



A Baseline Assessment of Economic Conditions in Provincetown, MA

Implications for the Growth Management Policy

Conducted by:

The Public Policy Center at UMass Dartmouth

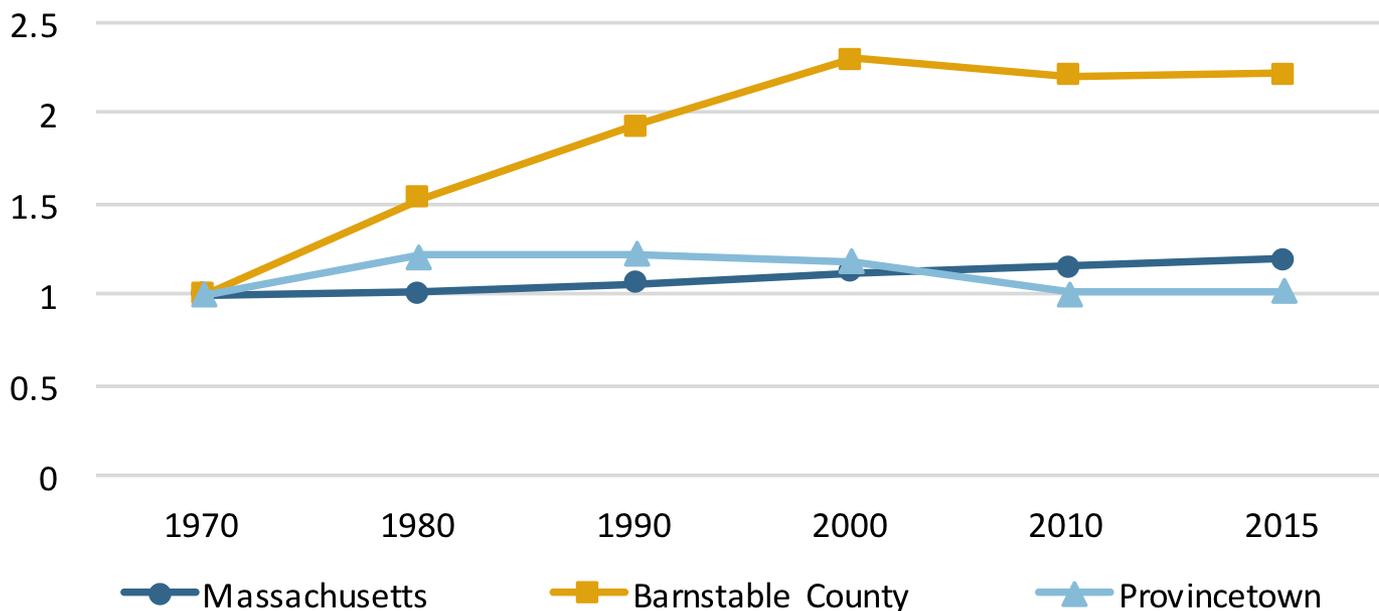
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Provincetown's year-round population has been flat for decades.

Index of Population Trends, Massachusetts, Barnstable County, and Provincetown, 1970–2015

