

Auburn's Local Economy: Agriculture, Forestry, and Housing



DATA BOOK

Prepared for the
Ad Hoc Committee, City of Auburn, Maine
Agriculture and Resource Protection Zone (ARPZ)

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Table of Contents

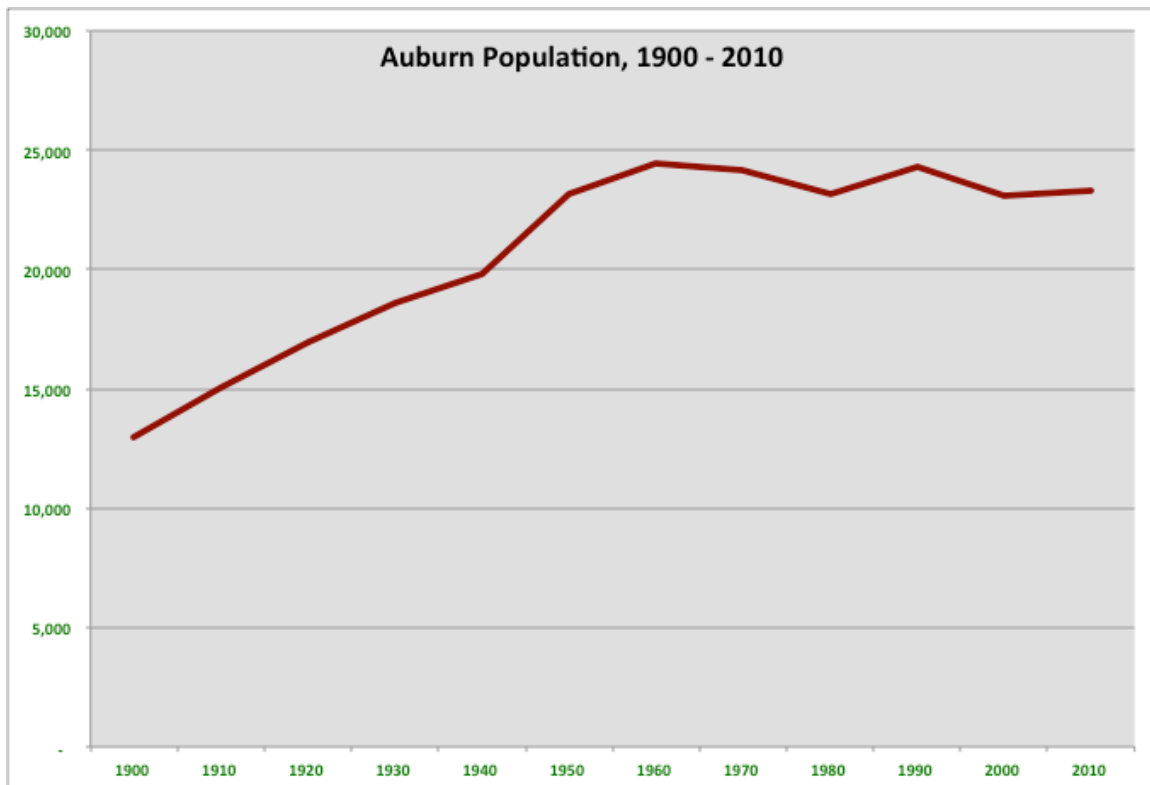
AUBURN HAS A STEADY STATE ECONOMY	3
HOUSEHOLD INCOME AND EMPLOYMENT IN AUBURN	7
AUBURN’S HOUSING MARKET	10
ECONOMIC CONDITIONS IN ANDROSCOGGIN COUNTY	17
EMPLOYMENT AND INCOME IN THE COUNTY	18
KEY INDUSTRIES IN ANDROSCOGGIN COUNTY	23
THE COUNTY’S FARM ECONOMY	29
CONSUMER MARKETS FOR FOOD	40
SNAP RECIPIENTS IN AUBURN	40
AUBURN’S FOREST ECONOMY	42
MAINE’S FOREST ECONOMY	45
ADDITIONAL RESOURCE BASED LAND USE	47
MINERAL EXTRACTION, MINING, AND GRAVEL PITS	48
RECREATION USES	48
TOURISM	49
HISTORICAL PERSPECTIVE	50
WORKS CITED	51

Auburn Has a Steady State Economy

Auburn features an excellent example of a “steady state” local economy. That is to say, the City features a stable set of industries that are not changing greatly, at least at this time. The same could be said about Androscoggin County as a whole.

The population of Auburn peaked in 1960 at 24,449, just before the Agricultural Zone Ordinance was passed, as Chart 1 below shows. It has fallen slowly ever since, and now stands at 22,943.

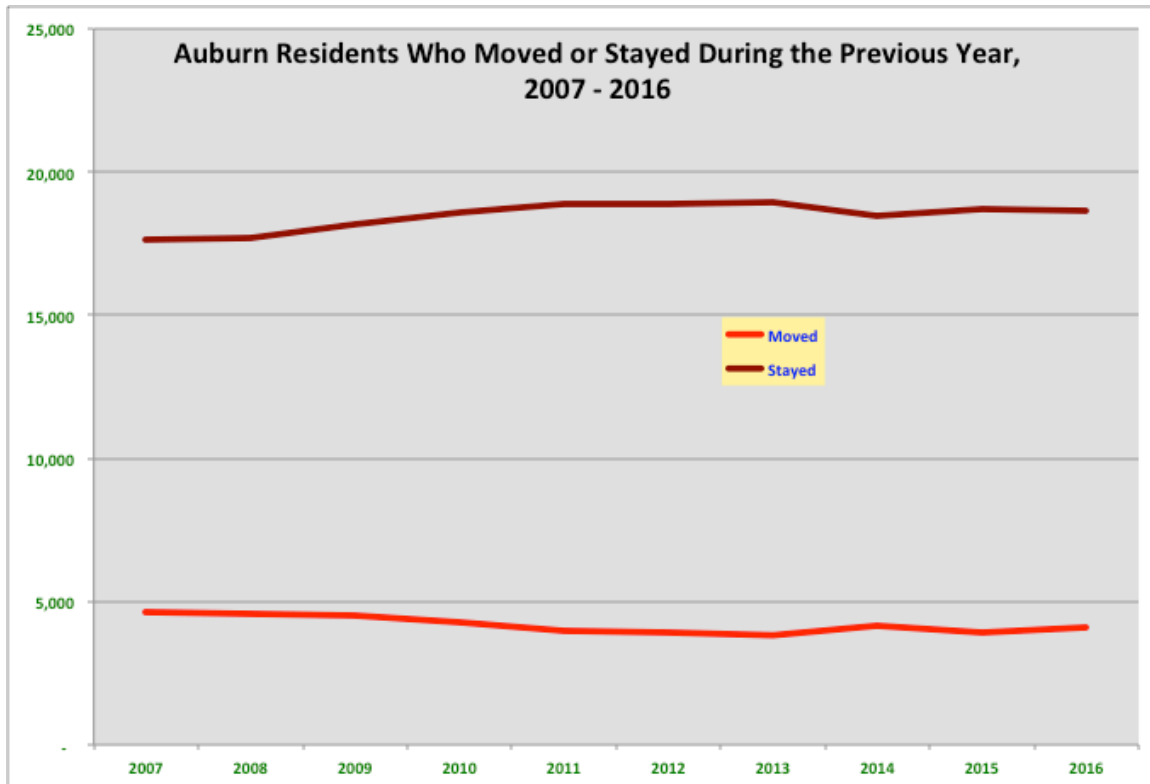
Chart 1: Population in Auburn, Maine, 1900 – 2010



Source: Federal Census

The stability of the City population is reflected in mobility patterns for Auburn residents. Most (82%) remain in their current home, while nearly one in five (18%) moves in a given year. The number of Auburn residents who choose to stay has increased slowly over the past decade, while the number that choose to move has fallen slightly. This is shown in Chart 2 below.

Chart 2: Auburn Residents Who Moved or Stayed During the Previous Year, 2007 - 2016

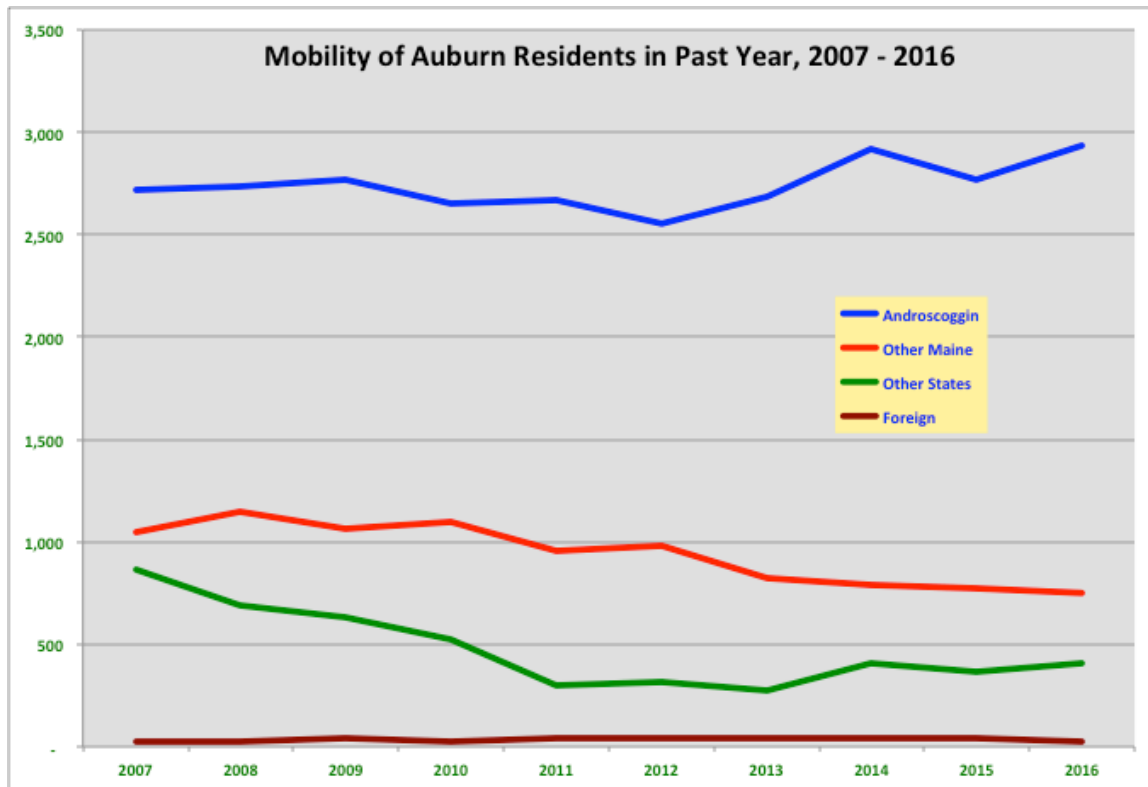


Source: Federal Census. Note that these data cover Auburn residents age 1 or older.

Perhaps even more telling, as Chart 3 shows, most of those who relocate to Auburn come from somewhere else in Androscoggin County, often moving within the City itself. The number of residents moving to Auburn from elsewhere in Maine, or from other states, have fallen steadily over the past decade, while a small number of residents move in from abroad.

Auburn's Population Has Remained Steady since 1960

Chart 3: Mobility of Auburn Residents in Past Year, 2007 - 2016



Source: Federal Census. Note that these data cover Auburn residents age 1 or older.

One of the patterns is that those who relocate to Auburn are often lower income people who lived elsewhere in Androscoggin County (including elsewhere in the City itself). While the median income of the City population was \$25,957 in 2016, the median income of those who moved within the County was \$18,583. Obviously, this may include lower-income residents who are able to purchase homes in the city. Those who move from elsewhere in Maine have a slightly lower median income, at \$17,965.

**Those who relocate to Auburn are most often lower income renters
who lived elsewhere in Androscoggin County
[including the City itself]**

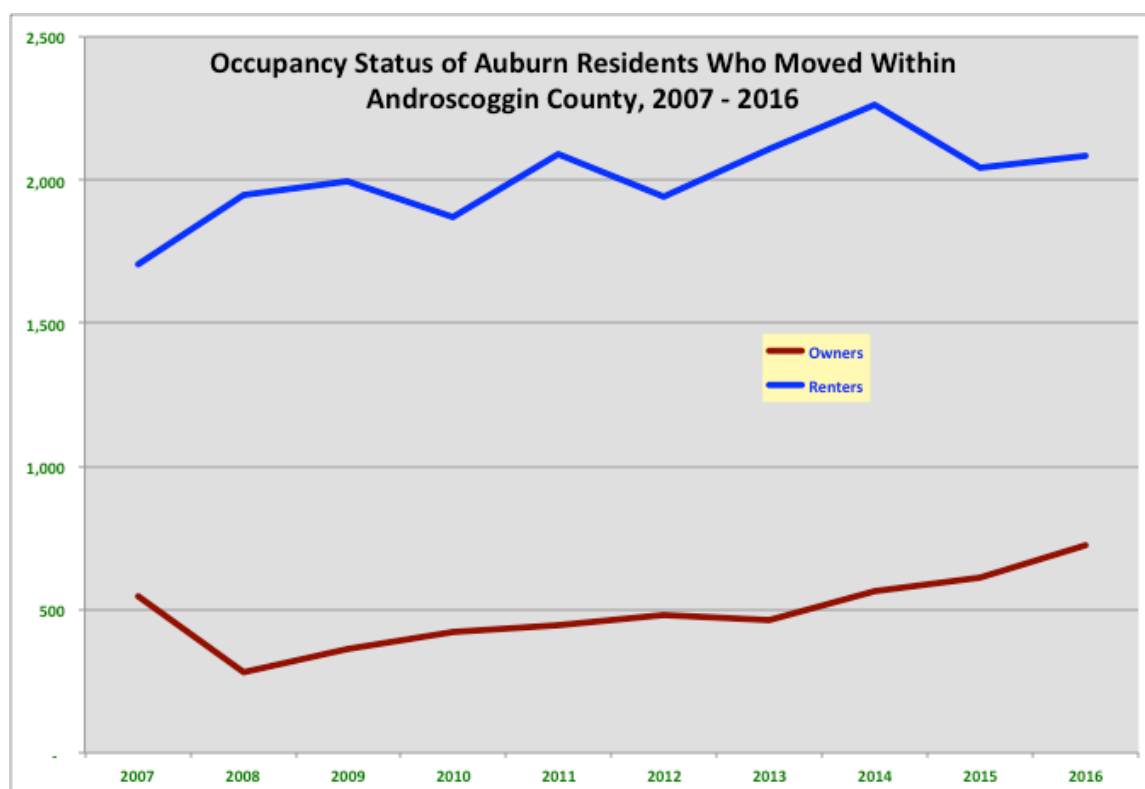
While Census data show that many of the foreign arrivals earn more than established Auburn residents, this data set has not been reported for two years. This suggests that many of those who move in from other nations come to take jobs at colleges or hospitals.

Poverty does not appear to be a significant factor in why people stay or relocate. About one quarter of those who move into Auburn each year earn less than 150% of poverty (this is less

than a living wage), while one quarter of those who remain in the City are at the same poverty level. These ratios have been relatively steady for the past decade.

Nevertheless, the number of people who move into Auburn who rent their homes is more than three times the number of those who purchase homes, as Chart 4 shows. About 724 residents moved into purchased homes in 2016, compared to 2,084 renters.

Chart 4: Occupancy Status of Auburn Residents Who Moved Within Androscoggin County During the Previous Year, 2007 – 2016



Source: Federal Census

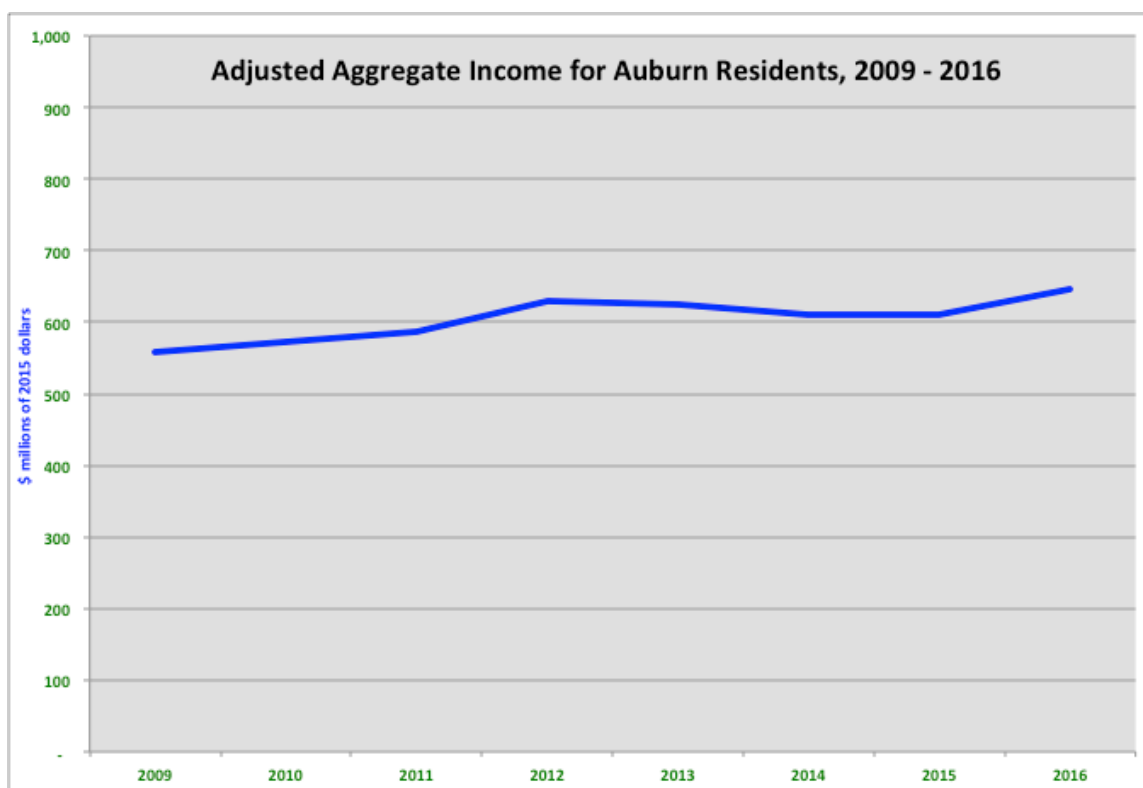
The employment base in the City of Auburn is stable, with 17,666 workers, 11,277 of which live in the City itself (EMSI, 2016). The unemployment rate is 4%, and the median household income is \$46,976. Nine percent of the City's residents do not have health insurance. About half of these residents without insurance (1,373) are employed (Federal Census, 2012-2016).

