



New Housing Production in Massachusetts: Fiscal Dynamics and Community Implications

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A new study demonstrates that, in the aggregate, development of new housing offers net fiscal benefit to both municipalities and the state. Additional analysis validates a second study which found that increased housing production does not predict enrollment changes in Massachusetts school districts. In the new study, a distinct minority of municipalities did incur net fiscal burdens—burdens that the net new state tax proceeds associated with the development of new housing are more than sufficient to offset.



INTRODUCTION

Since 2010, the Massachusetts economy has grown robustly, led by the state's dynamic innovation economy clustered in greater Boston. During the nine years leading up to 2017, Massachusetts added over 300,000 new residents and employment now exceeds the 2001 peak by almost 300,000 jobs.¹ As the Massachusetts economy grows, so does the demand for more housing. In 2010, the UMass Donahue Institute published a baseline estimate of future housing demand in 2020 as part of the Massachusetts Housing Partnership's (MHP) Foundation for Growth Initiative,² which estimated a supply gap of almost 30,000 homes by 2020, leading to unnecessary price inflation and out-migration.

Slow housing growth in Massachusetts has been well-documented and discussed in housing reports by many experts, including MHP, the Commonwealth Housing Task Force and even the White House.³ Over the past fifty years, housing production in Massachusetts has fallen, particularly construction of multi-unit housing developments. Constraints on new construction include complex and exclusionary permitting processes for multi-family development, threats of lawsuits and organized opposition to new housing projects, and large-lot zoning for single-family homes that limits the number of homes that can be built in one area. Even though housing construction has picked up over the last few years, as evidenced by the increase in building permits between 2013 and 2016,⁴ the state's regulatory environment, high construction costs, and lengthy and uncertain permitting process combine to incentivize high-end housing that yields greater rates of return, but does not help solve the state's affordability problems.

For more than a decade, community and academic leaders from across Massachusetts have identified the need for significantly increased housing production as perhaps the central barrier to economic growth and quality of life in the state. One major argument in opposition to new housing development is the belief that new residents—especially in multi-family housing—will have a negative fiscal impact on the municipality, especially from higher municipal service costs associated with increased school costs due to new students living in new housing units.

In 2016, we published a report⁵ that summarized the literature on the local fiscal impact of new housing development and extended this literature by analyzing the state's fiscal benefits associated with new development. We analyzed the housing units studied in a 2007 UMass Donahue Institute report⁶ to calculate the state revenues (from all sources including income and sales taxes) from residents, adjusting for the estimated income of residents and their associated housing costs. We found

that the new state revenues generated by the new developments previously examined were substantial and more than offset any negative local fiscal impacts, if and when they occurred.

Informed by our previous work on this topic, this study attempts to develop an estimate of the total state revenue potential of new housing projects by accounting for regional variation in project mix and demographics. The results of this analysis demonstrate that, in the aggregate, new housing development provides a net fiscal benefit to both municipalities and the state. This is true even after considering that not all residents of new housing are new residents in the state and after accounting for the additional costs associated with new residents.

Additionally, we conducted an analysis validating a study by the Metropolitan Area Planning Council, which found that increased housing production does not predict enrollment changes in Massachusetts school districts.⁷ Our analysis finds that available school capacity—measured as declining enrollment and a student-teacher ratio below the state average—does not have a statistically significant impact on whether towns permit new housing. If anything, the relationship is in the opposite direction. We find that towns with more school capacity tend to permit less housing.

ESTIMATING THE FISCAL COSTS AND BENEFITS OF NEW HOUSING PRODUCTION

To calculate the net fiscal impact of new housing production on Massachusetts and its cities and towns, the Public Policy Center:

1. Developed a representative, purposive sample of recent housing developments in Massachusetts that accounts for regional variation in project type and demographics⁸
2. Collected detailed information for each development, including number of units by type (market-rate or affordable), unit size (by number of bedrooms), and price
3. Calculated household income estimates for each development based on the type, size, and price of the units
4. Modeled the household spending impacts using an input-output model (IMPLAN)
5. Estimated the associated net new state income taxes using a micro-simulation model⁹
6. Calculated property tax impacts by applying prevailing tax rates to assessed property values
7. Calculated excise tax impacts using town-level data on per vehicle excise taxes and the number of vehicles per household

8. Subtracted the estimated state costs associated with providing MassHealth services to new eligible households
9. Subtracted the state and local costs of providing K-12 education as determined by collecting information on the actual enrollment characteristics of students reported as residing in the examined developments directly from the sampled school districts

Since not everyone who moves into an available housing unit, new or otherwise, is new to the state, we reduced the state-level impacts in proportion to the percent of people moving into a Massachusetts unit from out-of-state (43%).¹⁰ To calculate the *net new* revenue arising from these developments, it was also necessary to estimate the major costs associated with the new residents. We have focused our attention on the costs associated with MassHealth and K-12 school expenditures, since these are the largest population-driven state and local expenditures. Calculating these costs requires knowing how many of the residents in the sample developments are eligible, and likely, to receive their health insurance through MassHealth, and how many of the residents attend local public schools. The estimated income of the residents was used to estimate MassHealth eligibility. Recognizing the importance of obtaining highly accurate student demographics, we surveyed all school districts in the sample to determine the actual number of students living in the sampled developments by cost category.