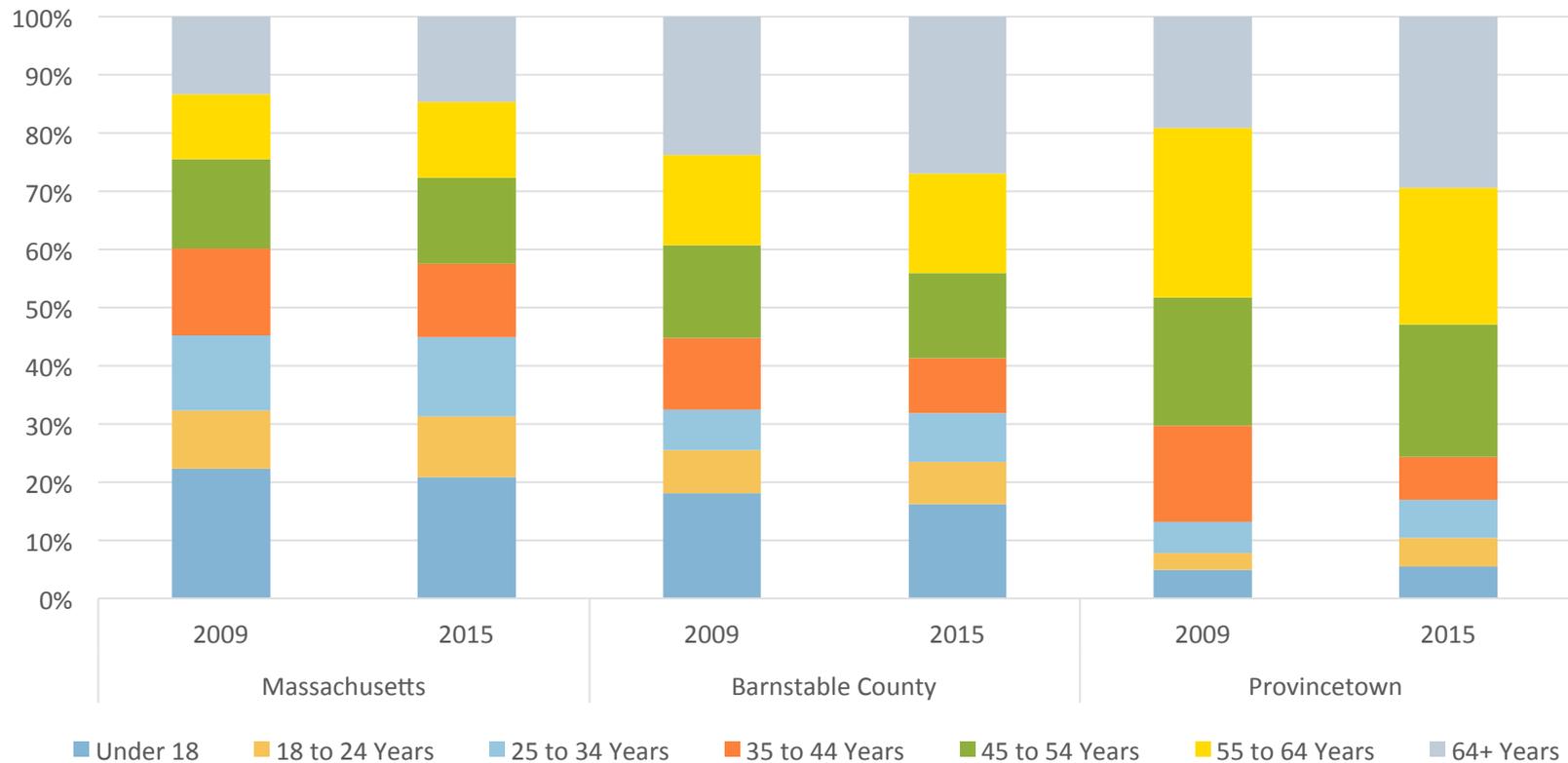


Source: 1970–2010 U.S. Census Bureau Summary File 1, 2011–2015 ACS 5-Year Estimates, UMass Donahue Institution Population Estimates Program (Indexed to 1970)



And a majority of its residents are over age 55.