The Census also lists 1,759 veterans living in the City. Of these 439 (25%) have a disability, and 130 (7%) live below the poverty line. Median income is lower for vets than for the rest of the population, at \$39,844. There are 158 veterans aged 18-34, and 481 aged 35-54.

Household Income and Employment in Auburn

Although not entirely satisfying as income data, Federal Census does report aggregate income for residents of the City. These data indicate that Auburn residents earned about \$645 million in 2016. As Chart 5 shows, household income for City residents has risen steadily over the past decade, even as population has declined and inflation affected the value of a dollar, showing that each household is earning a bit more money. Such trends as shown by Census data should be more reliable than the actual numbers listed here.

Chart 5: Adjusted Aggregate Household Income of Auburn Residents, 2009-2016



Source: Federal Census. These data are adjusted for inflation and shown in 2015 dollars. Census data for aggregate income are not entirely consistent with other sources, for example the Bureau of Economic Analysis (BEA). However, BEA only reports income data for entire counties. These data will be shown below.

The Census reports that 11,466 Auburn residents are employed in a variety of industries, as Table 1 below shows. Leading industries are health care, education, and government, but a substantial number of residents work in accommodation and food services, retail sales, and manufacturing.

Unfortunately, manufacturing income has fallen dramatically since 1958, when the Blackwell report tracked 13,265 manufacturing jobs in Auburn. Today that figure has fallen to 1,151. Similarly, the number of people employed in agriculture and forestry occupations (this excludes

farm families) is still a relatively small percentage of the employment profile, and has fallen from 95 workers in 1958 to 44 in 2016. The AGRP Committee is putting together a tally of farms within City limits.

Table 1: Employment by Industry for Auburn Residents

Industry	Estimated Workers
Agriculture, forestry, fishing & hunting, and mining	44
Construction	528
Manufacturing	1,151
Wholesale trade	303
Retail trade	1,599
Transportation, warehousing, and utilities	603
Information	208
Finance, insurance, and real estate	904
Professional, scientific, and management	880
Educational services, health care, and social assistance	3,191
Arts, entertainment, recreation, and accommodation & food services	1,263
Other services, except public administration	444
Public administration	348
Total:	11,466

Source: Federal Census, 2012-2016

Yet income is not always enough to meet basic needs. As Chart 6 below shows, Auburn residents experience a wide range of household incomes, with 1,562 people earning less than \$10,000 per household (each household averages 2.35 people), to 574 people earning more than \$200,000. Significantly, more than half of the City's households (nearly 12,000 residents) earn less than \$50,000 per year.

Census data also show that 7,229 Auburn residents live in households earning less than 185% of the Federal Poverty Line (averages for the years 2012-2016). This is 32% of the City's population, nearly one of every three people. This poverty level is generally speaking the threshold for earning a livable income for a family of four.

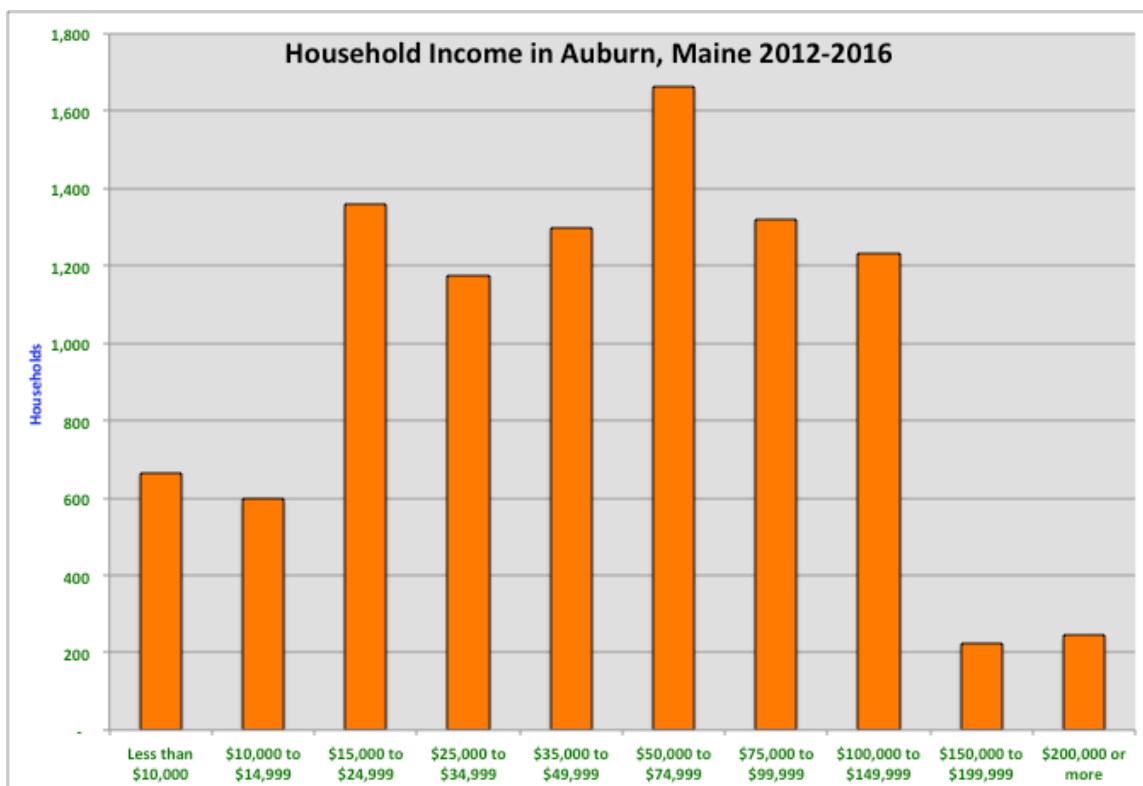
Federal Census data show that 2,045 Auburn households received SNAP benefits (formerly called food stamps) on average during the years 2012-2016. This is one of every five households, primarily working households. Of the households surveyed, 31% had two or more people working, while 51% had one worker in the workforce. Only 18% of the households had no one working at all. Average household income for SNAP recipients was \$17,885.

Feeding America estimates that 15.5% of the Androscoggin County population is food insecure.¹ We found no similar data for the City of Auburn, but we assume the rate is similar inside the City.

¹ <http://map.feedingamerica.org/county/2015/overall/maine/county/androscoggin>

The Federal Census reports that 5.5% percent of Auburn residents are unemployed. This is a marked decline from a rate of 8.6% in 2014, and also is well below the national average of 7.4% reported by the Census.²

Chart 6: Household Income of Auburn Residents, 2012-2016 Averages



Source: Federal Census, 2012-2016

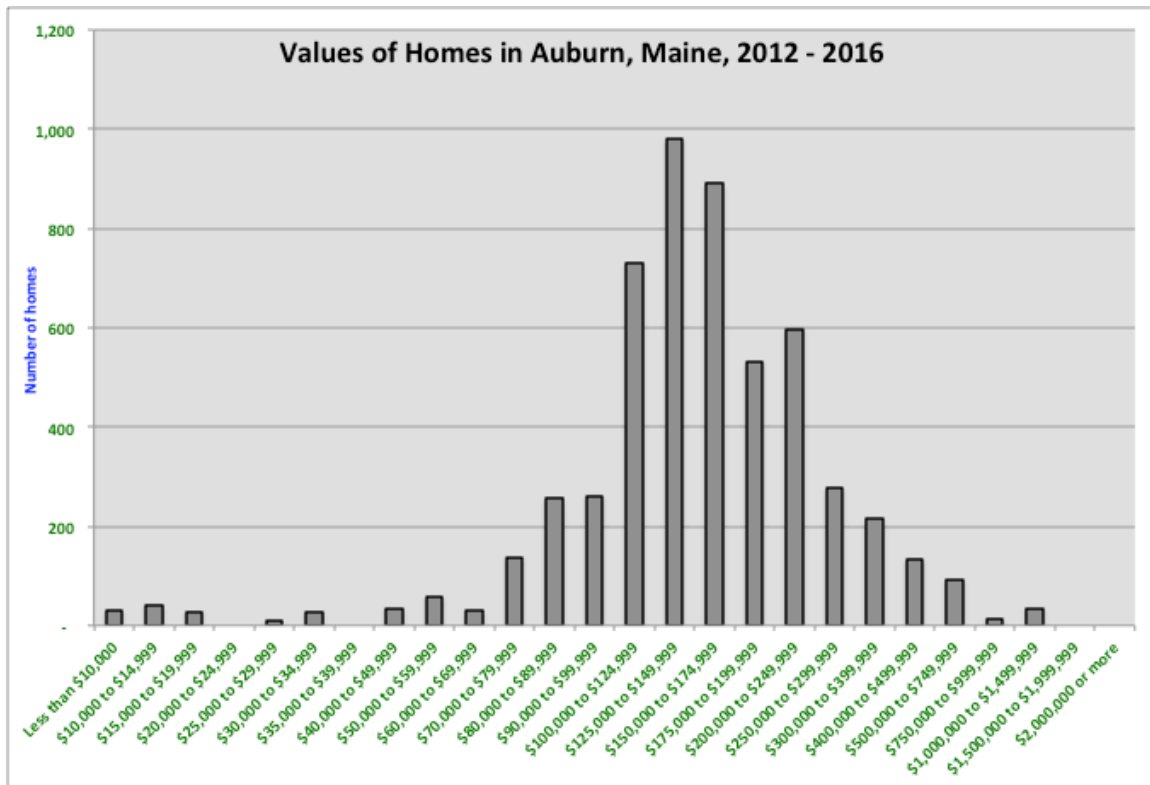
**Nearly one of every three people lives
in a household earning less than
185% of the Federal Poverty Limit**

² Note that the Bureau of Labor Statistics reports that the US unemployment rate for 2016 was about 5%, and is currently about 4.1%. See <https://data.bls.gov/timeseries/LNS14000000>

Auburn's Housing Market

As Chart 7 below shows, Auburn has a wide variety of houses available at all price ranges.

Chart 7: Values of Homes in Auburn, 2012-2016 Averages



Source: Federal Census. These data average the value of Auburn homes over a five-year period.

Table 2: Single Family Residential Sales, 2015-2017

Single Family Residential Sales	2015 (12 months)	Year 2016 (12 months)	2017 (1st 6 months)
Arm's Length Sales (total # of SF units/period)	200	262	137
Average sales volume per month (# of SF units/month)	16.7	21.8	22.8
Median Sale Price	\$144,950	\$155,950	\$161,500
Average Sales Price	\$163,765	\$182,374	\$186,656

Source: City of Auburn Assessor. The Auditor notes that "This sample includes all single family homes, including mobile homes and condominiums. The sales used in this sample are deemed to be good, arms-length transactions."

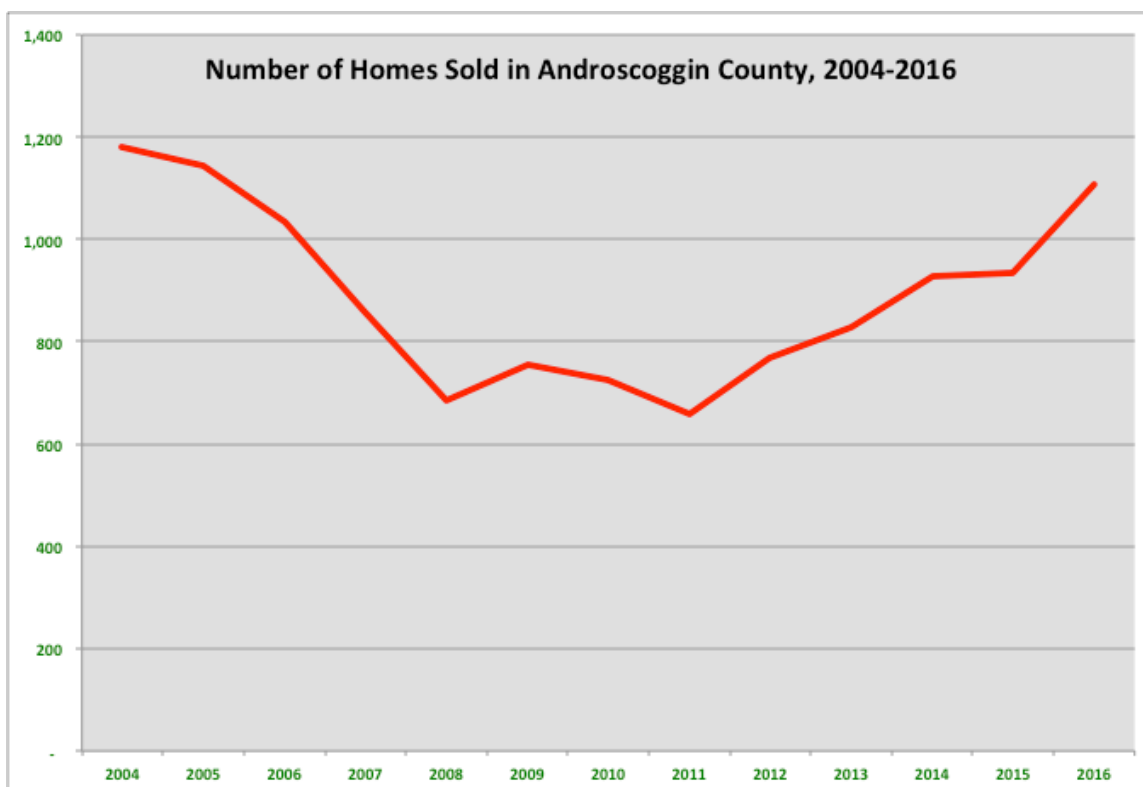
The Assessor's office for the City of Auburn prepared a summary of single family residential sales for recent years; this is shown in Table 2. Although complete data were not yet compiled for 2017, these data shows that median and average sale prices have edged upward. More detailed data from the Assessor covering specific sales show that a few individual houses are selling for far more than the median value — with one house selling for \$556,000 and several over \$400,000.

Four of these homes were in the ARPZ. The average sale price for these homes was \$119,725 (City of Auburn Assessor, 2018).

It is likely that home sales roughly followed trends for the rest of the County. Maine realtors published data showing how many homes were sold in Androscoggin County over the past 13 years (See Chart 8). Currently, there are about 1,000 homes sold per year. This means that Auburn accounts for about half of the home sales in the County. Housing sales diminished during the global housing finance crisis, and are only now recovering to 2004 levels.

**Median sale price for Auburn homes
in the first half of 2017 was \$161,500**

Chart 8: Number of Homes Sold in Androscoggin County, 2004 – 2016



Source: Association of Maine Realtors

Since one potential competing use for land in the City of Auburn’s Agricultural Resource Protection Zoning areas is housing, it is also useful to consider the size of the housing industry in Androscoggin County (See Table 3). In 2016, single-family home developers earned \$13.6 million of sales in the County, while contractors building single houses for sale directly to individual buyers sold \$881,181. This latter total amounts to about 5 houses at current median housing values. No multi-family development sales appear in the EMSI data.