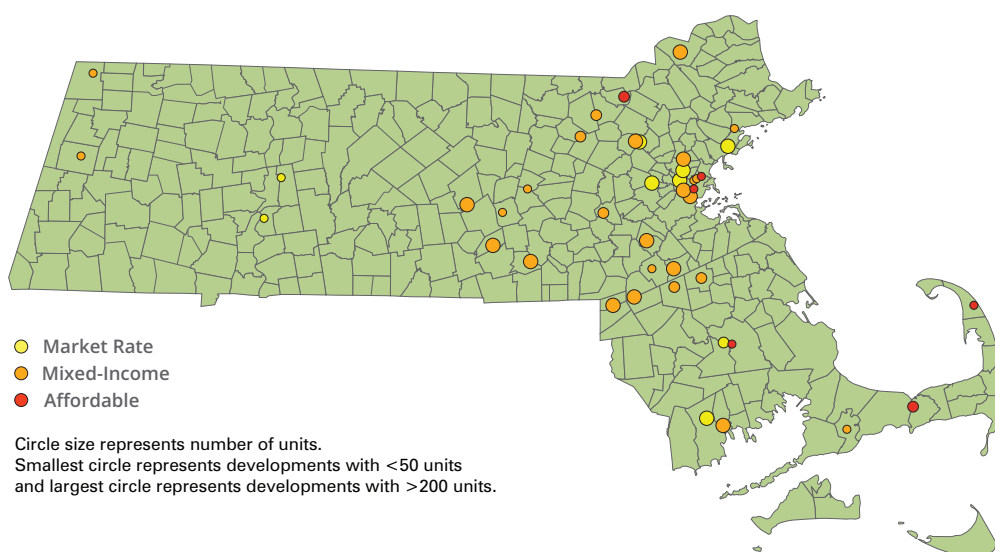
Developments were purposively selected to create a representative mix in a range of community types from every region of the state. The sample consists of 42 housing developments, predominantly rental units (39). In total, there are 6,076 housing units in the 42 sample developments. Importantly for revenue estimates, the sample was stratified to ensure that our income estimates reflect the full range of residents living in all new housing developments in Massachusetts.

THE NET EFFECT OF NEW HOUSING PRODUCTION

In total we estimate that, in the aggregate, the 42 sample developments contributed \$7.7 million in local taxes and fees to municipalities and \$15.6 million to the state in net new state tax revenue in FY18. On a per unit basis, municipalities received \$1,273 and the state received \$2,562. We consider these estimates to be conservative in that they do not systematically consider the drag that an inadequate housing supply can have on the economy overall nor the attractiveness of Massachusetts as a place to live, work, and do business.

Nevertheless, individual developments of new housing development can and occasionally do present a net fiscal burden for municipalities and/or the state. We estimate that 12 of the 42 (29%) developments had net negative fiscal impacts on the municipality (fiscal costs that exceeded benefits), while 6 of the 42 (14%) had net negative fiscal impacts on the state's tax rolls. To make the

Figure 1. Representative Sample: Location and Size of Housing Developments by Type



Source: Authors' analysis

IS LOCAL HOUSING PRODUCTION BEING STYMIED BY SCHOOL CAPACITY?

A recent research brief by the Metropolitan Area Planning Council (MAPC) found “no meaningful correlation between housing production rates and enrollment growth” over the six years from 2010 to 2016. The research credits this pattern to demographic changes, such as the aging of the Baby Boom generation and smaller family sizes among younger generations. To extend this analysis, we posed a related but different question. Instead of questioning whether new housing brings more students into a school district, we evaluated whether cities and towns with excess capacity in their schools are more or less likely to permit new housing. If the fiscal concerns raised by the prospect of increasing school enrollment are in fact the primary obstacle to new housing development, we would expect that towns with excess capacity in their schools would be more likely to approve new housing than those without.¹¹

To test whether this bears out in actual development patterns, housing construction permit data and school capacity data were collected for all 351 cities and towns in Massachusetts for the years 2010 to 2015.¹² School capacity was defined as a negative annual average enrollment growth rate during the five years prior and a student-teacher ratio below the state average. Since school data are reported at the district level and not the municipal level, we painstakingly disaggregated regional school districts based on each associated community’s share of the school-age population. Vocational schools were excluded from our analysis since students have a choice whether or not to attend them. It also proved too difficult to predict and allocate.