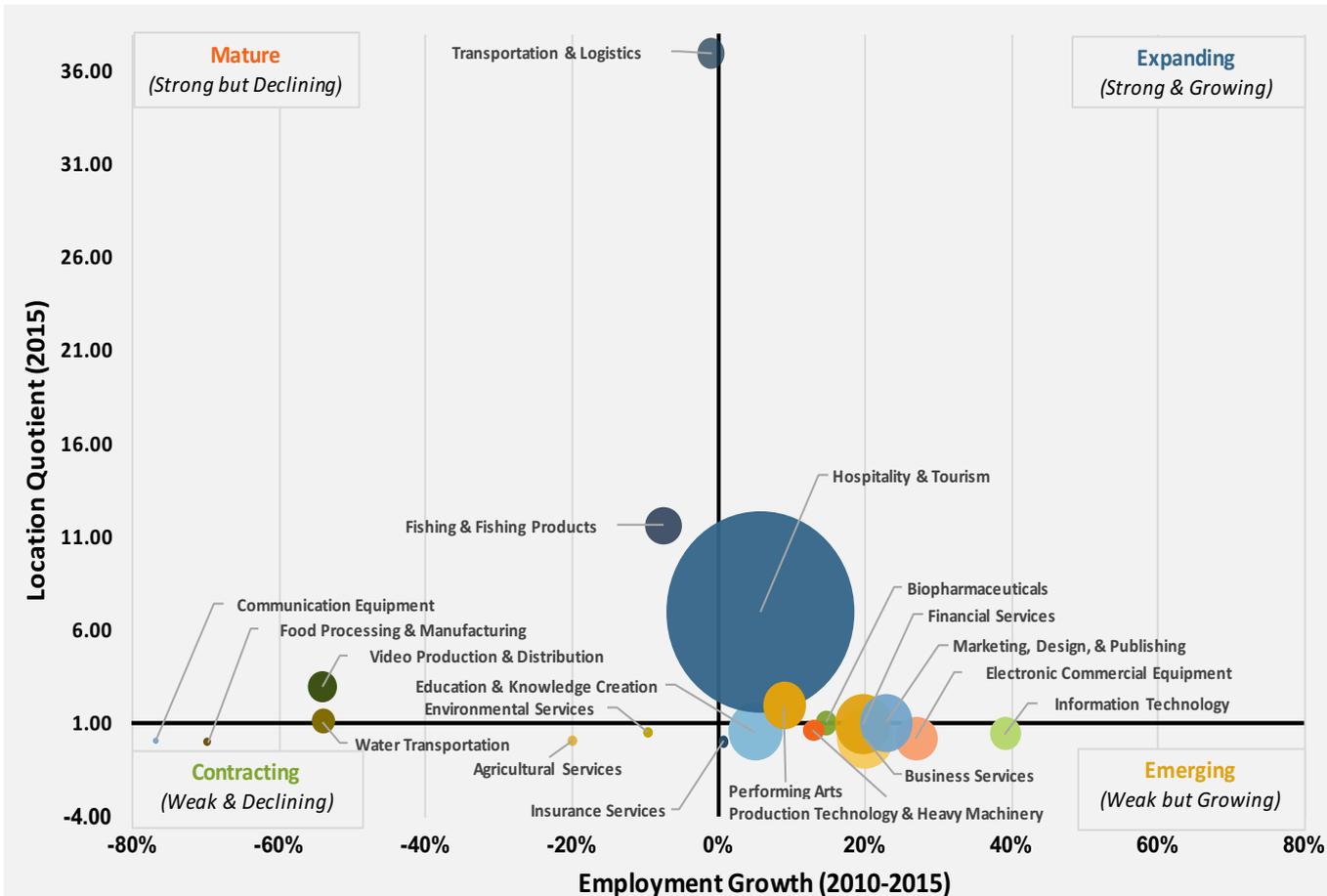
Age Cohorts, 2009 to 2015



Source: 2009 ACS 5-year estimates, 2015 ACS 5-year estimates



The local economy is dominated by Hospitality & Tourism.



Source: Emsi



In a region beset by housing affordability problems, conditions here are even worse.