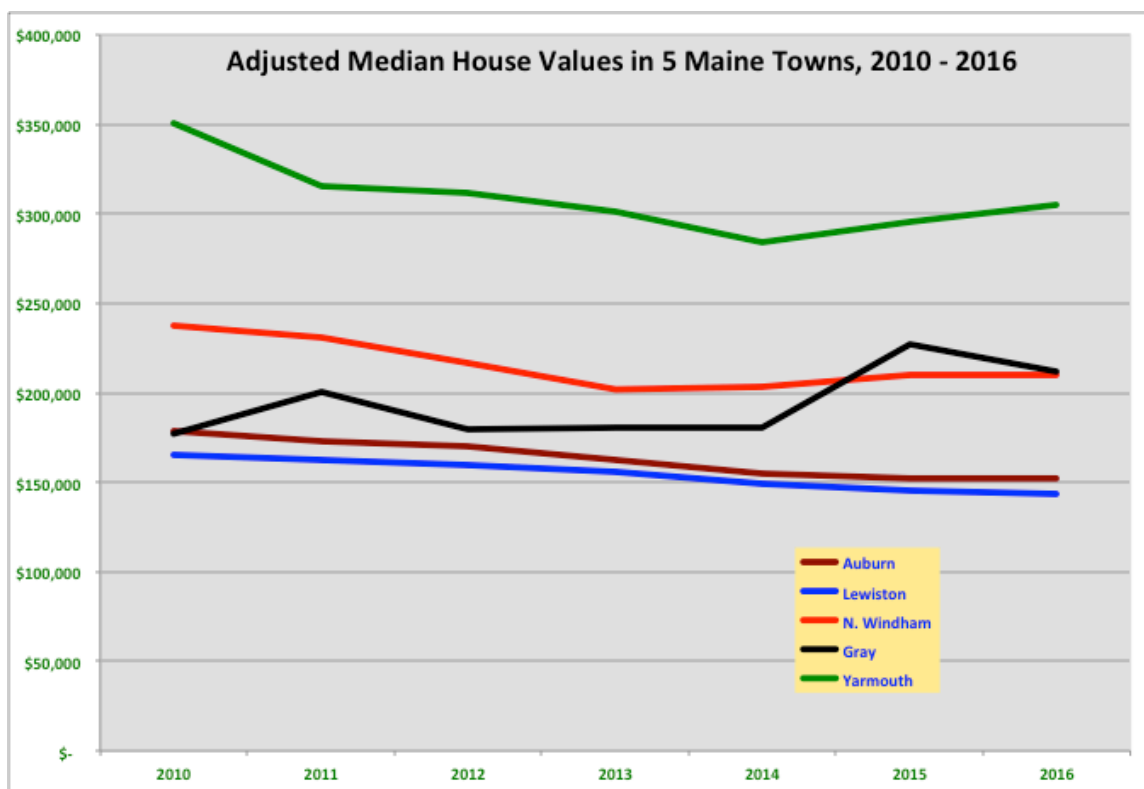
Table 3: In-Region Sales by Primary Resource Industries in Androscoggin County, 2016

NAICS	Sector	2016 Total Sales
236115	New Single-Family Housing Construction (except For-Sale Builders)	\$13,562,361
236116	New Multifamily Housing Construction (except For-Sale Builders)	\$0
236117	New Housing For-Sale Builders	\$881,181

Source: Economic Modeling Specialists, Inc.

Since Auburn operates within a competitive real estate environment, the values of homes in nearby cities and towns are shown here for comparison. The next chart (Chart 9) shows median home values for Auburn, Gray, Lewiston, North Windham, and Yarmouth. Not surprisingly, home values are similar in Lewiston and Auburn — but median values in both towns are declining. Gray and North Windham show similar home values, but while values in North Windham are falling, values in Gray are rising slightly. The Yarmouth market, as any market close to the ocean, is dominated by higher priced homes. Yet even here, median home values are declining, Census data show.

Chart 9: Adjusted Median Values of Homes in 5 Maine Towns, 2012-2016



Source: Federal Census. These data show 5-year average values.

Our interviewees noted that Auburn may find itself at a disadvantage due to the age of its housing stock, which may not look attractive to buyers who come from outside the community. Older housing stock can be viewed as a disadvantage since it may be perceived as being in need of significant repair, with outdated utility systems, and potentially difficult to retrofit for new electronic technology.

The age of the housing stock is only one potential measure of the attractiveness of housing in the Auburn market, since some older homes are viewed as more desirable, and buyers have a host of other variables in mind, such as physical location, school, open space, recreational opportunities, and the like. The advantage of considering the age of the City's housing stock is that a consistent data set is available from the Federal Census. The most recent data is shown in Chart 10 and Table 4 below.

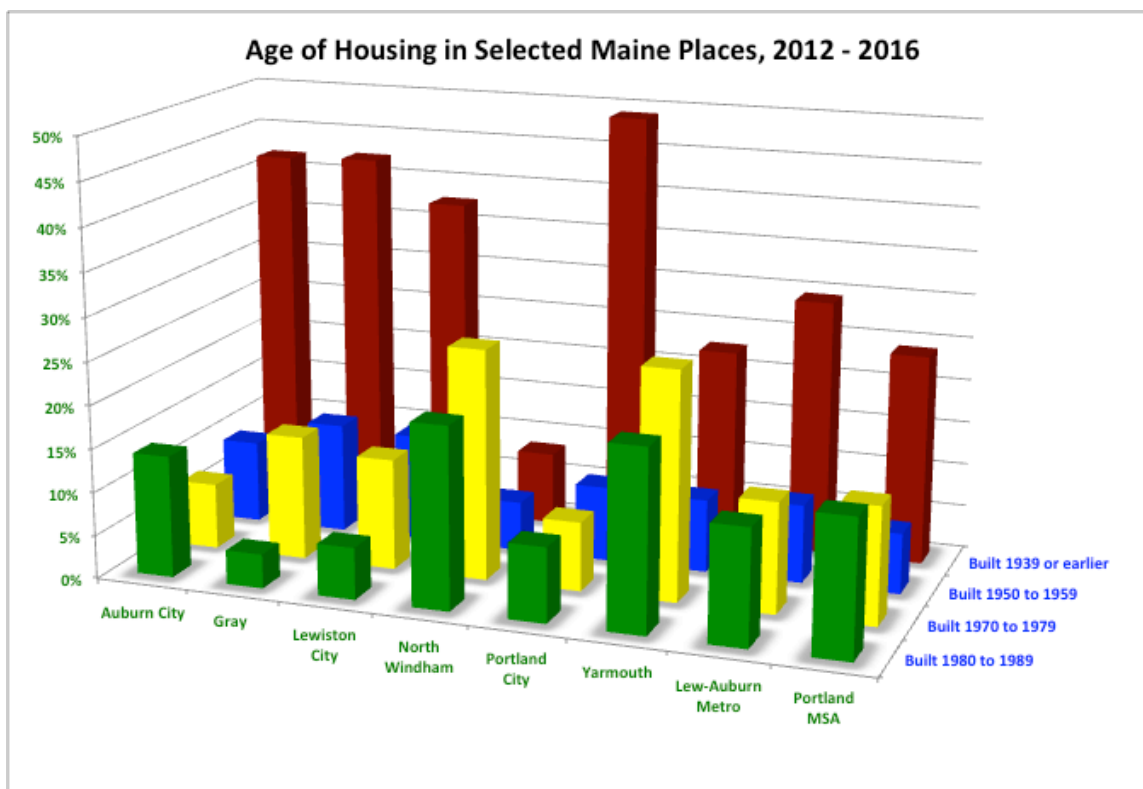
Auburn's housing market compares well with nearby communities

From the standpoint of this one measure, Auburn is not placed too badly. Fully 42% of the City's housing stock was built before 1939. While this ranks higher than the City of Lewiston (38%), this is not an immense difference. Gray and Portland have even higher rates. Moreover, if one includes the entire Lewiston-Auburn metro area, including the agricultural lands of Auburn and other rural residential areas, the percentage falls to 29%, slightly higher than Metro Portland's rate of 24%. Yarmouth is about the same, at 23%, while North Windham is the lowest of the selected towns, at 8%.

Yarmouth and North Windham also have the highest percentage of newer homes, with 21% built in the 1980s, and 26%-27% of homes in each community built in the 1970s. With Yarmouth serving as a more upscale location given its proximity to the ocean and commercial centers, it is unlikely to attract those looking for housing in Auburn. Yet North Windham certainly is a significant competitor to Auburn, as a community with significant open space near Portland. Yet even here, Auburn remains competitive, with 14% of its housing stock built in the 1980s, just less than Portland itself.

This suggests that the age of Auburn's housing stock may not serve as an impediment to home buyers, especially if the older homes can be modernized in significant ways. This suggests that other factors, such as schools, proximity to open space, proximity to turnpike and freeway access, may be more important.

Chart 10: Age of Housing in Selected Maine Places, 2012-2016



Source: Federal Census. These data show 5-year average values. To simplify presentation of findings, this chart includes the four periods in which most houses were built.

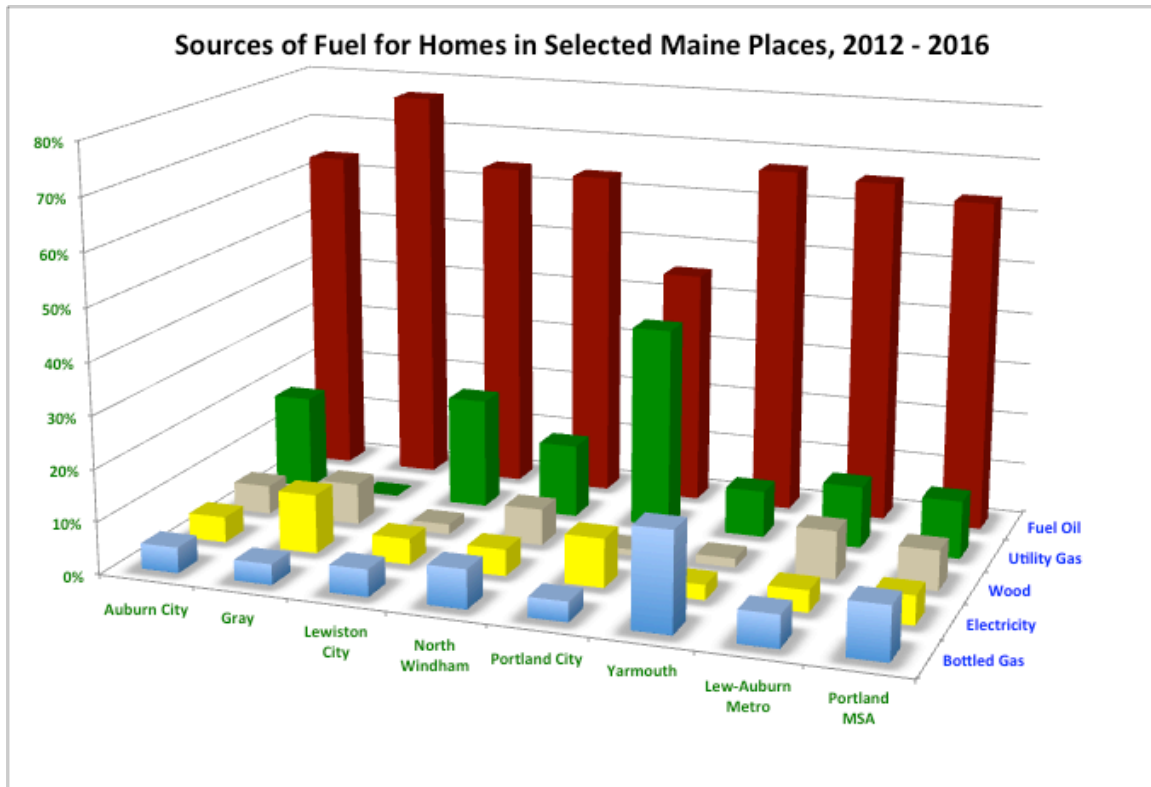
Table 4: Age of Buildings within Ag & Resource Protection Zone

Age	# of Buildings
< 1900	89
1901 - 1950	82
1951 - 1980	93
1980 - 2000	64
2001 - 2017	37
Total Buildings	365

Source: City of Auburn, 2018

Similarly, as Chart 11 below shows, Auburn is not especially distinctive for its reliance on fuel oil for heat, nor for rural residences that depend on bottled gas. Since the City of Portland has invested in natural gas infrastructure, it uniquely offers this service to 40% of its homes.

Chart 11: Sources of Fuel for Homes in Selected Maine Places, 2012-2016



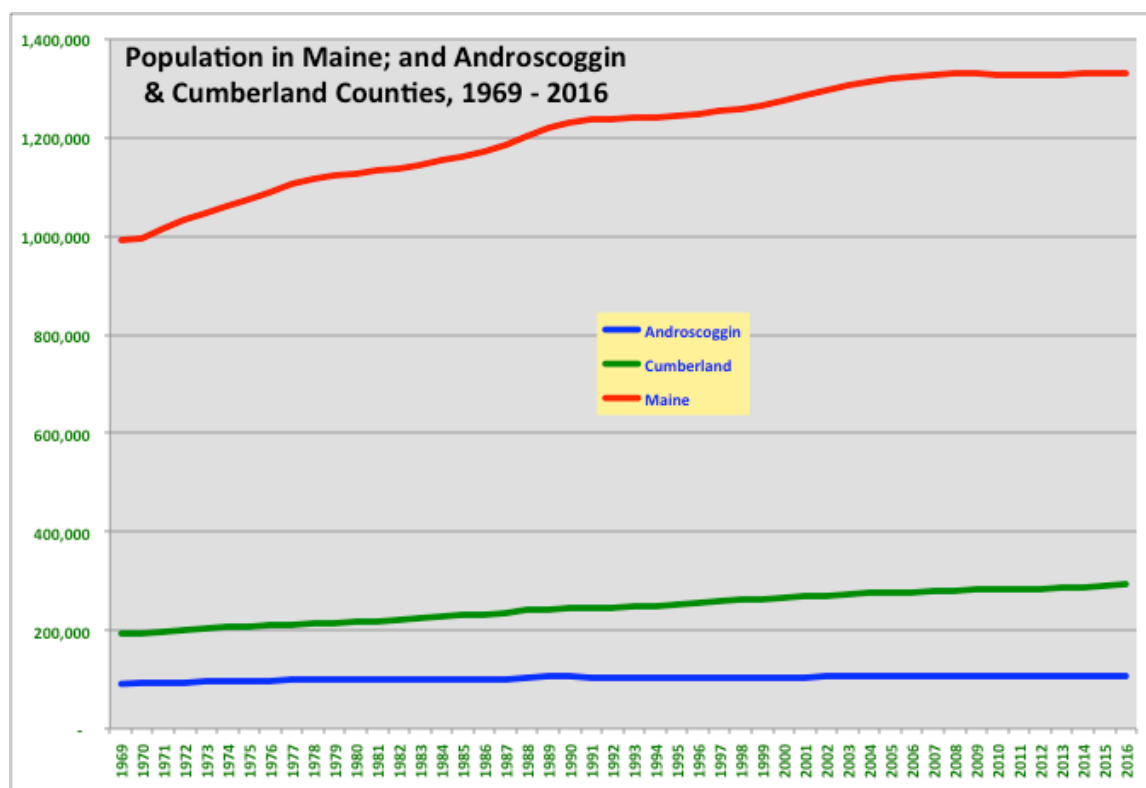
Source: Federal Census. These data show 5-year average values. To simplify presentation of findings, this chart includes the fuel sources that were most prevalent among homes in the selected places, so it omits solar energy and other fuel sources.

Economic Conditions in Androscoggin County

Considerable data that is relevant to the City's zoning decisions is available only at the County level. While this is less satisfactory than counts that are specific to Auburn itself, these data do reflect accurately on conditions in Auburn, which holds 21% of the County population. When the combined cities of Lewiston and Auburn are considered, fully 60% of the County population is included.

Once again, considering only population growth, Auburn shows itself to be in a long-standing pattern of slow and steady growth. Population has increased 18% over the past 47 years, as Chart 12 below shows. This compares with growth of 52% in Cumberland County, which drives the growth of 34% in the state's population over the same period of time.

Chart 12: Population in Maine; and Androscoggin & Cumberland Counties, 1969-2016



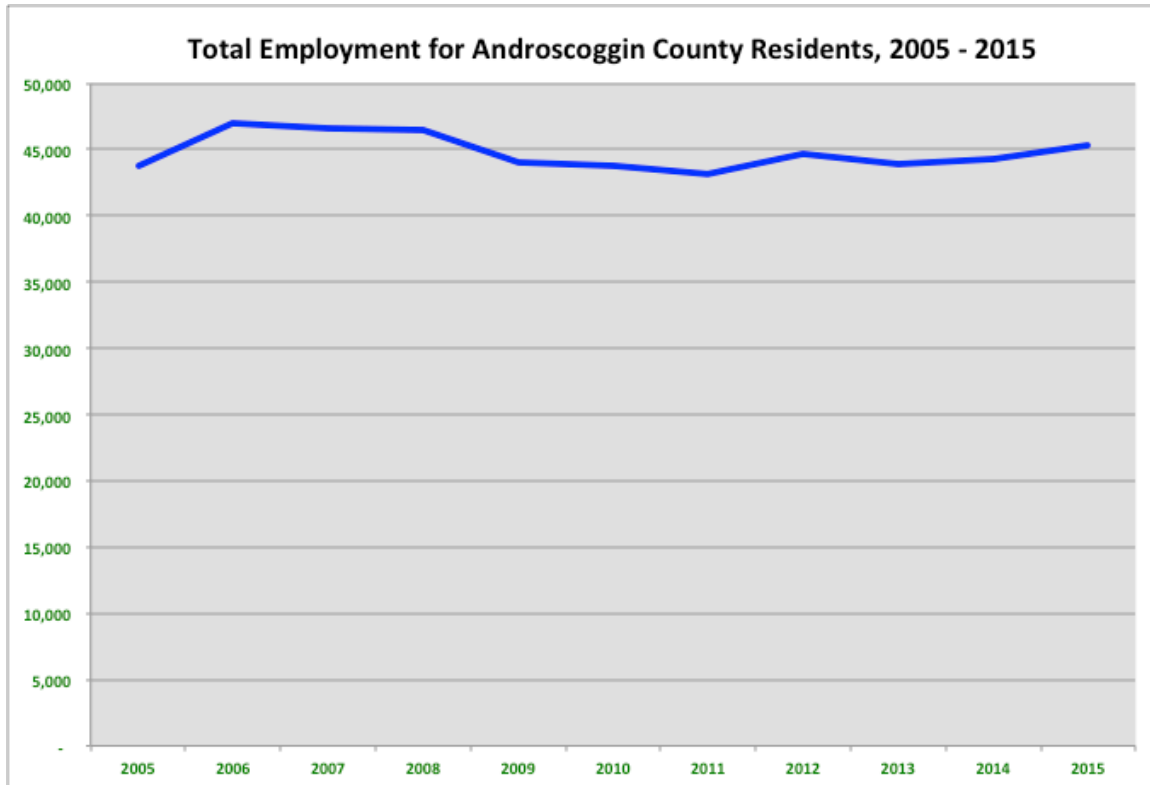
Source: Bureau of Economic Analysis

Yet a closer look at the data shows that population growth has slowed for both Maine and Androscoggin since about 2005, while the population of Cumberland County has continued to increase at similar rates. This suggests that people are attracted to urban centers more than rural communities, and also reflects broader economic trends that will be covered later.