One difficulty with simply comparing cities and towns that have school capacity to those that do not is that the demand for housing varies, and therefore fewer permits issued do not necessarily reflect community resistance to new development. To correct for this problem, the direction and statistical significance of the effect of school capacity were assessed using a statistical model that controls for other factors. These factors included:

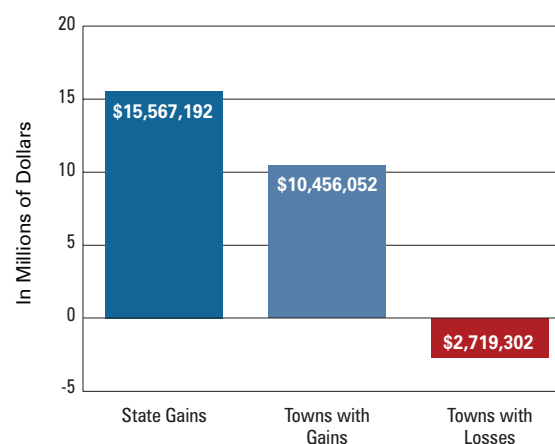
- Presence of rail station (commuter rail or MBTA subway)¹³
- Job Center (Yes/No), defined as being in the top 10% of cities or towns by population and having more jobs located there than employed residents
- A city form of government (Yes/No)
- Housing density (units per Square Mile in 2009)
- Property tax rate
- Percent of municipal revenue from property taxes
- Median household income
- Median rent
- Meets 40B 10% affordability threshold (Yes/No)
- Presence of a 40R district (Yes/No)
- Percent of school funding from Ch. 70 aid
- Perceived school quality¹⁴
- Share of the population that is white, non-Hispanic
- Median age
- State GDP (to account for macroeconomic conditions)

municipalities that experienced a net fiscal loss financially whole, an estimated \$3.1 million would be required annually, or the equivalent of 20 percent of the state’s net new revenue from the sampled developments.

These results make it clear that the net new state tax proceeds associated with the development of new housing are more than sufficient to offset local fiscal shortfalls. The challenge for policymakers is to design a way of providing municipalities with a predictable and reliable source of support in the relatively small number of cases when the local fiscal costs of new housing development exceed their local benefits. Such a policy would reduce the role that fiscal concerns play in local resistance to much new housing development across the Commonwealth.

The results indicate that school capacity does not have a statistically significant impact on whether towns

Figure 2. Net Effect of All 42 Housing Developments in Massachusetts, 2018



Source: Authors' calculations

permit new housing. In fact, the relationship is in the opposite direction—towns with school capacity tend to permit less housing. So, while municipal officials may argue that school costs prevent them from permitting new housing, cities and towns that tend not to permit new housing are just as likely as other towns, if not more so, to have extra space available in their schools.

We offer a note of caution about the statistical significance of the percent of the population that is white, non-Hispanic. This variable is correlated with housing density, as more densely populated places tend to have more racial diversity. In fact, if the number of housing units per square mile is included in the regression equation, the statistical significance of the white, non-Hispanic population share is reduced to non-significance (see Table 1 and Table 2). This does not rule out concerns about race as an explanation for resistance to new

housing production, but it does mean that we cannot disentangle race from density since they are so closely associated. However, this has no bearing on the significance of school capacity. In any of the regression equations or statistical tests that were evaluated, school capacity does not predict housing production. 

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Table 1. Housing Unit Permitting Regression, Imputed Values¹⁵
Massachusetts Cities and Towns, 2010 – 2015

	Value	Standard Error	Degrees of Freedom (DF)	t-value	p-value
Presence of Rail	37.66	22.44	333	1.68	0.094
Schools Have Capacity	-3.86	4.54	1674	-0.85	0.396
Job Center (Yes/No)	94.18	33.56	333	2.81	0.005
Presence of 40R District	-95.04	19.66	1674	-4.83	0
Percent White, Non-Hispanic	-249.79	69.09	1674	-3.62	0

Source: Authors' analysis

Table 2. Housing Unit Permitting Regression Including Housing Density, Imputed Values¹⁶
Massachusetts Cities and Towns, 2010 – 2015

