to determine a municipality's local cost share expectation and represents the minimum expected property tax rate for education which is in turn based on the state valuation. School districts must raise local funds based on that number if they want the full subsidy from the state.

not unique to Aroostook and occurred statewide under the current administration. However, the decline in population made these impacts more severe on Aroostook County taxpayers.

Figure 6: Education State and Local Funding Trends, 2006-2016



Source: Maine Revenue Services; Department of Education; US Census, Population estimates. Values in 2016 \$'s.

This means communities are forced to raise more tax revenues through property tax increases or decrease the levels of service, which oftentimes are not an option. Based on the total municipal commitment of all towns and cities in the County (excluding the UT) 39 percent of the total budget was spent on education for the 2006-07 school year which rose to 43 percent for the 2015-16 school year.⁴

One of the key recommendations in the 2003 report was for communities to engage in discussions around consolidation of education and municipal services. It appears little headway has been made on these complicated issues since. If current population trends continue, pressures on taxpayers will only increase while quality of local services, particularly regarding education, will deteriorate. There simply are inefficiencies due to the level of scale in order to sustain the

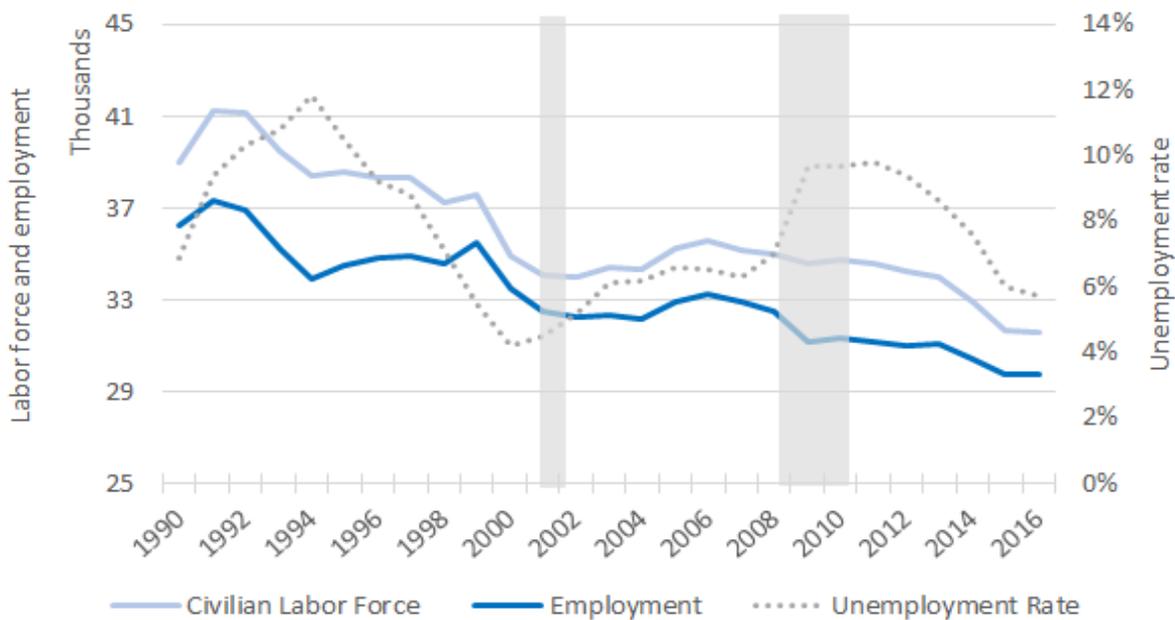
⁴ The estimated percent of budget spent on education funding for Aroostook County as a whole is calculated by dividing the total local contribution by the total municipal commitment.

same level of services for a population two-thirds of what it was a generation ago. The failure to address these issues will only lead to exacerbating the continued outward march of population.