Employment and Income in the County

As Chart 13 shows, employment has remained fairly steady in Androscoggin County despite the increase in population.

Chart 13: Total Employment for Androscoggin County Residents, 2005 - 2015

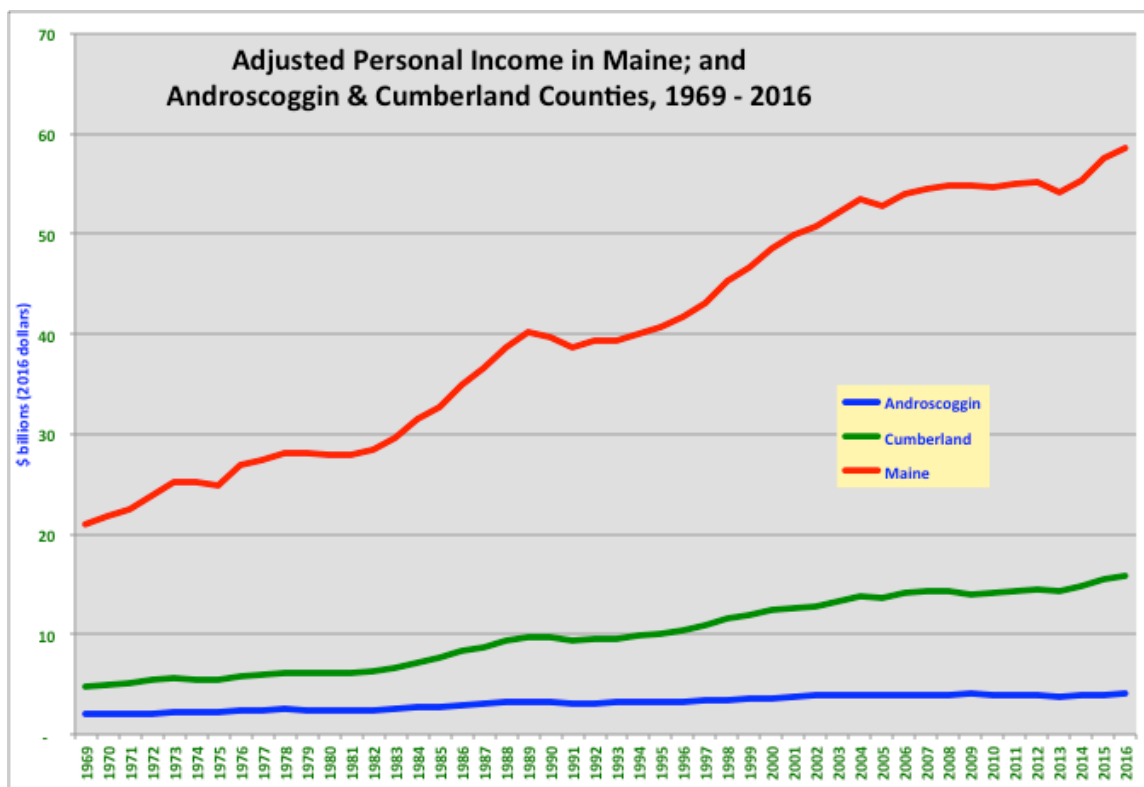


Source: Federal Census, County Business Patterns

Interestingly, personal income has increased far more rapidly than population, even after adjusting for inflation. Income has more than doubled (103%) in Androscoggin County over the past 47 years. Yet the county is not growing as fast as surrounding areas, with Cumberland County income more than tripling (234% increase), and the state of Maine rising 179%, over the same years. Moreover, the rate of growth in Androscoggin County has slowed since 2003 relative to the other regions. This is shown on Chart 14.

Androscoggin County holds considerable spending power, with its 107,319 residents earning a combined total of \$4 billion in 2016

Chart 14: Adjusted Personal Income in Maine; and Androscoggin & Cumberland Counties, 1969-2016



Source: Bureau of Economic Analysis. Adjusted using Federal Reserve Board Consumer Price Index.

All the same, Androscoggin County holds considerable spending power, with its 107,319 residents earning a combined total of \$4 billion in 2016.

Yet little of this income is earned by working in manufacturing, farming, or forestry. The largest share of this income (\$1.1 billion, or 27%) comes from transfer payments — through programs such as retirement pensions, unemployment benefits, and SNAP benefits. Each of these depends upon government action. This is shown on Chart 15 below.

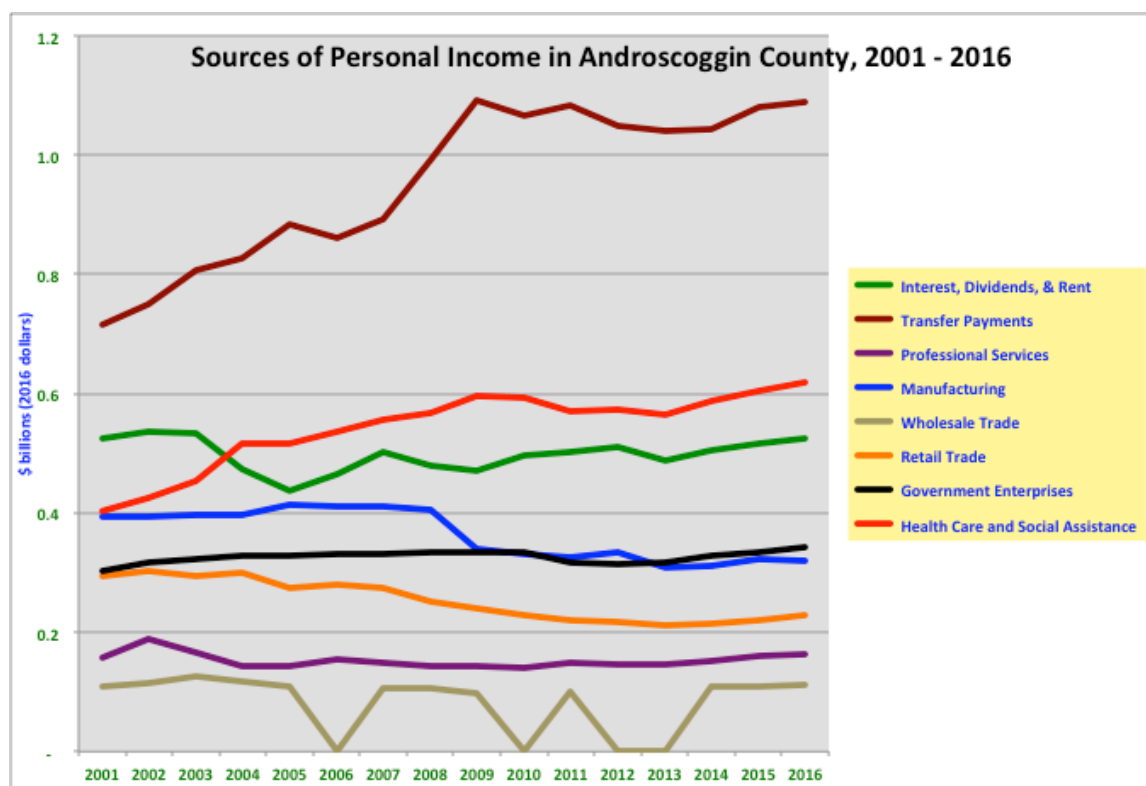
The next most important source of income is working in the health care industry, where workers earn \$620 million, or 15% of all personal income. Capital investments rank third, accounting for \$526 million of personal income, 13% of the total. The fourth largest source of income is government jobs (including educators), which account for \$341 million (8%) of income. These public positions began to outrank manufacturing jobs in 2013. Manufacturing now accounts for \$321 million of personal income, also 8%.

Strikingly, when the two public programs are combined — transfer payments and government jobs — public sources account for 35% of all income earned in the County.

Chart 15 also shows that most sources of income are holding quite steady over the past 16 years. The only rising employment sector is health care, and even this has been relatively stable since 2009. Income earned by retail workers has declined steadily. Transfer payments are not only the largest source of income in the County, but also the one rising the most rapidly, experiencing 52% growth since 2001.

Public sources account for 35% of all income earned in the County

Chart 15: Sources of Personal Income in Androscoggin County, 2001 - 2016



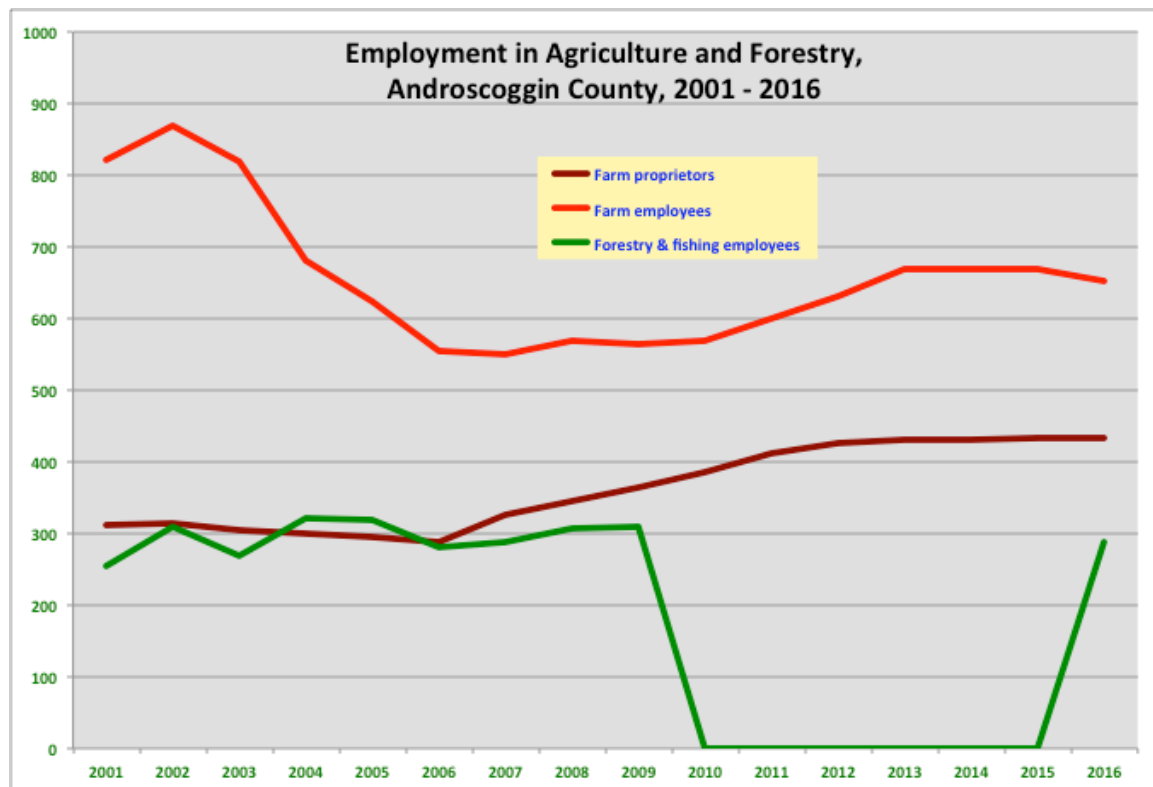
Source: Bureau of Economic Analysis. Data are adjusted for inflation using 2016 dollars. Where income falls to zero, this signifies data that were suppressed in an effort to protect confidentiality.

Trends for employment in agriculture and forestry in Androscoggin County reflect similar developments, with the key difference being that farm jobs have declined markedly from a peak of 869 to a low of 550 in 2007, then rebounding to 653 in 2016. The number of farm owners has increased slightly from 312 to 433, contributing to the rise in the number of farm workers.

Employment in the forestry and fishing sectors has remained steady at about 300 for 16 years. These trends are shown in Chart 16 below.

Employment in the forestry and fishing sectors has remained steady at about 300 for 16 years

Chart 8: Employment in Agriculture and Forestry in Androscoggin County, 2001 - 2016



Source: Bureau of Economic Analysis. Where income data shows as zero, this signifies data that were suppressed in an effort to protect confidentiality.

These developments are extensions of longer-term trends in agriculture that Androscoggin County has experienced since Auburn created Agricultural Zoning in 1964. While of course the data below reflect conditions county-wide, rather than within the City itself, these do account for the economic context in which farmers have worked since the district was created. These historical trends are shown in Chart 17 below.

Employment on Androscoggin County farms peaked at 2,269 in 1974, the result of globally high grain prices that rose precipitously in 1973-1974 when the Soviet Union began purchasing grain

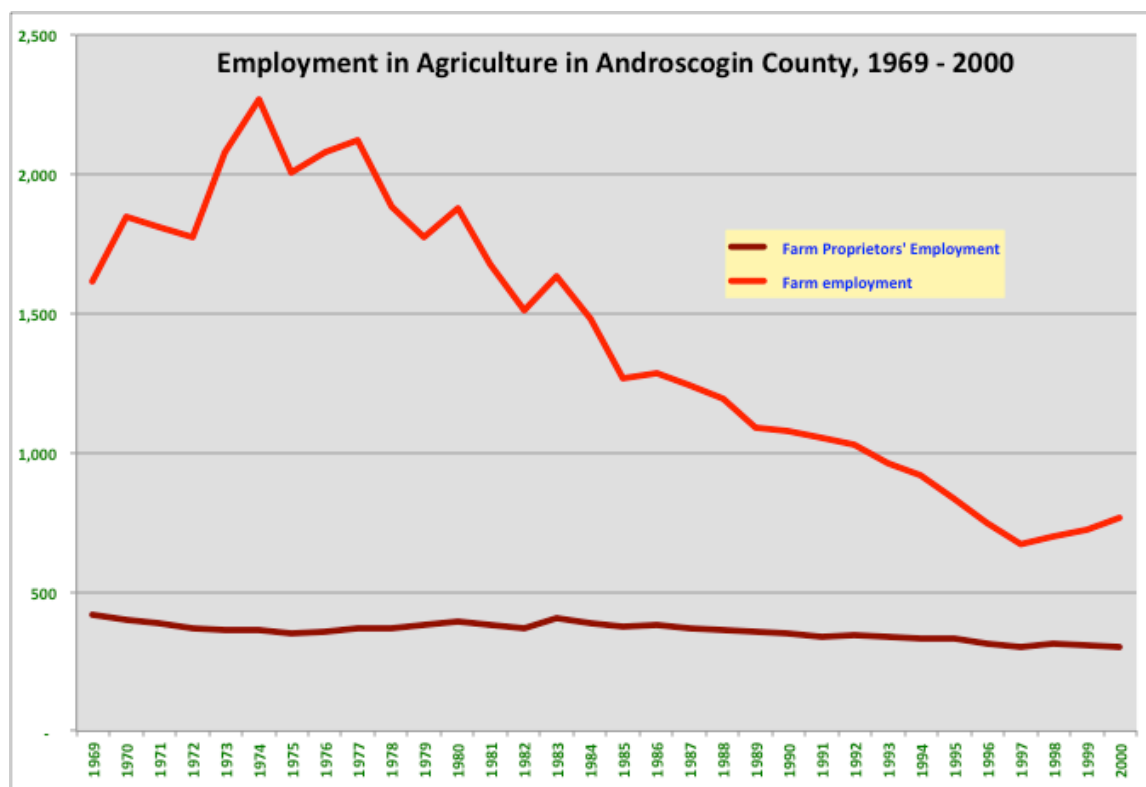
from US farmers during the OPEC Energy Crisis.³ Yet employment fell steadily from that peak to a low of 671 in 1997, rising to 766 in 2000.

The number of farm proprietors fell from 420 to 301 during the same years.

One substantial pressure on farm employment was the adoption of new labor-saving technology, including larger equipment and greater reliance upon farm chemicals. This is a trend that began after World War II, earlier than can be shown using this data set. This technological expansion coincided with an increased desire among workers to live in more urbanized areas.

These data suggest that global markets had a significant role to play in the protection of both jobs and farmland in the County. When combined with more recent trends shown in Chart 16 above (when attention to local food production and support from Maine consumers) appears to have resulted in slow but steady growth in the number of farms and in employment, it is clear that the efficacy of farmland protection is tied to having robust markets for what farmers produce.

Chart 9: Employment in Agriculture in Androscoggin County, 1969 - 2000



Source: Bureau of Economic Analysis. Note that these data reflect an earlier coding of industries, the Standard Industrial Classification (SIC) codes, which was changed to the North American Industry Classification System (NAICS) in 2000-2001. This means the data shown on this chart are not always comparable to data on the previous chart, Chart 16.

³ Further farm income data covering this period is shown below, on Charts 23 and 24.

Note: Similar data on employment in forestry and fishing, as shown in Chart 18, is not available in this data set.

The efficacy of farmland protection is tied to having robust markets for what farmers produce

Key Industries in Androscoggin County

We will discuss the farm economy in greater detail below, but first an overview of the main industries in the County, including food industries. Table 5 below shows employment in the County for the 12 largest industries currently hiring workers in Androscoggin County. These dozen industries account for 35% of all county employment. Overall, Economic Modeling Specialists Inc. tracks 3,128 firms selling \$7.7 billion of products, and hiring 61,957 people in Androscoggin County in 2016.⁴

The 12 largest industries account for 35% of all county employment

Table 5 offers a more nuanced view of the industry category “Government” that was used in BEA data above. 2016 jobs data show that medical professions offer the strongest employment sector, with 7% of the County’s jobs. Education accounts for more than 8% of all jobs, while actual jobs with government account for 2.7% of employment in the County. Temporary help services are a surprisingly large fifth-ranked sector.