Cost Burdened Rental Households, 2010–2015

	2010		2015	
	Year-Round Renter Households	Spending 35% of Income or More on Rent	Year-Round Renter Households	Spending 35% of Income or More on Rent
Provincetown	592	57.6%	617	64.2%
Outer Cape	1,451	43.8%	1,401	54.9%
Lower Cape	3,061	33.2%	2,831	39.5%
Mid Cape	8,983	43.9%	5,872	44.6%
Upper Cape	5,789	40.3%	7,055	34.2%
Barnstable County	19,284	41.1%	17,159	40.3%
Boston	159,964	42.9%	168,836	41.4%
Massachusetts	904,078	40.4%	966,054	40.5%

Source: 2006-2010 and 2011-2015 American Community Survey 5-Year Estimates



Fewer residents live in town year-round.

Seasonal and Year Round Housing Units, 2010 - 2015

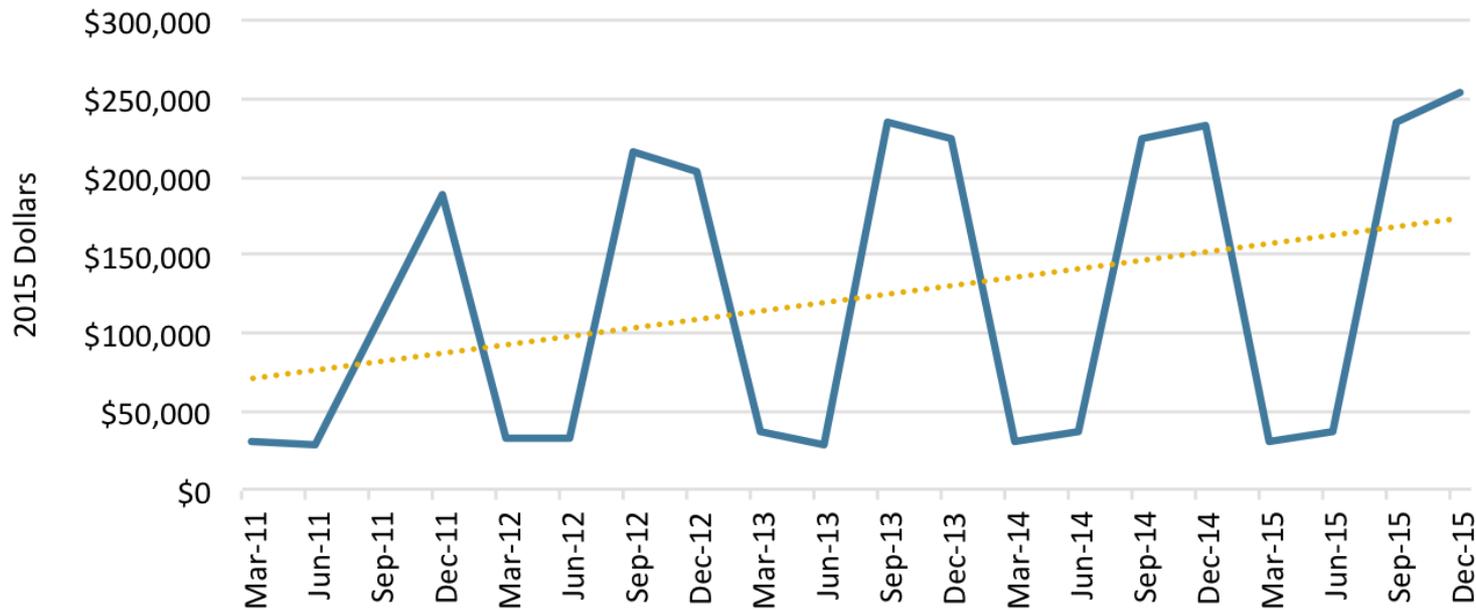
	2010			2015		
	All units	Seasonal	Year Round	All Units	Seasonal	Year Round
Provincetown	4,478	51.7%	42.6%	4,517	55.6%	39.5%
Outer Cape	17,730	57.5%	39.1%	18,176	62.0%	35.4%
Lower Cape	29,833	42.0%	54.1%	30,232	45.4%	50.9%
Mid Cape	59,728	30.1%	65.7%	60,236	33.7%	61.7%
Upper Cape	51,547	27.1%	69.6%	52,667	28.9%	67.2%
Boston	270,470	0.6%	90.9%	278,521	1.1%	92.0%
Mass.	2,786,077	4.0%	90.2%	2,827,820	4.4%	90.2%

Source: 2006-2010 & 2011-2015 American Community Survey 5-Year Estimates



Economic activity has increased, but remains highly seasonal.