Labor force and employment

Following population trends in the County, employment levels have been on a slow decline over the last 10 years following a brief increase in the middle of the last decade (Figure 7). The County is still almost 3,000 jobs below the pre-Great Recession high point in 2008 after almost 7 years of recovery. The unemployment rate peaked at just under 10 percent just following the end of the recession and has since fallen steadily approaching the low unemployment rates reached in 2000. As of 2016 it sat at 5.7 percent, still above the statewide rate (3.9 percent) and national rates (4.9 percent). However, the declines in the unemployment rate have been driven largely by a decline in the size of the labor force rather than more people finding work.

Figure 7: Labor Force Trends in Aroostook County



Source: Maine Department of Labor, CWRI. Note: Shaded areas are recessions.

An aging, steadily declining population coupled with the declining rate of residents participating in the labor force has resulted in sluggish labor force growth over the last sixteen years, and will likely continue to shrink the labor force, particularly as the youngest Baby

Boomers reach 65 in 2029. The result will be a significant replacement gap in the number of workers available to replace retirees reaching close to 10,000 over the next 10 years, if current trends were to continue. This will prove to be a major challenge for businesses if realized.

Some of this gap can be mitigated by increased labor force participation. However, labor force participation rates overall have been falling for the last decade, dropping to 56.7 percent in 2015, down from 58.6 percent in 2000 (Table 1).⁵ This compares to the statewide labor force participation rate of 63.4 in 2015. There has been a slight increase in participation among older adults (55+), although this has been insufficient to counter the overarching story with labor force participation.

Table 1: Labor Force Participation Rates by Age for Population 16+, 2010 and 2015

Age Cohort	Population			LF Participation Rate		
	2000	2015	Difference	2000	2015	Difference
16 to 19 years	4,324	3,576	-748	51.8%	49.1%	-2.7%
20 to 24 years	3,782	3,754	-28	75.8%	76.8%	1.0%
25 to 44 years	19,538	14,659	-4,879	80.9%	79.8%	-1.1%
45 to 54 years	11,297	10,700	-597	74.6%	73.3%	-1.3%
55 to 64 years	8,066	11,303	3,237	50.9%	60.5%	9.6%
65 to 74 years	6,866	7,939	1,073	17.5%	22.8%	5.3%
75 year and over	5,672	6,549	877	3.9%	4.9%	1.0%
Total 16 +	59,545	58,480	-1,065	58.6%	56.7%	-1.9%

Source: US Census, American Community Survey (2015 5-yr estimates); Decennial Census

The primary driver of the decline has been the drop of participation rates of prime working age adults (25 to 44 years) from 80.9 percent to 79.8 percent. This is reflective of a longer term trend in labor force participation rates in which middle aged adults, particularly males without a college degree, have been dropping out of the labor force; a trend not unique to the County but imposing a greater burden on the County’s workforce and economy. The loss of jobs and industry requiring less than a college degree that at one time provided a path to middle income wages have left many workers frustrated and displaced (Table 2). Middle aged workers with a high school degree or less have participation rates well below the county average. Efforts

⁵ More recent preliminary estimates for 2016 suggest the rate may have dipped even further to 53.1 percent, however these data are subject to a larger margin of error than the 2015 estimates.

to retrain and attract middle aged workers back into the workforce will be critical to address future labor market shortages.