To focus on food industries, three of the top 12 industries in the County involve food, with restaurants and supermarkets hiring 3,274 workers, or 6% of the County workforce.

Table 5: Employment by Industry in Androscoggin County, 2016

NAICS Code	Industry	Jobs 2016
622110	General Medical and Surgical Hospitals	3,953
903611	Elementary and Secondary Schools (Local Government)	2,846
611310	Colleges, Universities, and Professional Schools	1,751
903999	Local Government, Excluding Education and Hospitals	1,459
561320	Temporary Help Services	1,260
561422	Telemarketing Bureaus and Other Contact Centers	1,253
722511	Full-Service Restaurants	1,187
551114	Corporate, Subsidiary, and Regional Managing Offices	1,175

⁴ This tally is higher than was reported earlier by the Federal Census, since the Census tracked the number of residents who were employed, while EMSI data sets track total jobs in the County, no matter who holds them.

623210	Residential Intellectual and Developmental Disability Facilities	1,164
623110	Nursing Care Facilities (Skilled Nursing Facilities)	1,095
722513	Limited-Service Restaurants	1,049
445110	Supermarkets and Other Grocery (except Convenience) Stores	1,038
Total		19,231

Source: Economic Modeling Specialists, Inc. These are color-coded by industrial category: Turquoise shading=Food Retail; Yellow=Medical Care; Blue=Government and Education.

Closely reflecting employment are corporate earnings for County industries, as Table 6 shows. The only food industry among the top earners is bottled water.

Three of the top 12 industries in the County involve food, with restaurants and supermarkets hiring 3,274 workers, or 6% of the County workforce

Table 6: Corporate Earnings in Androscoggin County, 2016

NAICS	Industry	Corporate Earnings 2016 (\$ millions)
622110	General Medical and Surgical Hospitals	298
903611	Elementary and Secondary Schools (Local Government)	162
903999	Local Government, Excluding Education and Hospitals	95
551114	Corporate, Subsidiary, and Regional Managing Offices	78
611310	Colleges, Universities, and Professional Schools	64
621111	Offices of Physicians (except Mental Health Specialists)	61
561320	Temporary Help Services	46
493110	General Warehousing and Storage	44
561422	Telemarketing Bureaus and Other Contact Centers	39
623110	Nursing Care Facilities (Skilled Nursing Facilities)	38
484121	General Freight Trucking, Long-Distance, Truckload	36
623210	Residential Intellectual and Developmental Disability Facilities	36
238220	Plumbing, Heating, and Air-Conditioning Contractors	33
312112	Bottled Water Manufacturing	32
541110	Offices of Lawyers	31

Source: Economic Modeling Specialists, Inc. These are color-coded by industrial category: Turquoise shading=Food Industries; Yellow=Medical Care; Blue=Government and Education.

Table 7 shows employment in the food industries in Androscoggin County with more than \$1,000,000 in sales in 2016. These are color-coded by industrial category: Turquoise shading=Farming; Yellow=Manufacturing; Blue=Retail; and Gray=Wholesale. These data show that food retailers rank among the largest employers in the County, yet also show that if crop and

livestock production were combined, they would rank fourth in food-sector employment in the County, with 581 jobs.

**If Crop and Livestock Production were combined,
they would rank fourth in food-sector employment
in the County, with 581 jobs**

Table 7: Food Industry Employment in Androscoggin County, 2016

NAICS	Industry	2016 Jobs
722511	Full-Service Restaurants	1,187
722513	Limited-Service Restaurants	1,049
445110	Supermarkets and Other Grocery (except Convenience) Stores	1,038
312112	Bottled Water Manufacturing	416
722515	Snack and Nonalcoholic Beverage Bars	404
112000	Animal Production and Aquaculture	391
311812	Commercial Bakeries	315
111000	Crop Production	190
424490	Other Grocery and Related Products Merchant Wholesalers	185
722310	Food Service Contractors	166
445120	Convenience Stores	119
722410	Drinking Places (Alcoholic Beverages)	101
312140	Distilleries	85
424810	Beer and Ale Merchant Wholesalers	85
445310	Beer, Wine, and Liquor Stores	63
423820	Farm and Garden Machinery and Equipment Merchant Wholesalers	59
311811	Retail Bakeries	55
445230	Fruit and Vegetable Markets	33
311824	Dry Pasta, Dough, and Flour Mixes Manufacturing	32
311612	Meat Processed from Carcasses	23
312120	Breweries	18
311941	Mayonnaise, Dressing, and Other Prepared Sauce Manufacturing	12
311511	Fluid Milk Manufacturing	-

Source: Economic Modeling Specialists, Inc. These are color-coded by industrial category: Turquoise shading= Farming; Yellow=Manufacturing; Blue=Retail; and Gray=Wholesale.

Table 8 shows earnings in the food and industries in Androscoggin County that pay more than \$10,000 in average wages. These are color-coded by industrial category: Turquoise shading= Farming; Yellow=Manufacturing; Blue=Retail; and Gray=Wholesale. Not surprisingly, the County's bottled water and distilling firms pay the best, along with other manufacturers. Wholesale occupations tend to pay a bit more than farming itself, but farming jobs tend to pay better than retail food jobs.

This table also shows that while restaurants and supermarkets are among the County's larger employers, they do not necessarily pay the highest salaries.

**While restaurants and supermarkets are among the
County's larger employers,
they do not necessarily pay the highest salaries**

Table 8: Food Industry Worker Earnings in Androscoggin County, 2016

NAICS	Food Industry Sector	Adjusted Earnings
312112	Bottled Water Manufacturing	\$63,834
312140	Distilleries	\$58,234
312120	Breweries	\$55,532
311941	Mayonnaise, Dressing, and Other Prepared Sauce Manufacturing	\$50,838
424810	Beer and Ale Merchant Wholesalers	\$48,023
311812	Commercial Bakeries	\$46,768
424490	Other Grocery and Related Products Merchant Wholesalers	\$40,202
423820	Farm and Garden Machinery and Equipment Merchant Wholesalers	\$36,332
424420	Packaged Frozen Food Merchant Wholesalers	\$33,813
112000	Animal Production and Aquaculture	\$28,824
115114	Postharvest Crop Activities (except Cotton Ginning)	\$25,130
111000	Crop Production	\$24,004
311612	Meat Processed from Carcasses	\$23,950
445310	Beer, Wine, and Liquor Stores	\$23,239
722310	Food Service Contractors	\$22,592
311811	Retail Bakeries	\$22,407
445230	Fruit and Vegetable Markets	\$21,019
722320	Caterers	\$20,734
445110	Supermarkets and Other Grocery (except Convenience) Stores	\$20,499
115115	Farm Labor Contractors and Crew Leaders	\$20,309
722410	Drinking Places (Alcoholic Beverages)	\$19,047
722511	Full-Service Restaurants	\$17,345
722330	Mobile Food Services	\$16,982
445120	Convenience Stores	\$15,556
722515	Snack and Nonalcoholic Beverage Bars	\$14,284
722514	Cafeterias, Grill Buffets, and Buffets	\$14,241
722513	Limited-Service Restaurants	\$13,571

Source: Economic Modeling Specialists, Inc. This table shows average earnings per worker for all food industries in the County that pay more than \$10,000. Data for several industries was not reported due to the small number of firms in those categories. Note also that the earnings for

115310 Support Activities for Forestry (input suppliers, technical assistance, etc.) are reported as \$34,332.

Turquoise shading=Farming; Yellow=Manufacturing; Blue=Retail; and Gray=Wholesale.

Economic Modeling Specialists also compiled data on unemployment in the County, shown in Table 9. These data show that there is considerable unemployment in the accommodation and retail sector, as well as in the construction industry, which rank as the top two sectors, accounting for 32% of all unemployment. A limited number (25) of farm workers are looking for work.

Table 9: Unemployment in Androscoggin County, 2016

NAICS	Industry	Unemployed Jan. 1, 2017
72	Accommodation and Food Services	267
23	Construction	266
56	Administrative and Support; Waste Management; Remediation Services	197
99	No Previous Work Experience/Unspecified	179
31	Manufacturing	170
44	Retail Trade	166
62	Health Care and Social Assistance	86
48	Transportation and Warehousing	70
90	Government	52
54	Professional, Scientific, and Technical Services	43
81	Other Services (except Public Administration)	38
42	Wholesale Trade	31
61	Educational Services	26
11	Crop and Animal Production	25
71	Arts, Entertainment, and Recreation	23
52	Finance and Insurance	18
51	Information	9
53	Real Estate and Rental and Leasing	8
55	Management of Companies and Enterprises	4
21	Mining, Quarrying, and Oil and Gas Extraction	3
22	Utilities	2
Total		1,884

Source: Economic Modeling Specialists, Inc.

Next we drill down into the resource-based industries that are the focus of the Ad Hoc Committee's deliberations. These 14 industries account for about 2% of the County's economic activity, with a total of \$156 million in sales for 2016, as shown in Table 10. Leading them is crop and livestock production. Including its associated industries, this sector accounts for \$135 million in sales.

With \$16 million in sales, and another \$1.5 million in support activities, logging accounts for \$17.5 million in sales. Shellfish fishing (presumably Androscoggin County residents who live in the County but ply the fishing trade in the Atlantic) is the fourth largest sector in terms of sales.

Table 10: Sales by Primary Resource Industries in Androscoggin County, 2016

NAICS	Sector	Total Sales
112000	Animal Production and Aquaculture	\$108,330,794
111000	Crop Production	\$23,018,381
113310	Logging	\$16,200,974
114112	Shellfish Fishing	\$2,173,940
115115	Farm Labor Contractors and Crew Leaders	\$1,713,110
115310	Support Activities for Forestry	\$1,450,853
115114	Postharvest Crop Activities (except Cotton Ginning)	\$1,065,021
115210	Support Activities for Animal Production	\$942,239
114210	Hunting and Trapping	\$559,105
114111	Finfish Fishing	\$374,685
115112	Soil Preparation, Planting, and Cultivating	\$201,855
115113	Crop Harvesting, Primarily by Machine	\$187,960
115116	Farm Management Services	\$68,638
113110	Timber Tract Operations	\$61,546
Total		\$156,349,101

Source: Economic Modeling Specialists, Inc.

As Table 11 shows, earnings reflect total sales.

Table 11: Total Worker Earnings in Primary Resource Industries in Androscoggin County, 2016

NAICS	Sector	Earnings
112000	Animal Production and Aquaculture	\$19,135,774
111000	Crop Production	\$5,808,546
113310	Logging	\$5,559,470
115115	Farm Labor Contractors and Crew Leaders	\$1,411,442
115310	Support Activities for Forestry	\$1,194,590
114112	Shellfish Fishing	\$936,935
115114	Postharvest Crop Activities (except Cotton Ginning)	\$877,798
115210	Support Activities for Animal Production	\$775,802
114210	Hunting and Trapping	\$238,765
115112	Soil Preparation, Planting, and Cultivating	\$166,308
114111	Finfish Fishing	\$165,923
115113	Crop Harvesting, Primarily by Machine	\$154,852
115116	Farm Management Services	\$56,556
113110	Timber Tract Operations	\$21,102

Source: Economic Modeling Specialists, Inc.

Of the sales figures listed in Table 10, only a portion is made by buyers in the County. Table 12 below shows the estimates that EMSI makes, based on its computer models, for purchasing in Androscoggin County from the County's resource-based industries. This is a total of \$44 million, once again primarily by farms. Yet this is only 28% of total sales. Another \$108 million of sales (72%) is channeled to external clients.

Table 12: In-Region Sales by Primary Resource Industries in Androscoggin County, 2016

NAICS	Sector	2016 In-Region Sales	2016 % In-Region Sales
112000	Animal Production and Aquaculture	\$18,402,093	17%
111000	Crop Production	\$14,791,566	64%
113310	Logging	\$5,180,969	32%
115115	Farm Labor Contractors and Crew Leaders	\$1,326,851	77%
115114	Postharvest Crop Activities (except Cotton Ginning)	\$1,022,664	96%
115210	Support Activities for Animal Production	\$877,165	93%
114112	Shellfish Fishing	\$602,809	28%
115310	Support Activities for Forestry	\$572,180	39%
114111	Finfish Fishing	\$309,934	83%
115113	Crop Harvesting, Primarily by Machine	\$180,423	96%
115112	Soil Preparation, Planting, and Cultivating	\$162,238	80%
114210	Hunting and Trapping	\$151,068	27%
115116	Farm Management Services	\$60,682	88%
113110	Timber Tract Operations	\$45,015	73%
		\$43,685,657	28% 28%

Source: Economic Modeling Specialists, Inc.

The County's Farm Economy

The USDA NASS 2012 Census of Agriculture counted 463 farms in Androscoggin County, 22% than the County held five years earlier. All told the County has 59,446 acres of land in farms, which means that the City of Auburn ARPZ district holds one of every three acres of farmland in the County.

Androscoggin County holds an important place in Maine agriculture, ranking first in the state for tobacco sales, poultry and egg sales, and for its inventory of laying hens. However, none of these figures were released by USDA in an effort to protect the confidentiality of these growers. The County also ranks 2nd in the state for acreage planted to sweet corn (no figures were released), and also second in the state for inventory of hogs and pigs, with 1,155.

As Table 13 shows, the most prevalent farm size in Androscoggin County is farms of 50 to 179 acres. Nonetheless, half of the County's farms are less than 50 acres in size, while 8 farms (1.7%) are larger than 1,000 acres.

Table 13: Farms in Androscoggin County by Size, 2012

Size Range	Number
1 to 9 acres	141
10 to 49 acres	98
50 to 179 acres	118
180 to 499 acres	83
500 to 999 acres	15
1,000 acres or more	8

Source: USDA NASS Census of Agriculture, 2012

All told, Androscoggin County farmers sold \$53.8 million of farm products in 2012, the Census showed. Of this, \$41.9 million of sales were livestock, and \$11.9 million were crops. Due to concentration in the poultry and dairy industries, and the small number of hog producers, however, the Census did not report sales for most of the top products sold by farms in the County. Table 14 shows the data that are available.

Table 14: Top Farm Products in Androscoggin County, 2012

Product	\$ millions
Poultry & Eggs	(no sales data released)
Forage Crops	\$3.6
Vegetables	\$3.2
Cattle & Calves	\$1.9
Milk & Dairy Products	(no sales data released)
Hogs & Pigs	(no sales data released)

Source: USDA NASS Census of Agriculture, 2012

Census of Agriculture data also show that two of every three farms in Androscoggin County sold less than \$10,000 of products in 2012. Thirty-seven farms (8%) sold more than \$100,000. These figures are found in Table 15 below.

Table 15: Farms in Androscoggin County by Sales, 2012

Sales Range	Number
Less than \$2,500	197
\$2,500 to \$4,999	61
\$5,000 to \$9,999	53
\$10,000 to \$24,999	58
\$25,000 to \$49,999	31
\$50,000 to \$99,999	26
\$100,000 or more	37

Source: USDA NASS Census of Agriculture, 2012

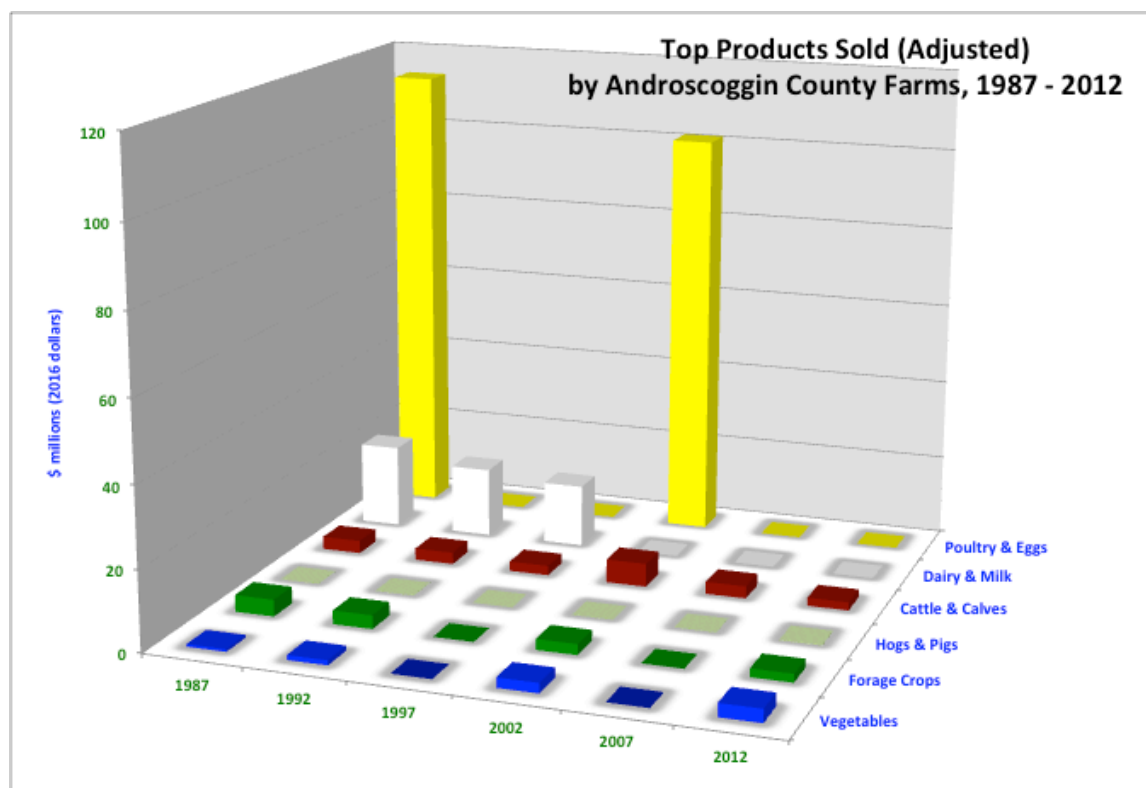
Sales of the major commodities sold by Androscoggin County farmers are generally declining, with the exception of vegetables and direct sales. Chart 18 shows the principal crops and livestock products sold by County farms since 1987.