	Value	Standard Error	Degrees of Freedom (DF)	t-value	p-value
Units Per Square Mile	0.04	0.01	332	4.43	0
Presence of Rail	7.23	22.85	332	0.32	0.752
Schools Have Capacity	-3.4	4.54	1674	-0.75	0.454
Job Center (Yes/No)	84.84	32.69	332	2.6	0.01
Presence of 40R District	-90.28	19.49	1674	-4.63	0
Percent White, Non-Hispanic	-94.83	76.38	1674	-1.24	0.215

Source: Authors' analysis

Endnotes

- 1.) U.S. Bureau of Labor Statistics and U.S. Census Population Estimates.
- 2.) *Foundation for Growth: Housing and Employment in 2020*. Technical Report, Prepared for the Massachusetts Housing Partnership Foundation for Growth Initiative, authors Lindsay Koshgarian, UMass Donahue Institute, Alan Clayton-Matthews, Northeastern University, Michael Goodman, UMass Dartmouth and Michael Johnson, UMass Boston, 2010.
- 3.) *Unlocking the Commonwealth: New housing and growth policies to help Massachusetts realize its full potential*. Massachusetts Housing Partnership, November 2014; numerous editions, Greater Boston Housing Report Card 2002-2016, Dukakis Center for Urban and Regional Policy, Boston Foundation; and, Housing Development Toolkit, Executive Office of the President of the United States, September 2016.
- 4.) Building Permits Survey, U.S. Census Bureau, calculations by authors.
- 5.) Goodman, M., Rapoza, E., and Wright, J. (2016). *The Costs and Hidden Benefits of New Housing Development in Massachusetts*. Retrieved from <http://publicpolicycenter.org/portfolio-item/2060/>.
- 6.) Nakajima, E., Modzelewski, K., & Dale, A. (2007). *The fiscal impact of mixed-income housing development on Massachusetts municipalities: A report for Citizens' Housing and Planning Association*. Hadley, Massachusetts: Donahue Institute, University of Massachusetts. Retrieved from http://www.massbenchmarks.org/publications/studies/pdf/UMDI_FiscalImpact.pdf
- 7.) Reardon, T., and Philbrick, S. (2017). *The Waning Influence of Housing Production on Public School Enrollment in Massachusetts*. Retrieved from http://www.mapc.org/wp-content/uploads/2017/10/MAPC_HousingEnrollment_Final.pdf
- 8.) Purposive sampling selects observations into a sample based on predetermined criteria, which are the focus of the study. It is distinct from any type of random sampling in that it is not a probability sample.
- 9.) The microsimulation approach involves using the official state income tax form and calculating the total tax paid for a variety of hypothetical tax filers that represent the range of possible responses in the Massachusetts population. The results are weighted to make the final results representative of the total population. The tax form used is for tax year 2017 and the demographic data were drawn from the 2016 American Community Survey Public Use Microdata Sample. Many thanks to Northeastern University Professor and MassBenchmarks Senior Contributing Editor Alan Clayton-Matthews for his insights into and generous assistance with this component of our analysis.
- 10.) Internal Revenue Service SOI Tax Stats, Individual Income Tax Returns: County-to-County Migration Inflow for Selected Income Items, Calendar Years 2014-2015.
- 11.) While adding to the body of evidence, the MAPC study has a few methodological limitations that are addressed here: (1) Charter schools, regional schools, and vocational schools were not included. (2) The researchers did not test the effect of using imputed vs reported building permit data. (3) They only allowed for a 9 month or 21-month time lag between permit issuance and enrollment change.
- 12.) The enrollment data obtained from the MA Department of Education has many errors in it. Where just one year of data was problematic, the average of the neighboring years was used. Some towns could not be included at all because of extensive missing values or data entry errors. These include Ayer, Bellingham, Grafton, Leicester, Lincoln, West Stockbridge, and Westport.
- 13.) MBTA bus stops were less predictive of permitting than rail, and as a result was not included.
- 14.) School rankings, obtained from School Digger (www.schooldigger.com), were used to measure the perception of school quality as opposed to actual school performance.
- 15.) A random intercept model was used to account for differences between towns that are not measured. Listed variables not shown in Tables 1-2 were found to be statistically insignificant. Since each year of data for a given town is not independent from the prior year, the potential for autocorrelation was accounted for using an AR(1) process. To allow for robust estimation of this model, a linear mixed-effects model was fit using restricted maximum likelihood (REML). Additionally, a sensitivity analysis was performed to test whether the results differed depending on whether imputed or reported permitting data were used. We found that this did not alter the main findings. The results using the reported values in place of imputed values were not substantially different.
- 16.) The results using the reported values in place of imputed values are not substantially different.