Table 2: Labor Force Participation Rates by Ed Attainment, Population 25-64

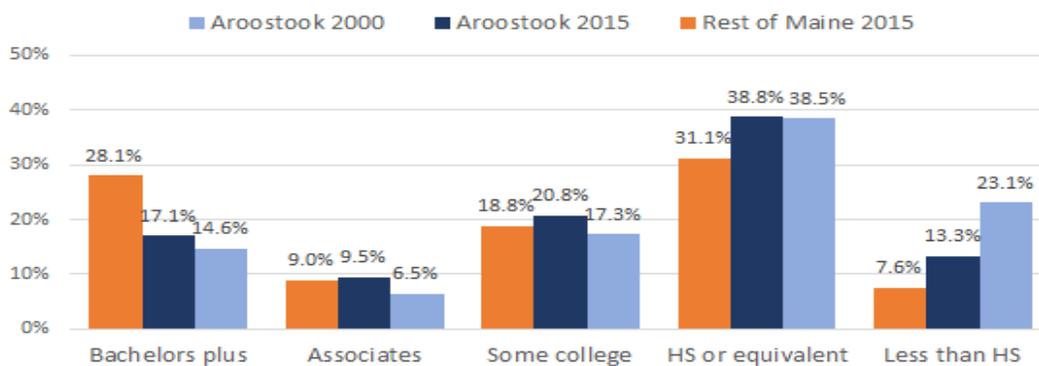
Ed attain level	Total Number		Labor Force Participation	
	Aroostook	Maine	US	
Less than high school	2,918	43.1%	50.2%	60.6%
High school or equiv	14,207	66.8%	72.8%	72.9%
Some college or associate's	12,563	76.9%	79.9%	79.2%
Bachelor's or higher	6,974	85.5%	87.1%	86.0%
Total	36,662	71.9%	78.0%	77.5%

Source: US Census, American Community Survey (2015 5-yr est)

Educational attainment and workforce skills

There has been great progress, however, with improvements in education levels in the County. Since 2000, educational attainment levels have been increasing (Figure 8). The share of population with less than a high school diploma dropped by almost 10 percent, while the share with greater than a high school degree increased across all degree levels, especially across degree types often referred to as ‘middle skills’ (Figure 8). This has important implications for not only labor force participation, but for regional economic competitiveness in general, as the overall economy shifts to activities that demand different skill sets and higher levels of former training than were once demanded of the workforce. Data limits us from determining which age cohorts upskilling is likely occurring. However, efforts to promote education stemming from the Partnership likely had an impact in this area. Still there is more work to do.

Figure 8: Educational Attainment for Population 25+ in Aroostook County, 2015



Source: US Census, American Community Survey (2015 5-yr estimates)

Economy

The largest employment sector in Aroostook County is in Government, which includes state and local as well as federal jobs, which have proven to be a significant boost to the region. Although government jobs overall have been somewhat level since 2001, federal government jobs have grown by 21 percent from 2001 to 2016 and pay average annual earnings (\$80,042) that are almost twice the regional average. Health care and social assistance, followed by retail trade, manufacturing, and crop and animal production (agriculture and forestry) continue to be the largest private sector sources of jobs (Table 3). These 4 sectors in addition to government employ 2 out of every 3 workers in the County. These sectors all have high concentrations in the region relative to the state as indicated by location quotients with values higher than 1.20. Transportation and warehousing is also slightly more concentrated in the County than the state.

Table 3: Sector Employment, Growth, and Earnings in Aroostook County

Sector	2016 Jobs	2001- 2016 % Change	Location Quotient	Avg. Earnings Per Job
Government	6,272	(3%)	1.31	\$57,295
Health Care & Social Assistance	5,482	(2%)	1.40	\$46,932
Retail Trade	4,109	(9%)	1.27	\$28,985
Manufacturing	2,945	(30%)	1.19	\$57,649
Crop & Animal Production	2,212	5%	5.74	\$35,450
Accommodation & Food Services	2,013	4%	0.76	\$16,655
Transportation & Warehousing	1,296	(2%)	1.22	\$46,540
Construction	1,290	(7%)	0.77	\$36,785
Other Services (except Public Administration)	1,221	(8%)	0.81	\$20,048
Finance & Insurance	785	(23%)	0.65	\$55,323
Admin. Support & Waste Mgmt & Remediation Svs.	783	(15%)	0.40	\$24,919
Wholesale Trade	714	7%	0.60	\$51,286
Professional, Scientific & Technical Services	487	(12%)	0.24	\$48,636
Information	458	(61%)	0.79	\$43,522
Educational Services	310	12%	0.39	\$37,351
Real Estate & Rental & Leasing	305	(9%)	0.60	\$33,094
Management of Companies & Enterprises	250	(14%)	0.57	\$52,434
Arts, Entertainment, & Recreation	157	19%	0.30	\$15,817
Utilities	103	151%	0.93	\$102,125