Perhaps one of the most significant features of this chart is that no sales data were reported for poultry producers in 1992, 1997, 2007, or 2012, and that no dairy sales are recorded for 2002, 2007, or 2012. Nor were forage sales reported for 1997 or 2007, or sales figures for vegetables in 1997 or 2007. These data went unreported because there were such a small number of producers (or such a small level of sales) that census takers withheld sales figures in an effort to protect the confidentiality of each business.

Yet in poultry production, the data we have shows that poultry and eggs sales was overwhelmingly the largest sector of farming in the County, with \$101 million of sales in 2002. This is nearly twice the value of total sales for all County farms in 2012. Similarly, dairy production has fallen so much, from \$15.5 million in 2002, that it is no longer reported.

Chart 18 shows that vegetable growing is the main sector of the County farm economy that is expanding, having increased from \$0.6 million in 1987 (in 2016 dollars) to \$3.3 million in 2012. Hog and pig sales rose from \$30,000 in 2007 to \$120,000 in 2012, but this sector remains small so it is difficult to see this on the chart. Forage production has diminished as dairy farms scaled back. Currently, sales of cattle and forage each total about \$2 million.

Chart 10: Number of Androscoggin County Farms Selling Direct to Households, 1987-2012

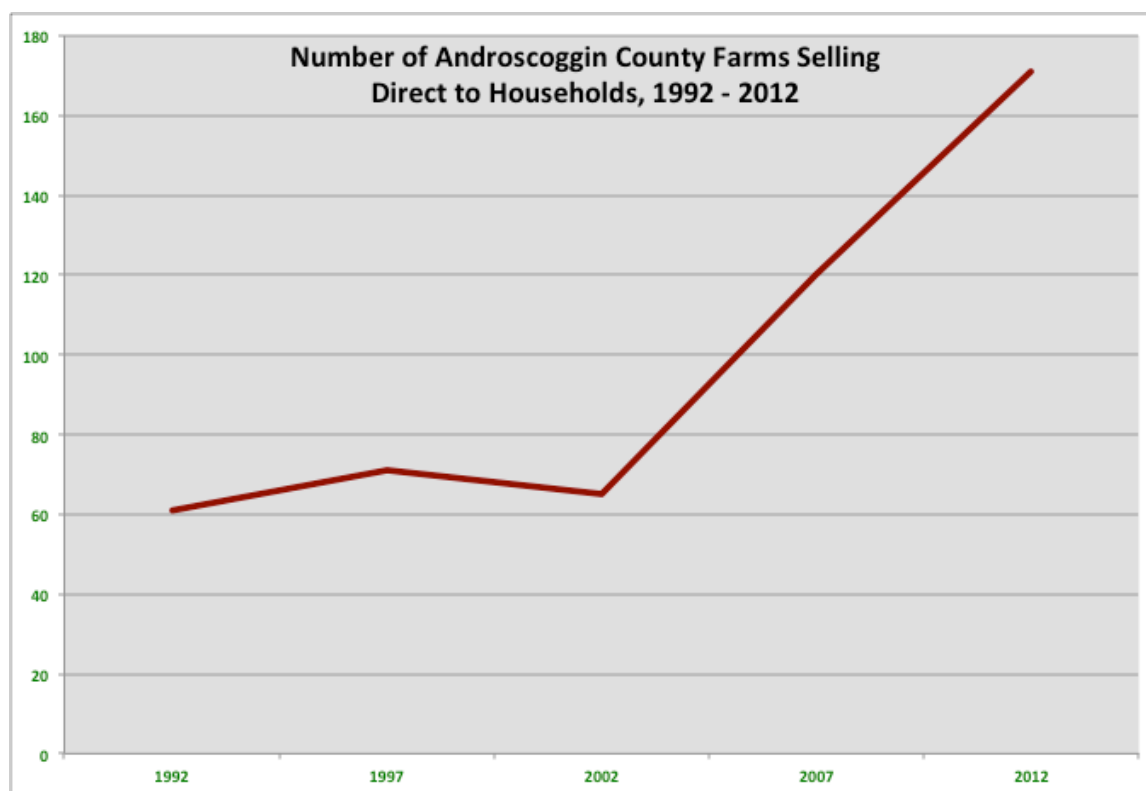


Source: Census of Agriculture

Vegetable growing is the main sector of the County farm economy that is expanding

Significantly, one further sector should be mentioned. This is not a form of production but rather a method of marketing — when farms sell direct to households. Such sales are likely to be primarily sales of vegetables and beef. In 2012, the 171 (37%) farms in the County who sell direct sold \$2 million of food products directly — making this sector as significant as the cattle sector. While this was an increase in 43% in the number of farms selling direct since 2007, reported sales actually declined slightly from \$2.3 million — although this difference could be due to sampling error. Chart 19 below shows that the number of farms selling direct to households has increased markedly (nearly tripling) from 65 in 2002 to 171 in 2012. This suggests there is strong interest from Androscoggin County consumers in purchasing food direct from nearby farms.

Chart 19: Number of Androscoggin County Farms Selling Direct to Households, 1992-2012



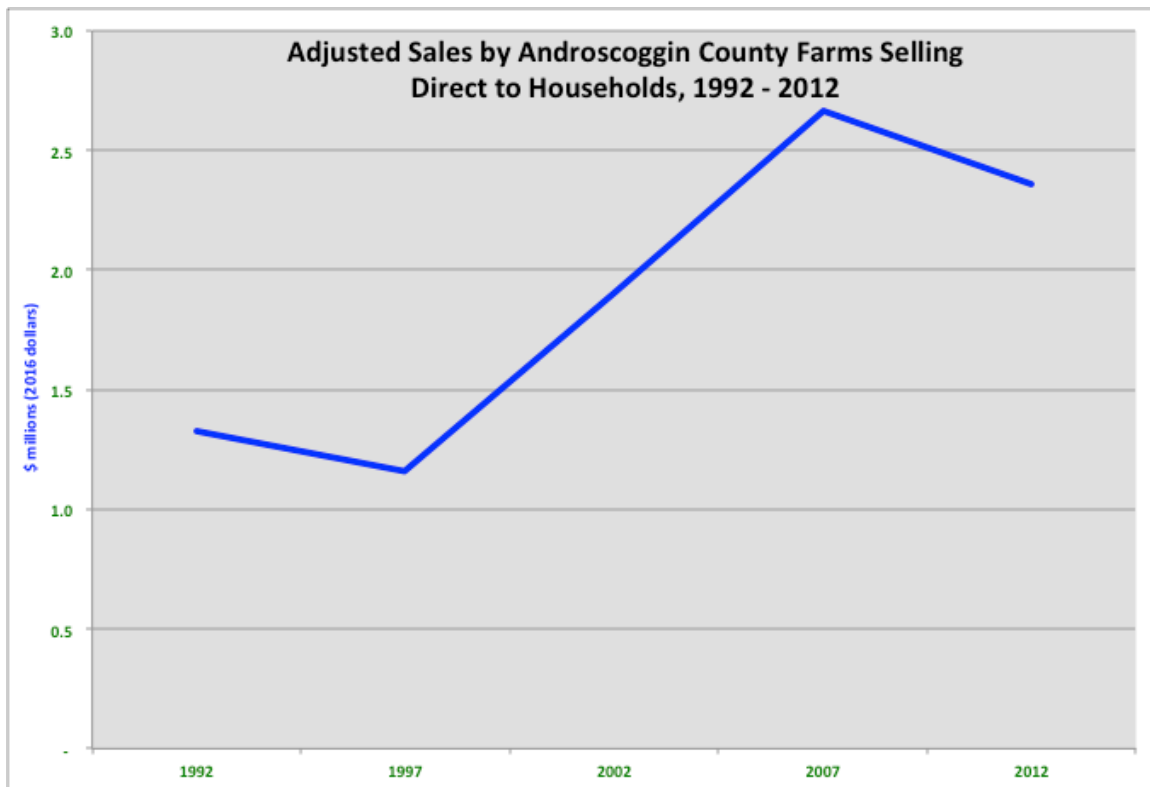
Source: Census of Agriculture

**The number of farms selling direct to households
has increased markedly (nearly tripling)
from 65 in 2002 to 171 in 2012.**

**This suggests there is strong interest
from Androscoggin County consumers in
purchasing food direct from nearby farms.**

Chart 20 shows that the value of direct sales has stabilized at about \$2.5 million in both 2007 and 2012. Some observers note, however, that direct sales nationally appear to have increased more than Census of Agriculture data show. If true, this difference could involve sampling error.

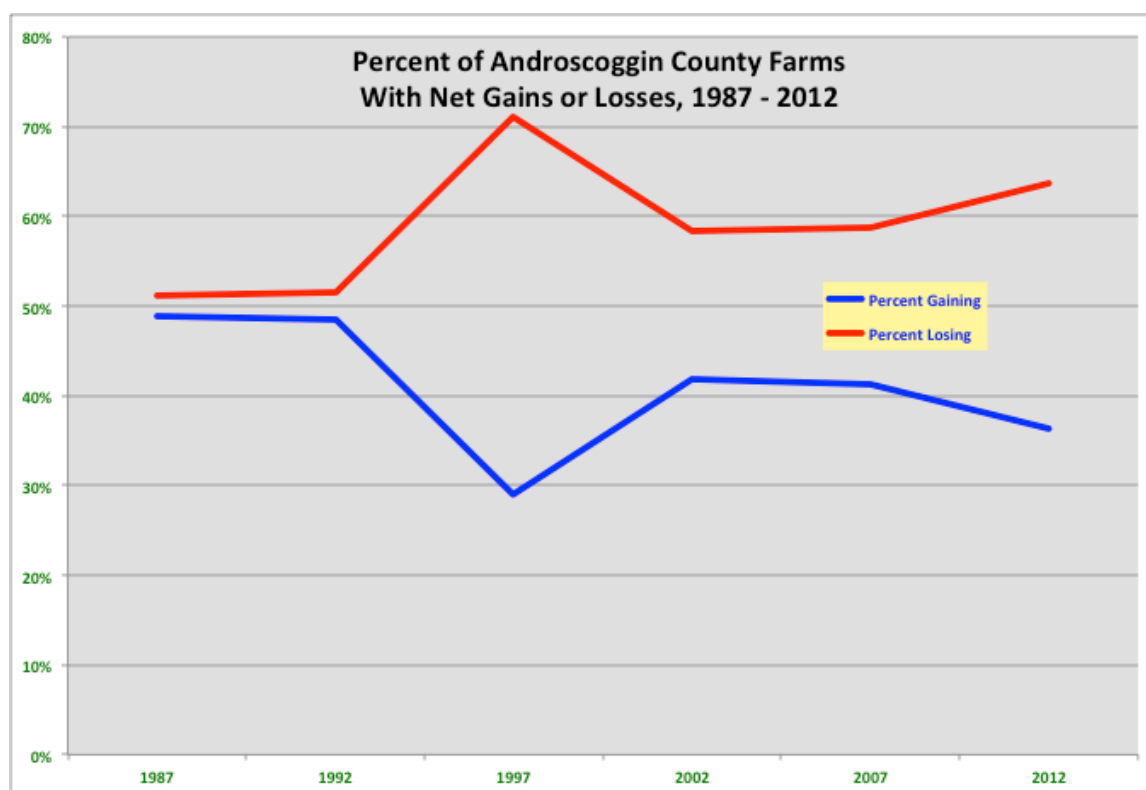
Chart 20: Adjusted Value of Direct Household Sales from Androscoggin County Farms, 1992-2012



Source: Census of Agriculture

Unfortunately, most of the farms in the County (64%) reported a net loss in 2012. As Chart 21 below shows, this represents a marked increase since 1987, when 51% of the County's farms reported net losses. Concurrently, the number of farms reporting a net gain has fallen from 49% to 36%.

Chart 21: Percent of Androscoggin County Farms With Net Gains or Losses, 1987 - 2012

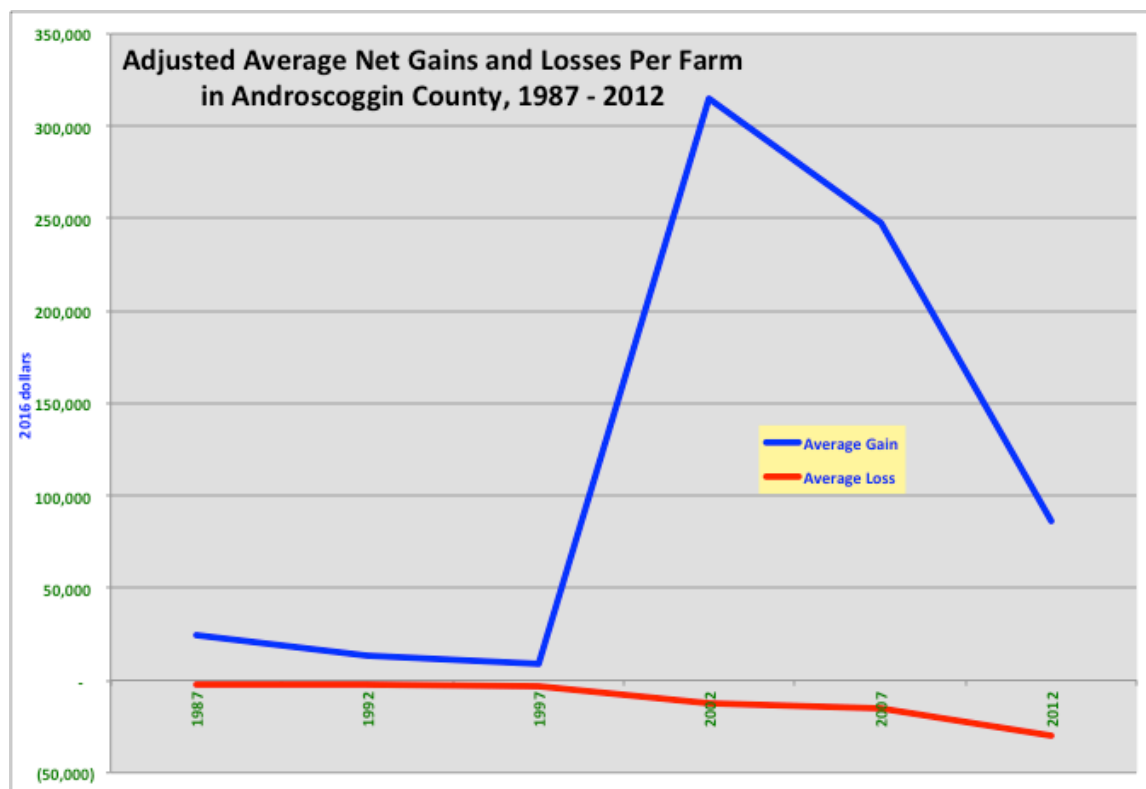


Source: Bureau of Economic Analysis

Tempering this news is that those farms that gained tended to gain more than those who lost. This is shown in Chart 22. Yet even here, there is humbling news, since gains fell substantially from 2007 to 2012, so the average net gain per farm that made a surplus is \$85,872.

**Nearly two of every three farms in the County
reported net losses in 2012**

Chart 22: Adjusted Average Net Gains and Losses Per Farm in Androscoggin County 1987 - 2012

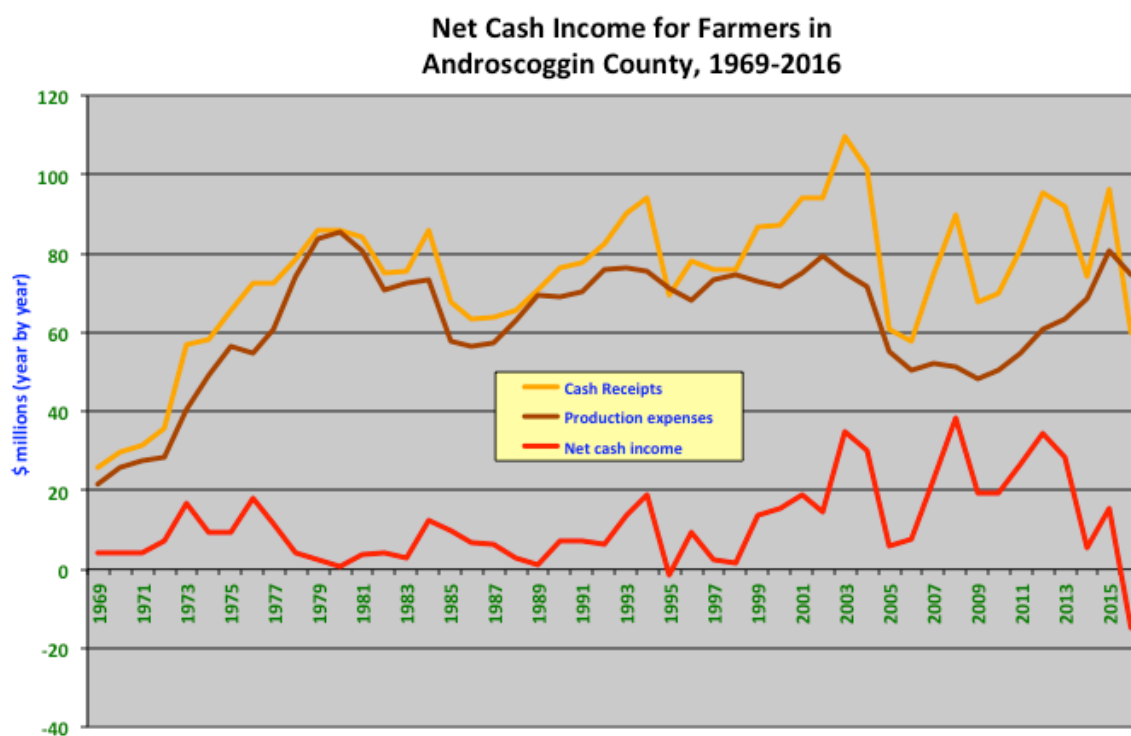


Source: *Census of Agriculture*

Longer-term trends for Androscoggin County farmers are more visible when looking at data covering personal income for the County's farms. These show that sales made by County farmers rose substantially from \$26 million in 1969 (five years after the Ag District was formed) to \$96 million in 2015, only to fall precipitously to \$60 million in 2016. This is shown on the orange line on Chart 23. Moreover, sales levels were precarious, rising and falling rapidly and unpredictably in response to market fluctuations.