Meal Tax Payments, Constant 2015 Dollars, Provincetown, 2011–2015

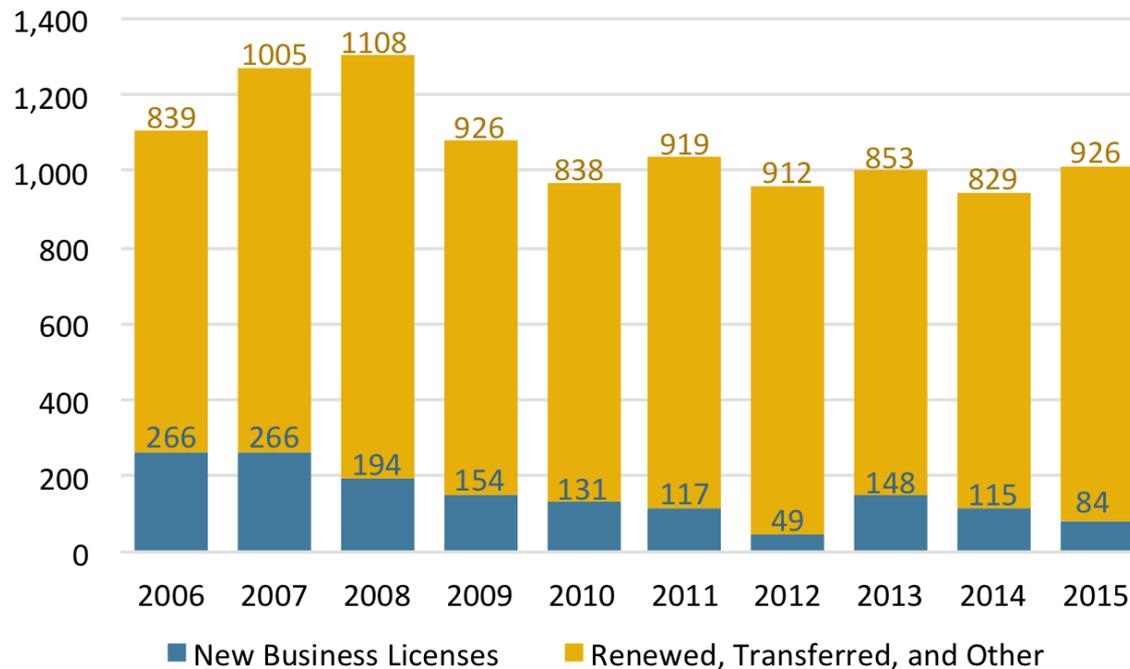


Source: Provincetown Document Center, 2011–2015



The number of new business licenses has been on a downward trend since 2007.