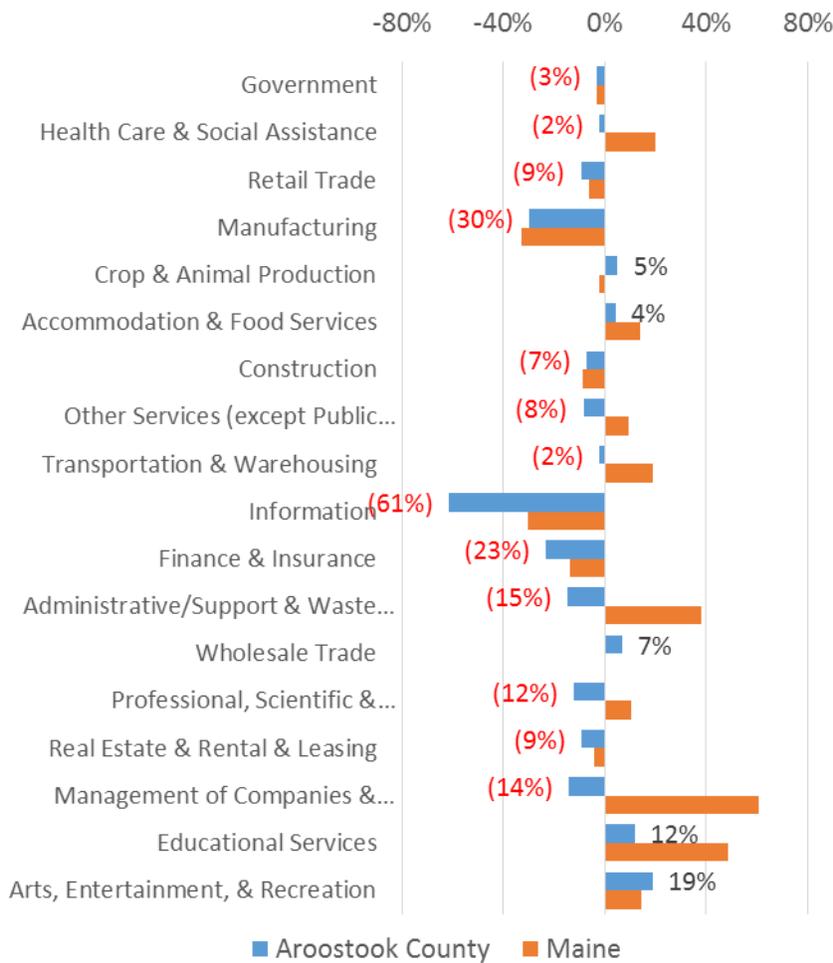
Source: Economic Modeling Specialists Inc. (EMSI), 2017.2 dataserries. Location quotients are a measure of concentration of an industry compared to a reference region, in this case the state of Maine. A value greater than 1.2 indicates greater concentration, while a value below .8 means under concentration.

Most sectors experienced employment declines from 2001 through 2016 with manufacturing hit most severely, although not as steep as statewide losses (Figure 9). Economic data shows that the bulk of these losses occurred between 2001 and 2009 in the paper and wood product manufacturing sector, after which employment levels have come back up slightly, likely due in part to investments and support through the Northern Forest Cluster and the Aroostook Partnership.

The finance and insurance and information sectors, although not necessarily the largest employment sectors, also experienced significant drops between 2001 and 2016 declining by 23 percent and 63 percent respectively (Table 3; Figure 9). However, despite significant losses in agriculture in previous decades, the crop production *subsector* has shown strong growth (18 percent) over the last 15 years with expansion efforts at businesses such as Pineland Farms and Smith Farms, and new businesses open such as Maine Malt House that have rapidly expanded to meet the demand of local Maine craft beer. Still the number of farms continues to decrease, while the average farm size continues to increase signaling continued consolidation in the agriculture sector.