Chart 23 also shows that production costs (the maroon line) rose and fell along cash receipts, from \$22 million in 1969 to \$75 million in 2016. Notably, however, production costs remained high in 2016, even as cash receipts fell. Net cash income (cash receipts less production costs) remained rather low for the entire 48-year period, falling well below zero in 2016. While in some years County farmers made \$34-\$40 million in net cash income, in this most recent year the farmers in Androscoggin County lost a combined \$15 million — earning \$19 million less than in 1969, after doubling productivity.

Chart 23: Net Cash Income for Farmers in Androscoggin County, 1969-2016



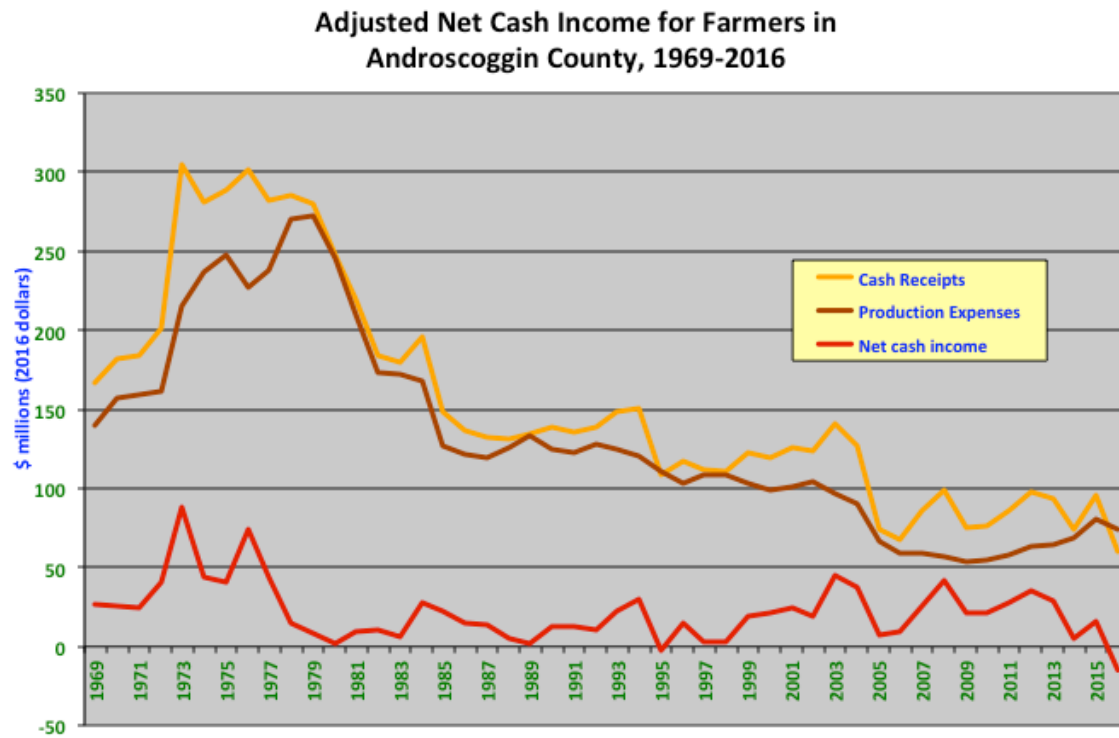
Source: Bureau of Economic Analysis

Yet some caution should be used with this data, since inflation has taken a toll on farm income, just as it has with everyone else. Due to cost-of-living increases, the value of the dollar in 2016 was one-sixth the value it held in 1969. The next chart, Chart 24, shows the same data as above, adjusted for this increase in the cost of living.

Now very different patterns emerge from the same data. In 2016 dollars, Androscoggin County farmers sold more than \$300 million of products in two years: 1973 and 1976. This had mainly to do with livestock sales, which peaked in those two years. Yet after this period of relative prosperity, sales fell steadily to current levels, just below \$100 million.

Production costs still mirrored cash receipts. Certainly in the two prosperous years, 1973 and 1976, County farmers enjoyed surpluses of \$74 and \$88 million each year — surpluses that are larger than total sales today. Moreover, overall trends appear more negative once inflation is taken into account. Overall, the net cash income for County farms fell from \$27 million in 1969 (in 2016 dollars) to a \$15 million loss in 2016 — a \$42 million decrease.

Chart 24: Adjusted Net Cash Income for Farmers in Androscoggin County, 1969-2016

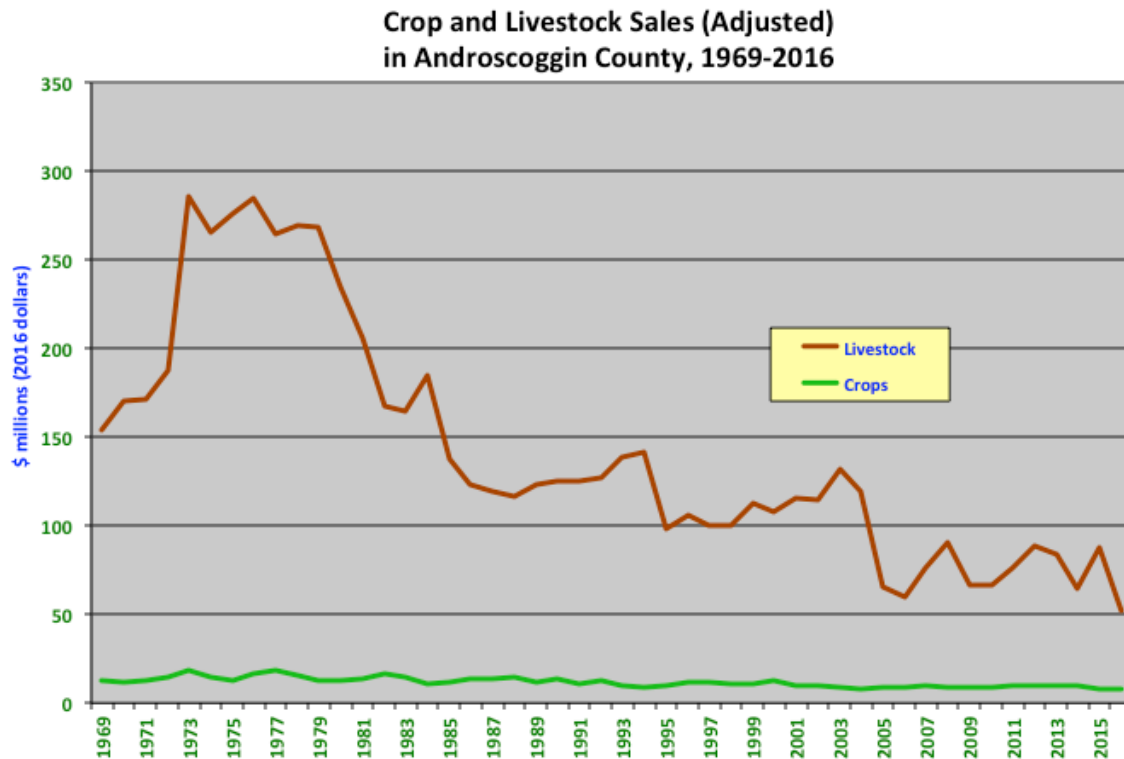


Source: Bureau of Economic Analysis

As the next chart shows (Chart 25), the decline in farm product sales is largely due to an erosion of livestock sales, primarily cattle, dairy, and poultry. As larger feedlots and dairy plants took hold in other regions of the US, prices and margins for livestock became smaller. Crop production has remained fairly steady, but has declined from \$13 million in 1969 to \$8 million in 2016. This decrease would seem to be tied to limited demand for forage as the dairy industry has weakened.

**County farmers lost a combined \$15 million in 2016 —
Earning \$42 million less than in 1969, after doubling productivity**

Chart 25: Crop and Livestock Sales (Adjusted) in Androscoggin County, 1969-2016



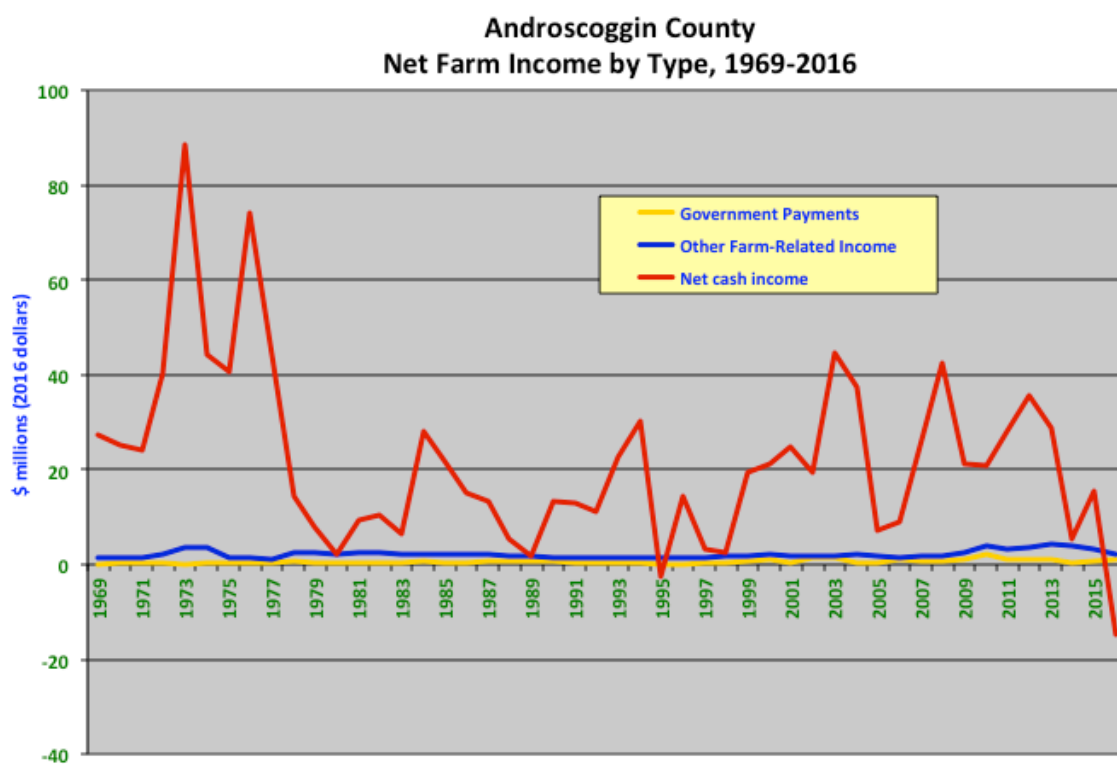
Source: Bureau of Economic Analysis

If we look at the three main sources of net farm income, as Chart 26 below shows, it becomes clear that the negative margins for County farmers pose a substantial threat to farmland protection. Federal subsidies are a rather unimportant source of farm income in the County, while farm production itself is costing farmers money. This means the largest source of net income (outside of holding off-farm jobs) is what the BEA calls “farm-related income.” This is largely rent income and payments from neighboring farmers for custom work (such as combining or harvesting hay for a neighbor). Chart 26 shows that renting out farmland has become a more important source of income than actually farming the land.

**The largest source of net farm income
is renting out land to others who farm**

**Most farm families rely on someone
Working off the farm**

Chart 26: Androscoggin County Net Farm Income by Type, 1969-2016



Source: Bureau of Economic Analysis

Consumer Markets for Food

The irony of farmers losing money while their neighbors are seeking more food from Maine farms is a strong one. To address this, we examine the consumer market for food in the City of Auburn and in Androscoggin County.

The Bureau of Labor Statistics does a comprehensive survey of consumer purchasing every year and publishes data showing household spending. These are regional averages, so this data covers an “average” household in the Northeast, but is not specific to Auburn. Since this region encompasses many urban centers as well as rural areas, it is likely to overstate actual consumption in Auburn.

Auburn residents spend about \$66 million each year buying food

Yet even so, City residents spend about \$66 million each year buying food, BLS data suggest. Of this, \$38 million is food purchased at grocery stores and other venues to eat at home. Since the vast majority of this food is sourced outside of the City, this means that Auburn residents probably purchase at minimum \$63 million of food from outside sources. This is a substantial drain of wealth when farmers are losing \$15 million per year.

Table 16 below estimates the amount of food that is purchased by Auburn residents.

Table 16: Estimated Food Purchases by Auburn Residents to Eat at Home, 2015

	\$ millions
Meats, poultry, fish, and eggs	9
Fruits and vegetables	8
Cereals and bakery products	5
Dairy products	4
Other food at home	12

Source: Bureau of Labor Statistics Consumer Expenditure Survey. Calculated by Meter using average data for Eastern states.

If each resident of the City purchased \$5 of food each week from some farm in Auburn, the City’s farmers would earn \$5.9 million. This would not be enough to stem the losses County farmers currently experience, but would be enough to cut them by more than one-third.

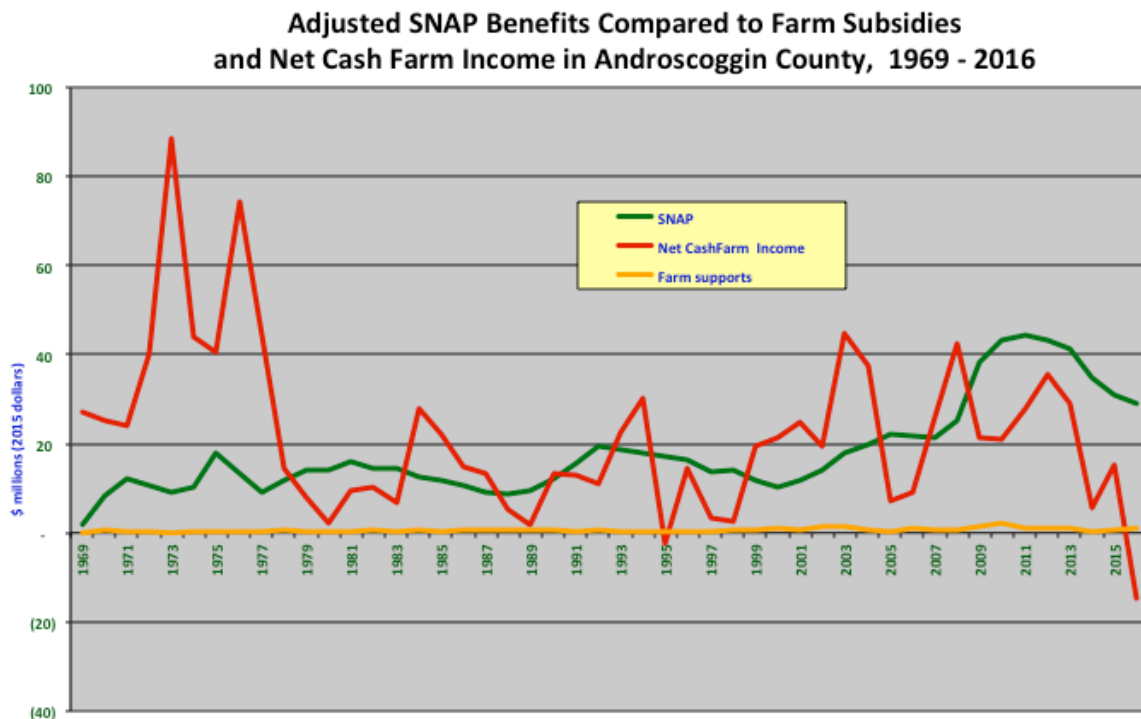
If Auburn farms sought to sell food only in Androscoggin County, they would be striving for a \$307 million market for food.

SNAP Recipients in Auburn

Yet there are also a wealth of Auburn residents with not enough to eat, as mentioned above.

One sobering comparison is made on Chart 27. This compares the net cash income for farmers, the same line we saw before on Charts 23 and 24 compared to both federal farm supports (which are not large in Androscoggin County) and SNAP benefits received by low-income residents. Tragically, this shows that SNAP benefits, which have risen from \$2 million in 1969 to \$29 million in 2016 after peaking at \$44 million in 2011, are a more important source of income for Androscoggin County than farming is.

Chart 11: Adjusted SNAP Benefits Compared to Farm Subsidies and Net Cash Income in Androscoggin County, 1969-2016



Source: Bureau of Economic Analysis

**SNAP benefits are a more important
source of income for Androscoggin County than farming**

Auburn's Forest Economy

The City of Auburn has 2,681 acres of forestland that have been enrolled in state programs, as detailed in Table 17, below. This includes 41 acres of softwood, 1,368.36 acres of mixed forest, and 173.9 acres of hardwoods on 33 properties that have been registered with the State Farmland Protection program. This land has a total value of \$652,419. Another 1,097.98 acres of Auburn land, including 310.7 acres of softwood, 441.92 acres of mixed forest, and 345.36 acres of hardwoods have been placed into the Tree Growth Program. These combined lands have a combined valuation of \$445,468. It is important to note that these acre classifications are not dictated by zoning but instead by current use, so these data do not reveal which lands are actually in the AGRP Zone.