Business Licenses, Provincetown, 2006–2015

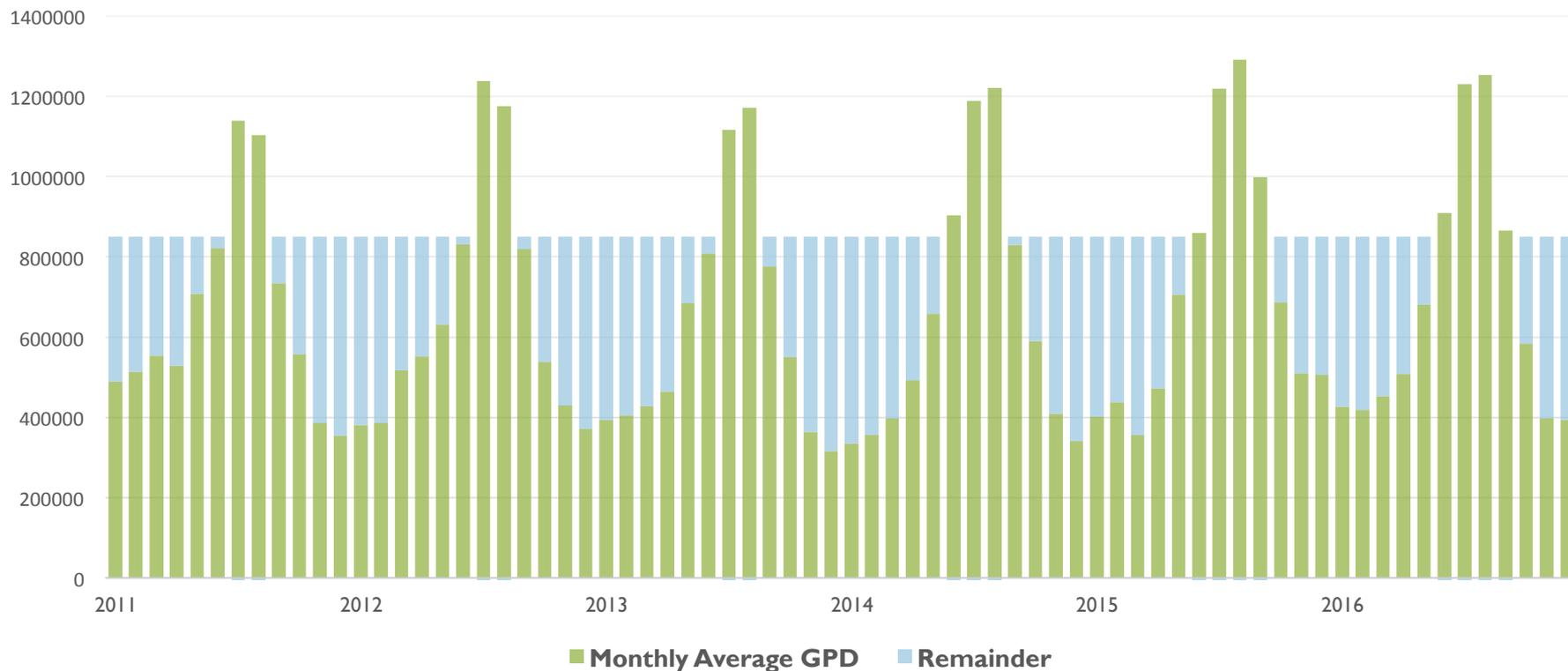


Source: Provincetown, Approved Business Licenses, 2006–2015



Seasonal development patterns are putting pressure on town infrastructure.