Worker earnings in Aroostook County remain below statewide and national averages across all sectors, though earnings vary significantly across sector and skill demands (Table 3). This presents challenges in attracting and retaining workers, especially younger workers, from seeking higher paying jobs in southern Maine or elsewhere. There is no easy cure for this. Eventually earnings paid by firms in Aroostook will need to rise in order to be more competitive for workers, particularly as the labor force continues to shrink. Still, higher compensation means higher costs for businesses, which in some sectors may threaten the survival of firms, especially ones that do not currently have a strong competitive advantage in the region.

Figure 9: Sector Employment Growth Rates in Aroostook and Maine, 2001-2016



Source: Economic Modeling Specialists Inc. (EMSI), 2017.2 dataseries. Growth rates for Aroostook correspond with those shown in Table 3.

Income and poverty

Income levels, by several measures, have consistently been lower than the state or nation, in part due to the rural nature and industrial composition of the County. Between 2000 and 2015, median household income increased in Aroostook County keeping pace with the nation but below the rest of Maine (Table 4). However, alternative measures of income, median family income and per capita income, grew faster than both the state and nation since 2000.

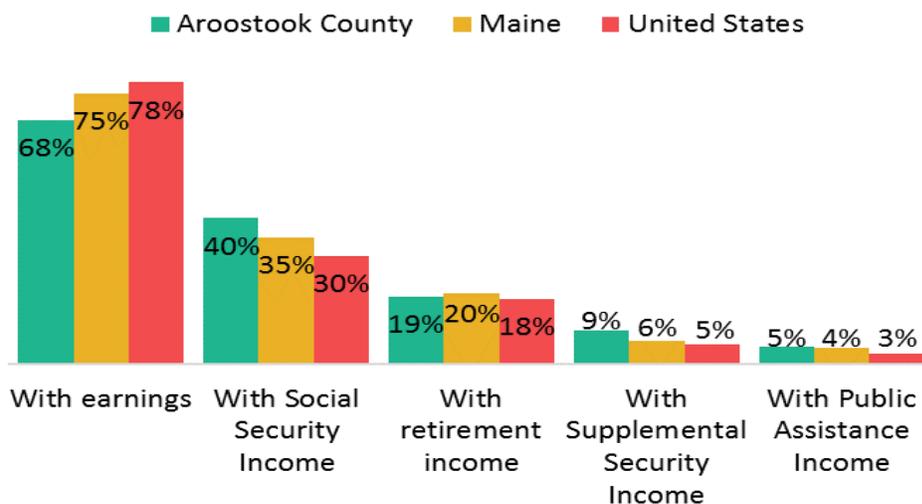
Table 4: Median Household, Median Family, and Per Capita Income, 2000 and 2015

	Aroostook		
	County	Maine	United States
Median Household			
2000	\$28,837	\$37,240	\$41,994
2015	\$36,923	\$49,331	\$53,889
Percent Change	28.0%	32.5%	28.3%
Median Family			
2000	\$36,044	\$45,179	\$50,046
2015	\$50,246	\$62,279	\$66,011
Percent Change	39.4%	37.8%	31.9%
Per Capita			
2000	\$15,033	\$19,533	\$21,587
2015	\$21,763	\$27,655	\$28,930
Percent Change	44.8%	41.6%	34.0%

Source: U.S. Census, 2000 Decennial Census and ACS. In nominal values.

An important issue for Aroostook County is how much income is generated from within the County compared to how much comes in from outside, such as from government sources (i.e. social security and other social insurance incomes). Since 2000, there has been an increase in social security, retirement, and supplemental security income, and decreases in earnings and public assistance income, all of which reflect the County’s aging population. Income sources are shown in Figure 10 for 2015.

Figure 10: Types of Income Earned, 2015



Source: U.S. Census, ACS (2015 5yr est)

As might be expected from lower incomes and increased dependence on social assistance, the share of population living below the poverty level has increased since 2000 in Aroostook County, though this also follows trends in Maine and the United States more broadly. In 2015, the poverty rate in Aroostook County was 18.4 percent, up from 14.3 percent of the population in 2000 and exceeding rates at the state (13.4 percent) and national level (13.5 percent). These reflect rates 4 full percentage points higher than 2000 levels in Aroostook County, well above increases at the state and national level. A good chunk of the increase in poverty rates and increased government assistance can be explained by older populations and from the Great Recession, which has hit rural areas particularly hard and have yet to fully recover from the economic downturn.