Table 17: Auburn Properties Enrolled in State Tax Programs, 2017

	Farmland Program	Tree Growth Program
Orchard (acres)	182.82	-
Cropland (acres)	35.00	-
Pastureland (acres)	1,547.26	-
Hort1 (acres)	10.25	-
Hort11 (acres)	21.20	-
Blueberry (acres)	1.00	-
Softwoods (acres)	41.00	310.70
Mixed Woods (acres)	1,368.36	441.92
Hardwoods (acres)	173.90	345.36
Open Space (acres)	123.60	-
Valuation of Open Space (\$)	\$155,700.00	-
Valuation of Farmland (\$)	\$615,801.00	-
Valuation of Woodland (\$)	\$652,419.24	\$445,468.20
Valuation of Classified Land (\$)	\$1,222,563.24	\$445,468.20

Source: City of Auburn Assessor's Office, 2017. Note that this table covers only land in the City that is registered with the state program, and does not refer to land within the AGRP Zone itself.

The value of land enrolled in Tree Growth is fixed by the Maine Revenue Services, whereas farmland valuations are determined by a local assessor based on state recommendations, as shown in Table 18:

Table 18: City of Auburn Land Valuation Rates for Farmland Program, Based on State Mandates, 2017

Classification	Dollars Per Acre
Orchard	450
Crop	400
Pasture	325
Hort 1	450
Hort 11	550
Blueberry	400
Softwd	430
Mixwd	440
Hardwd	340
Open Space	Based on % of Full Market Value of property

Source: City of Auburn Assessors Office, 2017

Definitions used in Table 18 above:

Orchard Land = trees bearing fruit at a density of 60 trees per acre

Cropland = field crops grown in rotation with potatoes

Pasture = land growing forage for animals

Hort1 = edible, vegetable, small fruit, marketing gardening, etc.

Hort11 = ornamental, Christmas trees, flowers, nursery stock, etc.

Blueberry = land growing wild, low-bush blueberries

Source: Maine Revenue Service, 2017

The Maine Tree Growth program has enrolled forest acreage in all counties of the state, as Table 19 shows.

Table 19: Maine Tree Growth Enrollment for Organized Municipalities by County, 2015

County	No. of Parcels	Total Acres	Total Value	Acres First Classified	Acres Withdrawn	Penalties Assessed
Androscoggin	689	35,464	\$10,468,775	327	9	\$903
Aroostook	1,774	702,564	\$94,476,355	2,697	1,786	\$13,708
Cumberland	1,669	83,124	\$26,379,826	224	150	\$83,515
Franklin	1,630	292,083	\$71,229,559	787	144	\$25,549
Hancock	1,486	229,388	\$26,991,741	304	80	\$49,195
Kennebec	1,445	73,376	\$18,424,670	972	154	\$46,837
Knox	395	18,955	\$4,990,039	304	0	\$0
Lincoln	706	36,476	\$9,438,958	64	201	\$56
Oxford	3,505	460,812	\$110,337,627	2,434	799	\$82,088
Penobscot	3,092	531,911	\$64,340,524	2,381	253	\$41,589
Piscataquis	1,431	292,640	\$39,506,689	330	162	\$7,311
Sagadahoc	409	18,345	\$5,550,560	152	31	\$10,609
Somerset	2,311	388,983	\$51,615,096	1,599	575	\$4,430
Waldo	876	57,115	\$14,505,825	74	40	\$9,412
Washington	1,532	369,950	\$44,295,688	1,481	483	\$11,983
York	1,439	92,785	\$28,868,289	850	292	\$31,472
State totals	24,389	3,683,971	\$621,420,221	14,980	5,159	\$418,657

Source: Maine Revenue Services, 2016

Table 20: Tree Growth Summary For Unorganized Territories by County, 2015

County	No. of Parcels	Total Acres	Total Value	Acres First Classified	Acres Withdrawn	Penalties Assessed
Aroostook	386	2,314,624	\$312,707,518	0	109	\$16,537
Franklin	287	438,415	\$106,997,037	0	11	\$3,452
Hancock	108	241,323	\$29,310,959	0	115	\$5,053
Kennebec	9	4,874	\$1,245,689	0	0	\$0
Knox	0	0	\$0	0	0	\$0
Lincoln	5	188	\$38,805	0	0	\$0
Oxford	213	285,289	\$70,446,340	0	147	\$8,977
Penobscot	391	714,574	\$87,204,661	0	164	\$30,232
Piscataquis	374	1,525,943	\$204,469,566	0	8	\$14,704
Somerset	819	1,459,839	\$196,672,398	0	296	\$45,112
Washington	392	579,525	\$70,339,350	0	12	\$10,811
State totals	2,984	7,564,594	\$1,079,432,323	0	862	\$134,878

Source: Maine Revenue Services, 2016

Maine's Forest Economy

Foresters, loggers and woodland owners in the ARPZ District operate within an economic context that is rich with forested lands. In fact, 89% of Maine's land mass is forested. Ninety-one percent of the state's forests are owned privately. Table 21 shows the ownership of this land.

Table 21: Ownership of Forestland in Maine, 2016

2015 Forestland Acres & Ownership	Acres of Land	% of Forested Land
Total Acres Forested	17,600,000	100.1
Privately Owned	15,900,000	90.7
State & Local Gov. Owned	1,400,000	8.1
US Forest Service	60,902	0.3
Other Federal Agencies	162,293	0.9

Source: Maine Forest Service, 2016

Most of the forestland in the state is owned by corporations (10.2 million acres) and families (5.6 million acres). Nearly half of family-owned forest land is in holdings of less than 100 acres (USDA, 2016). Family owners hold 32% of all Maine's forestland and own 40% of total wood resources, including the most valuable tree species. Most of these owners are older: 40% of small woodland owners are 65 years old or older; and 66% are 55 years or old (Doak, 2016). Others estimate that small woodland ownership is even higher, at 49% of Maine's privately owned forest lands (Leahy, Silver, & Weiskittel, 2014). This means that, just as in agriculture, woodlands are and will continue to experience a massive change in land ownership in the coming decades (Doak, 2016).

Most of the forestland in the state is owned by corporations.

Much of the industry is located in Southern Maine. The largest concentration of operating mills is in the southern half of the state, as is the largest concentration of small, woodland owners. In recent years, demand in the paper industry has shifted from soft firs and spruce to hardwoods, and this places additional emphasis of the value of small woodlands (Economic Development Assessment Team, 2017; Doak, 2016). However, continuing strong demand for building materials and solid wood products has maintained the value to woodland owners of saw logs and veneer of all species.

Yet demand has simultaneously been diminished by the closing of paper mills. One report states that recent mill closures have eliminated 4 million tons of demand, nearly 30% of Maine's timber harvest (Kingsley, 2017). Another report offers lower figures, estimating the market gap at 2 million tons, or 20% of the industry (Strauch, 2016). Yet both scholars agree that new markets for biomass as fuel in heat and power systems, pellet mills, sawmills, and tissue paper are already leading to reinvestment in the industry (Kingsley, 2017; Strauch, 2016).

Most forestland owners are flexible as the industry changes. One study of small woodland owners' perceptions, and their interest in management and harvesting, concluded that land owners don't care about the eventual market of their wood harvests, as long as it is going to good use and the land is left in good condition (Leahy, Silver, & Weiskittel, 2014). A survey of Maine landowners whose lands were harvested in 2016 found that most were satisfied to engage in forestry management programs, and held multiple motivations for logging their properties, with both income and woodland improvement as the top reasons to harvest (Maine Forest Service, 2016).

Ultimately, forest industries are long-term industries, so short-term fluctuations in the market will not greatly influence a small woodland owner or their property values. Larger owners, however, — the larger professional foresters, harvesters, and processors, etc. — are the most likely to experience significant impacts of market fluctuations, since they have greater investment at stake.

Given the competing uses for land in the ARPZ District, it is useful to understand the relative costs for providing public services to various land uses. Data from the Farmland Information Center, a national program sponsored by the American Farmland Trust and the USDA Natural Resources Conservation Service, show that residential developments, even in dense subdivisions, require more public services than they generate in tax revenue (Table 22). Both commercial/industrial uses and farms and forest lands return far more tax revenue than they require in public services. This calculation says nothing about the intrinsic value some communities place on their rural land uses, such as open space viewing, wildlife habitat, recreation, etc.

Table 22: Median Cost of Community Services Provided Per Dollar of Tax Revenue Raised, US, 2016

	Cost/Revenue
Business/Commercial/Industrial Use	\$0.30
Agriculture/Forestry/Working Lands	\$0.37
Residential	\$1.16

Source: Farmland Information Center, 2016

**Residential developments, even in dense subdivisions,
require more public services than they generate in tax revenue**

Additional Resource Based Land Use

Additional uses for rural lands include open space, wildlife habitat, watershed and environmental protection, outdoor recreation, and mineral extraction. These acreages dedicated to these uses are outlined in Table 23, below. Estimations are based on aerial photos and city assessor's records, and are estimations only. Many of these land uses, typically classified as "rural amenities," are non-market, public goods. Open space for recreation provides mental/physical health benefits, protects wildlife, ensures biodiversity, maintains soil health, supports flood control, watershed protection, and preserve cultural heritage, etc. (Hellerstein, D. et. al., 2002; Outdoor Industry Association, 2017). All of these benefits are extremely difficult to quantify in dollars, but are widely considered vital in relative literature for appropriate land and economic development. Some information, as it exists, is briefly presented below.

Table 23: Land Cover in Auburn's Outlying Zones

Zone	Land Use	Acres	% of Zone
Ag & Resource Protection	Crop	2,429	13%
	Open	1,494	8%
	Developed	657	3%
	Forested	13,939	74%
	Gravel Pit	194	1%
	Recreation	217	1%
	Total	18,931	100%
Low-Density Country Residential	Crop	206	11%
	Open	166	9%
	Developed	389	21%
	Forested	998	55%
	Gravel Pit	52	3%
	Recreation	10	1%
	Total	1,822	100%
Rural Residential	Crop	298	5%
	Open	600	10%
	Developed	1,145	20%
	Forested	3,550	61%
	Gravel Pit	1	0%
	Recreation	233	4%
	Total	5,826	100%

Source: City of Auburn, 2018, based on analysis of 2006 aerial photos.

The City's data (Table 24) also show that average lot sizes within the AGRP Zone are quite varied. While lots of 20-50 acres make up the most prevalent parcels, there are nearly as many that are from 1-5 acres in size.

Table 24: Lot Sizes within Ag & Resource Protection Zone

Lot Size (acres)	# of Lots
<1	106
1 - 5	150
5 - 10	113
10 - 20	128
20 - 50	167
50 - 100	85
> 100	34
All	783

Source: City of Auburn, 2018, based on 2017 data.

Mineral Extraction, Mining, and Gravel Pits

Mineral extraction, or mining, is largely accounted for in “gravel pit” acres. These include clay, sand, and gravel production, largely for Morin Brick and Auburn Concrete. 10 parcels classified as “Gravel Pit” have an assessed value of \$2,047,876, and generated \$47,080.67 in taxes in 2017, based on information provided by the City of Auburn in early 2018.

Recreation Uses

According to the Outdoor Industry Association, outdoor recreation generates 76,000 direct jobs, \$8.2 billion in consumer spending, \$2.2 billion in wages and salaries, and \$548 million in state and local tax revenue Maine (Outdoor Industry Association, 2018). Outdoor recreation/ tourism includes, camping, fishing, hunting, trail sports, off-roading, biking, water sports, and snow sports; there are many subcategories in all of the previously listed activities and available research deals more specific activities (Outdoor Industry Association, 2017; Rosenberger, R. et al., 2017).

In addition to direct economic impact, based on consumer spending, as well as the environmental and social benefits listed above there is also a tracked perceived value of the outdoor recreation experience of an individual or group. The economic values that people hold for specific recreation activities are recorded in the Recreation Use Value Database, updated through 2016 and is maintained by Oregon State University.⁵ These values can range from \$17 per person per day (backpacking) to over \$100 per person per day (non-motorized boating) depending on the activity (Rosenberger, R. et al., 2017), and are further described in Table 25.

The City of Auburn has already considered the importance of open space for recreation use in an earlier study regarding the Maine Army National Guard Training Facility & Mount Apatite Park from 2010 to 2013. The study was specifically conducted to identify and resolve incompatible land use of the National Guard Training Facility and the Mount Apatite Park, which is a significant outdoor recreation area for Auburn. In this study, recreational statistics were used for mountain biking at the national level, and a regional mountain bike trail system located in East Burke, Vermont, called the Kingdom Trail. This trail contributes an estimated \$5 million a

⁵ More information on the Recreation Use Value Database can be found here:
<http://recvaluation.forestry.oregonstate.edu/database>

year to the local economy between trail passes, lodging, food, and gear. Maine data for snowmobiling was also consulted. Snowmobiling is an estimated \$325 million dollar industry for the state of Maine. In 2013, season trail registrations topped 44,897 residents and 11,108 non-residents; 3-day non-resident passes exceeded 1,000 (Integrated Planning Solutions, 2013).

Table 25: Economic Value of Some Recreational Activities, Per Person Per Day

Activity	Mean value estimate
Backpacking	\$17.04
Biking	\$98.94
Cross-country skiing	\$36.84
Developed camping	\$22.99
Downhill skiing	\$77.63
Fishing	\$72.63
Hiking	\$78.19
Hunting	\$76.72
Motorized boating	\$42.48
Nature related	\$63.46
Non-motorized boating	\$114.12
Off-highway vehicle use, snowmobiling	\$60.61
Other recreation	\$62.06
Picnicking	\$31.98

Source: Summary statistics for average recreation economic value estimates of consumer surplus per primary activity day per person from recreation demand studies, values in 2016 dollars, (Rosenberger, R. et al., 2017). Note that these data are not specific to the City of Auburn.

Tourism

It is well known that tourism and particularly outdoor recreational tourism is an important economic driver, nationally, at the state level, and locally (Rosenberger, et. al. 2017; Outdoor Industry Association, 2017). Many states funnel millions of dollars towards tourism campaigns and see substantial returns, while local chambers of commerce and tourism bureaus also support tourism for many rural and recreational rich communities. Tourism contributes approximately 21% of the gross state product, which is over \$10 billion, and generates over \$250 million in sales taxes, but these benefits are largely generated by “the 3 Ls- Lobsters, Lighthouses, and L.L.Bean.” That is to say, the ocean communities are generating these economic impacts, and the potential for interior tourism has been largely untapped (Strauss, 2010). Indeed, one evaluation of sports tourism for the Auburn Lewiston area identified a lack of tourism infrastructure and promotion services as a significant weakness of the area (HuddleUp Group, 2018).

Historical Perspective

Even as the Auburn population was peaking, one important planner predicted tremendous growth for the city. The 1958 Blackwell Report predicted that the city population would rise to “45,000-50,000 or more by the year 2000.” To accommodate this rise in population, the report recommended allowing housing development along major roadways in rural areas, as well as in the urban center.

To protect the rural quality of life in Auburn, Blackwell recommended setting aside farm and forest areas.

“Generally, farming as a way of life has been declining,” the report stated on page 16. It did not address how the City could protect farmlands in the face of this presumed decline. No specific provisions were offered for agriculture, nor did the report address whether local farms ought to increase production to meet the consumer demand from the population he felt was going to double.

The Blackwell report did specifically mention the City-owned farm, which had once served as a poor farm. The study recommended that this farm might no longer be necessary due to “the decline in farm living and because of far-reaching changes in community approaches to rehabilitating or caring for disabled, enfeebled, or abandoned older citizens.” Blackwell recommended that the City retain ownership of the land so it could serve as part of a circle of public open space surrounding Lake Auburn.

The report noted that the “Turner Centre Creamery...north of Auburn, was once one of the largest in New England,” and that the cannery at Skilling’s Corner had closed [page 17-18].

Blackwell correctly predicted that “The Auburn future population will be mainly urban, suburban, and rural non-farm... The number of people will depend mainly on future urban employment, which we believe will to be more in non-manufacturing categories than in manufacturing” [page 95].

Further, the Blackwell report stated that “More future population growth can be expected within Auburn municipal boundaries than in Lewiston, we suggest, because there was in 1957 so much more attractively developable acreage in Auburn, both for industry and for residence” [Page 96].

Section IX of the Blackwell report offers “An Urban Renewal Program for Auburn.” Nothing regarding agricultural or forestry economic development is mentioned [page 110].

Moreover, the Blackwell report set out the vision for what became rural residential districts. “The principal eight suburban and rural residential districts suggested in the Land Use and Circulation Plan (not counting strips zoned for rural residence in outlying Auburn) appear to aggregate some 3500 buildable acres and would accommodate, we estimate, some 2,250 new one-family dwellings, over and above those already existing.

The report further noted that “Auburn and Lewiston have very little employment directly related to forestry exploitation, notwithstanding the extended wooded lands in and surrounding Auburn” [page 18]. Blackwell found that 95 jobs in Lewiston-Auburn involved forestry and agriculture, compared to 13,265 jobs in manufacturing at the time. The report concluded, “Farming and forestry activities in and around Auburn may expand also because of the national need for more food and more fibre products as the regional and national populations increase, but farm and forestry employment will not expand as much as productivity by new methods and equipment” [page 19].

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