Monthly Average Water Withdrawals, 2011-2016

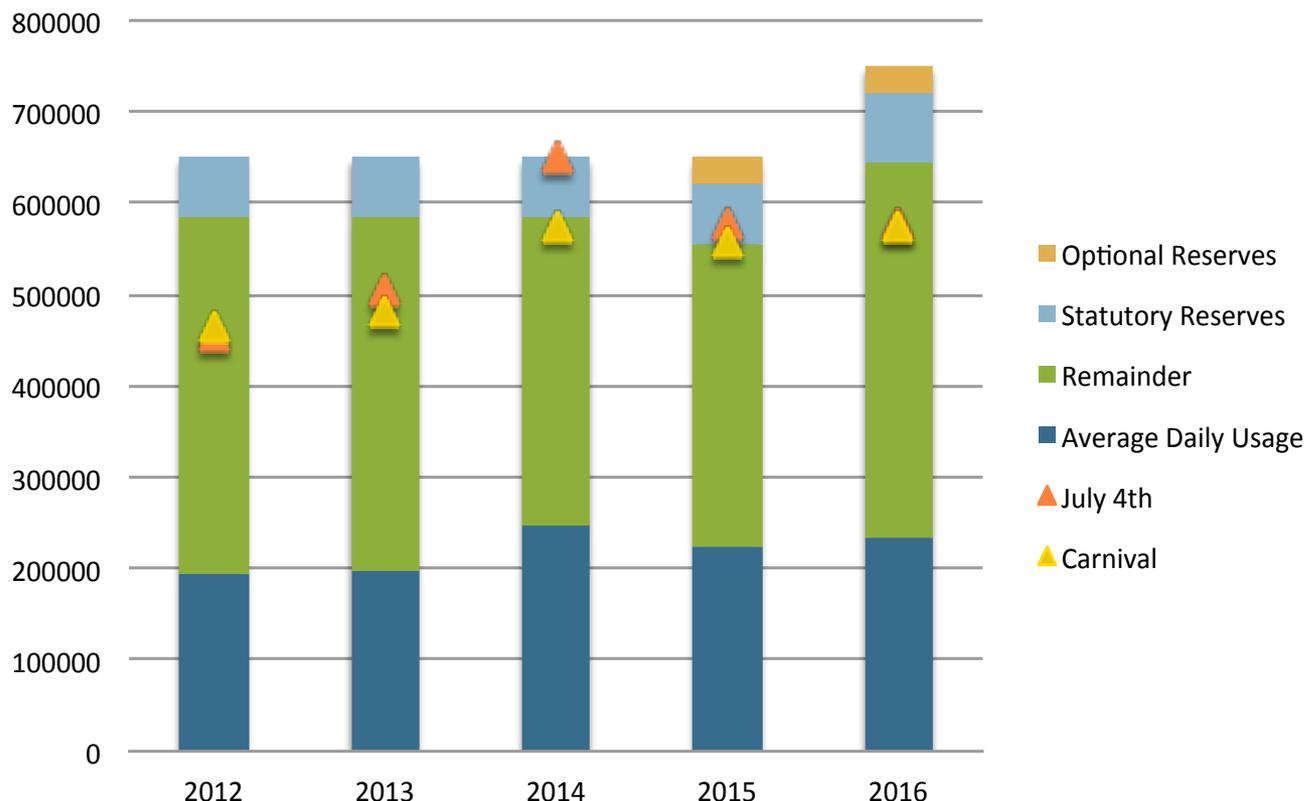


Source: Town of Provincetown



Seasonal pressure is worsened on holidays when tourist activity peaks.

Yearly Average Wastewater Usage with Peak Events, 2012-2016



Source: Town of Provincetown



Holidays, particularly when it rains, push the wastewater treatment facility near capacity.