Housing

Median housing values in the County have increased by 11 percent to \$94,800 since 2000; a larger increase than the US (5.2 percent) but much less than the state as a whole (24 percent). The total number of housing units increased in the County by just 2 percent since 2000 compared to the state which increased its number of housing units by 5 times as fast, most of which was in southern Maine. Like many rural regions of the country, Aroostook county has an aging housing stock and is in fact the oldest in Maine. According to the Partnership, the increasing number of dilapidated homes that need to be demolished is on the rise yet there are insufficient municipal funds to accomplish the task. This trend will continue as the population ages and if the population continues to decline, municipalities will need to look for ways to address this challenge.

Health care

A healthy population is fundamental to economic productivity and overall community well-being. On the other hand, an unhealthy population can pose much higher costs onto communities, workers, employers and local services which can in turn have any number of compounding indirect consequences.

Over 80 percent of Aroostook County's population live in rural areas which traditionally have faced challenges in the delivery and access of healthcare and as a result typically experience poorer levels of overall health. According to the 2016 report by the Maine Rural

Health Research Center (MRHRC), the population of Aroostook County is less healthy than the state as a whole, by several measures. Health challenges in the County include higher than average adult obesity rates, chronic bronchitis and emphysema (COPD diagnoses and hospitalizations), diabetes prevalence, hospitalizations and emergency department visits due to diabetes, hypertension prevalence, hospitalization due to hypertension, and lower rates of physical activity.⁶

Critical to maintaining a healthy population is timely, appropriate, high-quality and regular access to health care and preventive health services. However, access to quality health care can be limited by the location of and distance to health services, availability of transportation and the cost of obtaining the services. Roughly 90 percent of residents in the County had health insurance over the period from 2011-2015. Of those insured, Aroostook County had the fourth highest percentage of individuals with public (Medicare, VA, or Medicaid) insurance coverage, and more VA facilities per capita than the statewide average. Having access to health insurance does not guarantee access to care. County adults with health insurance were more likely to have foregone needed medical care due to cost-related barriers and lacked a personal doctor or healthcare provider over the past year, compared to the state as a whole.⁷

Aging and shrinking populations, coupled with rapidly rising costs are further straining healthcare infrastructure. While older populations increase healthcare demands, a shrinking population means smaller scale to support keeping services in location. Rapidly rising costs of healthcare have exacerbated these challenges and are creating an urgent need to rethink the delivery of healthcare services and the overall system. However, recent proposals at the federal level pose grave threats to the County's healthcare infrastructure and would likely have a dramatic negative impact on health care delivery in the years ahead.

This could have significant implications for the economy as well. Health care is an important economic sector in Aroostook County. The healthcare sector employs upwards of 19 percent of all workers, while wages in the healthcare sector are 15 percent higher than the countywide average wage.

⁶ Kahn-Troster S, Burgess A, Coburn A, et al. Maine Rural Health Profiles. Portland, ME: University of Southern Maine, Muskie School, Maine Rural Health Research Center; September, 2016.

⁷ *Ibid.*

Substance abuse and addiction

One other major change in the public health space since 2003 has been the rapid rise of opioid abuse and addiction epidemics, as well as the spread of methamphetamines, which presents major implications for communities both in the short and long term. While the problem has hit all areas of the state and much of the country, rural areas have been hit particularly hard in recent years due to rising rates of poverty and unemployment, two key community-level risk factors for addiction. Additionally, receiving treatment for addiction is harder in rural communities because there is limited access to medications that help treat addiction, and a lack of accessibility, including a shortage of medical professionals available to prescribe and administer them. However, Aroostook County has fared far better than other parts of the state where the epidemic is much more severe. Based on data from the Maine Drug Enforcement Agency, heroin arrests in the County were 2.9 per 100,000, one of the lowest in the state and well below the state average of 10.2 between 2012 and 2014, while deaths from heroin and other synthetic opioids was just .6 per 100,000 people between 2009 and 2015. Aroostook County had a rate of 8.7 drug affected babies for 10,000 whereas the statewide average was 6.7 per 10,000 for 2010-14.

While the short term implications of the opioid addiction are coming to light, the longer term challenges are not yet known. Addiction, especially to opioids, is often a lifelong battle and will almost certainly pose greater social costs to communities, as well as the economy through lower worker productivity. It will remain important for communities to be vigilant in making sure this crisis does not take a strong hold in Aroostook County including education programs and helping to improve economic conditions for residents.

Energy and broadband infrastructure challenges

Two infrastructure issues present serious potential challenges for the region's economy. The first issue relates to energy infrastructure. While upgrades to old transmission infrastructure are badly needed and currently being aggressively invested in, this has resulted in significant transmission cost increases (energy export fees for the region's two biomass facilities who, as a result have suffered operating losses, have submitted an 'intent to close' by the fall of 2018.

If one or both biomass facilities close, there are two potential ramifications. First, about \$3.5 million in transmission costs approved by the Public Utilities Commission (PUC) would

have to be reallocated to other companies in the County, raising operating costs as a result and posing additional barriers to reinvestment and expansion. Second, biomass plants serve as important outlets for biomass residuals which account for upwards of 8 percent of revenues for mills and plants. Without an outlet, plants and mills would have additional costs for the removal of the residuals causing negative ripples down the supply chain and further challenge the County's forest economy. A solution to this issue will need to address reducing the costs of annual transmission and reallocation of some charges throughout the regional customer base to reduce sector specific impacts. This would also entail finding ways to reduce energy export fees or "wheeling costs" of the biomass facilities given their integration with the broader forest economy sectors that are vital to Aroostook. A full impact assessment would be a useful tool to understand ways to balance the needs of upgrading critical infrastructure and minimizing impacts to the forest economy and overall business competitiveness.

The second critical infrastructure challenge was highlighted extensively in the 2003 Tarnished Crown report but warrants reemphasis here. Much like roads and electricity were the backbone of commerce in the industrial era, competitiveness in the modern global economy rests on the flow of information and connectivity to markets, jobs, and people. While much progress has been made in the state over the past two decades to improve connectivity, a significant part still remains unconnected and speeds of connectivity are at the bare minimum. Capital requirements of broadband build out are enormous particularly across an area the size of Aroostook County and the state. This is made more challenging by the low density of population and shrinking customer base. However, there are demonstrated models of broadband development through the use of cooperative arrangements, both in Maine and across the US, which could serve as examples of how fast, reliable broadband service could be implemented or upgraded in key areas of the County.

Conclusion and the Way Ahead

The recent successes of the Partnership and County stakeholders provide great opportunities to build on going forward. However, it is clear from the update in this report that there is still much to be done to address the looming challenges facing the County. Ultimately the challenges of the County are rooted in the demographic prospects, not unlike those faced by rural regions everywhere. Certainly, progress has been made on this front, with improvements in educational attainment levels and avoiding past trends of population loss. Still, the population and workforce continues to age and ultimately decline without sufficient immigration and retention of the younger generations. These challenges are not news, but creative strategies to address them must be. Today's economic fortunes are driven largely by global forces, an economic structure that is not likely to change anytime in the foreseeable future. The County must find new ways to differentiate itself and appeal to younger populations. Part of that rests on creating and catalyzing new investments in economic opportunities that include connecting to economies outside of Aroostook County. But part of the strategy must also address workforce and community challenges that lead to more skilled and productive lives.

Over the last several decades, global economic pressures have not been favorable to the traditional industries and ways of life that once fueled Aroostook County's growth. Big problems call for big solutions. For regions like Aroostook County to succeed in the global economy, they need to leverage their most important asset; their people. It is clear that intentional, widespread collaborative efforts can have a major impact. Much motivation was generated upon the initial formation of the Aroostook Partnership. It is time to rekindle that early motivation and come together to think new and to think bold.