Holidays When Total Rain Exceeded 0.25 Inches, 2006–2016

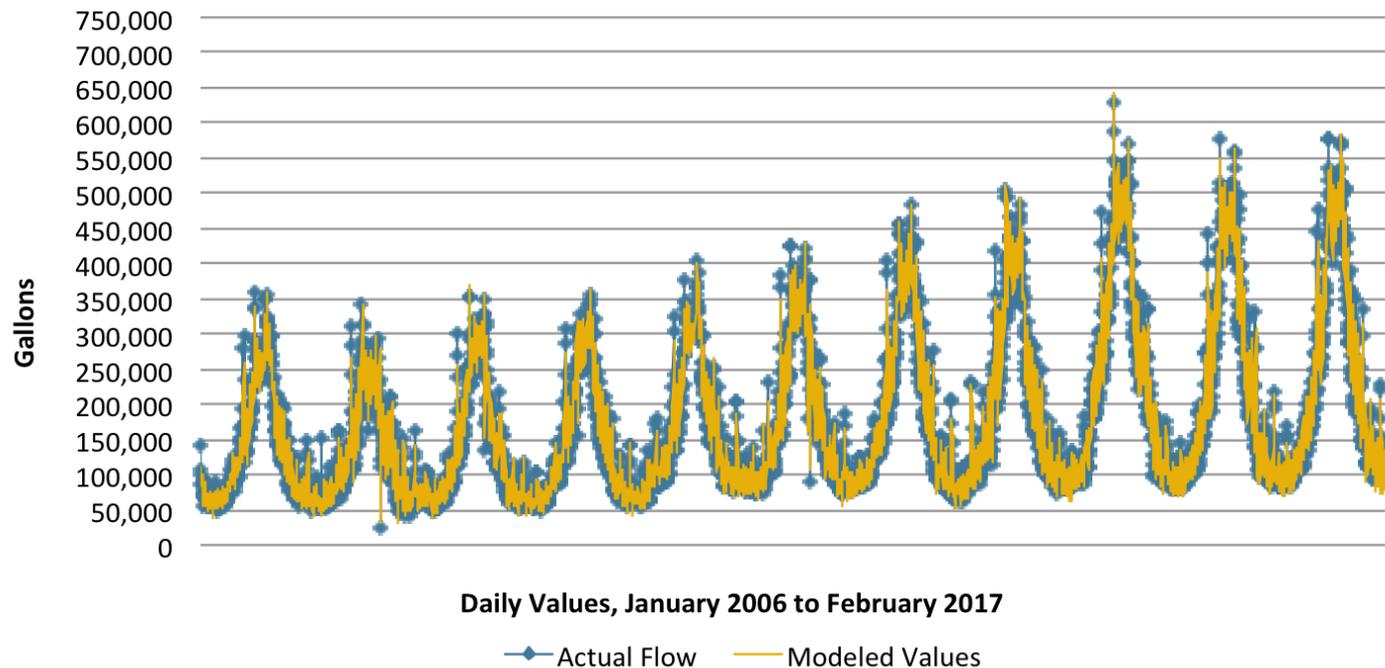
Date	Influent (MDF)	Connections	Ratio	Rain (inches)
7/5/06	291,132	502,228	57.97%	0.32
7/5/07	309,832	529,080	58.56%	0.82
8/16/12	483,502	794,870	60.83%	0.44
7/4/14	627,632	928,946	67.56%	1.13
7/5/14	657,199	928,946	70.75%	0.99
7/5/16	519,456	1,000,206	51.93%	0.88

Source: Town of Provincetown, NOAA rain data for Barnstable, and PPC Calculations



We modeled the impact of seasonality, holidays, rainfall, and number of sewer connection.

Daily Waste Water Flow, Observed and Modeled Values



Source: Town of Provincetown, NOAA, and PPC Calculations



The statistical analysis allows us to make reliable predictions that can be used to inform planning.

Regression Results

	Precipitation	Connections	Holiday
Coefficient	12,069.3	0.24	22,300.2
Standard Error	840.5	0.0032	3389.4
P-Value	< 0.000001	< 0.000001	< 0.000001

Source: PPC Calculations



Provincetown could experience between 6.5 and 7.9 inches of rain on a peak summer tourism day before exceeding system capacity.

Forecasted Precipitation Amount (Inches) Needed to Exceed Plant Capacity

Reserve Amount	Lower Estimate	Midpoint	Upper Estimate
0	6.5	12.8	16.8
5,000	6.8	12.9	17.1
10,000	6.9	13.2	17.3
15,000	7.2	13.4	17.5
20,000	7.4	13.7	17.7
25,000	7.6	13.9	18
30,000	7.9	14.1	18.2

Source: PPC Calculations



Policy Implications

- Seasonal growth patterns are putting significant pressure on town infrastructure, limiting economic and housing development options.
- Our analysis suggests that Provincetown may have more capacity to support growth than the assumptions in the current growth management policy imply.
- Historical data suggest that Provincetown can decrease the amount of optional wastewater reserves without having a large impact on the amount of precipitation the system can handle on the busiest tourism days.
- However, it is clear that over the long run Provincetown will need to expand its permitted wastewater capacity if highly seasonal growth patterns persist over time.