

Municipal Benchmarks for Massachusetts Middle Cities: A Look at Economic Growth

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Municipal Benchmarks for Massachusetts Middle Cities

Ezra Haber Glenn, AICP

A Look at Economic Growth

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Executive Summary

Through its Middle Cities Initiative, the Pioneer Institute has identified 14 cities in Massachusetts that are struggling with a number of related issues, including fiscal management, crime, education, and the need for lasting community and economic development. Despite millions of dollars in state and federal aid and the best intentions of countless activists, public officials, private businesses, and nonprofit organizations, efforts to improve the financial stability and delivery of municipal services in these cities have achieved mixed results at best. In order to inform this ongoing effort, this paper describes a data-driven “benchmarking” methodology to sift through these “mixed” results to identify possible areas of strength as well as places that might be slipping into deeper trouble. The proposed methodology is demonstrated with three particular indicators—the percentage of vacant residential units in a community, the value of owner occupied housing, and the level of commercial and industrial development—although the choice of topics is intended to be illustrative, not exhaustive, and the approach can be easily adapted for use with other data.

The Idea of Benchmarks

In the dim days before global positioning systems and Google Maps, surveyors would tramp around through the countryside measuring town boundaries, rights of way, continental divides, and other features of the legal, natural, and political landscape. Determining distance along the flat ground was relatively straightforward once you had a compass and a good yardstick, but measurements of height required the development of a complex system of both official and informal markings placed at known elevations, to serve as reference points. These indicators, known as benchmarks, could be used to determine the heights of surrounding features relative to one another, using a common frame of reference.

Today, although “surveying” is a term more likely associated with internet polls than with transits and theodolites, we still speak of the importance of benchmarks, although the emphasis has changed. The modern science of benchmarking still emphasizes the importance of reliable and valid indicators, but applies the concept to new areas of measurement, such as the performance of schools or hospitals, the assessment of industrial processes or technological innovation, and even the practical study of municipal management (the subject of this paper, and much of the work of Pioneer Institute’s Middle Cities Initiative).

This paper will explore the use of municipal benchmarks in Massachusetts, with particular reference to the 14 identified Middle Cities. Importantly, as with the original surveyor’s marks, the development and application of municipal benchmarks will require us to become comfortable thinking in relative terms—not always a simple task in a world where statistics often fly about faster than the speed of thought and the attractions of “absolute” comparisons (and judgements) tend to be hard to resist.

A Basic Approach

This paper advocates for an approach to benchmarking that recognizes meaningful differences within groups (like the Middle Cities) that may be lost in a broader comparison or statewide context. Below we discuss three different examples of this method, first looking at different rates of vacant housing from town to town, followed by similar explorations of home values and commercial and industrial development. More broadly, whether the topic is housing, property tax, or something else (school performance, public safety, whatever), wise use of municipal benchmarks holds the promise to recognize ways that communities may be distinguishing themselves—or drifting further into problem territory—without getting drawn into sweeping generalities, broad despair, or defensive apologies.

Importantly, although there are a number of valid ways to categorize cities in Massachusetts for the purposes of benchmarking, here we will limit ourselves to the use of the Pioneer Institute's Middle Cities classification to shed light on the relative performance of these places; this choice of category (and the specific decision to include these particular 14 places) is supported elsewhere in Pioneer's work, and seems generally consistent with studies using slightly different terms (such as "weak market", "forgotten", or "gateway" cities).

A Note of the Choice of Indicators

As mentioned above, this paper will make use of three different indicators to explore municipal performance in the Middle Cities. These indicators were selected based on the availability of data, but also to capture a range of issues central to the Middle Cities.

- **Decreasing Vacancy:** This indicator uses data from the U.S. Census (2000) and the American Community Survey (2006/8 three-year estimates) on vacant housing units (Tables SF3-H8 and ACS-B25002). Due to concerns over accuracy, the Census only reports data at this level for places with populations larger than about 20,000, which limits the study to these 94 communities. Both datasets are based on samples, not complete counts, and therefore represent best estimates. For any individual community, the results presented in this section should be interpreted along with the margins of error provided by the Census.
- **Increasing Property Values:** This indicator uses data from the U.S. Census (2000) and the American Community Survey (2006/8 three-year estimates) on median value of owner-occupied units (Tables SF3-H85 and ACS-B25077). As mentioned above, this is sample data, not a complete count, and is similarly limited to the 94 largest cities and towns. There may also be some concerns as

to whether increased housing values in and of themselves are a good thing, especially given the country's growing awareness of the potential for over-valuation of housing. Finally, given that the data is self-reported as part of the Census questionnaire, these figures should not be considered as reliable as sale price data or other more rigorous appraisal techniques.

- **Economic Development:** The third indicator uses data from the Massachusetts Department of Revenue to explore the growth of commercial and industrial development in the Middle Cities. Specifically, this benchmark uses reports on nonresidential new growth by town, aggregated between 2000-2009 to smooth out any year-to-year variation. All figures are corrected for inflation to Year 2000 constant dollars. Although this is complete data (i.e., not based on a sample), and therefore exempt from the "margin of error" concerns expressed above, there could be other concerns. Assessors may not all follow the exact same methodology from town to town, and the complex interworkings of property tax law, incentives for economic development, and other factors may cause the data to capture more (or less) than simply "economic growth."

An extremely important caveat is in order here (in fact, so important that it is mentioned both here and in the Conclusion): benchmarks are useful in tracking the relative changes in the Middle Cities in terms of these indicators, but there is a logical leap required in order to draw conclusions about performance. The challenges faced by cities may vary from one location to another, thereby biasing our results and potentially masking the true "performance": consider, for example, a drop in housing values that affected the western part of the state more severely than the cities closer to Boston; as a result, Springfield and Pittsfield might need to work harder in order to appear to perform as well as their eastern counterparts, when in fact simply holding still in the face of the

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regional decline would be noteworthy. (In fact, concern over such a problem would argue in favor of including these places in a different group for relative comparison—“Western Middle Cities”, for example—but there are only so many ways to slice up 351 municipalities...). The methodology described here attempts to be sensitive to this issue by pegging each benchmark to the community’s own levels at the start of the timeframe, but no statistical method can completely resolve this concern.

Table 1: Percentage of Vacant Units in Massachusetts Communities, 2006/2008 (Top 25)

Name	Middle City (*)	Vacant Units (%)
Falmouth		34.1
Yarmouth		31.4
Wareham		22.8
Sandwich		20.1
Plymouth		16.5
Gloucester		12.7
Fitchburg	*	12.5
Springfield	*	12.2
Worcester	*	11.7
Marshfield		11.0
Fall River	*	10.3
Beverly		9.4
Pittsfield	*	9.3
Cambridge		9.3
Lynn	*	9.1
Boston		9.0
New Bedford	*	8.9
Lowell	*	8.7
Dartmouth		8.6
Holyoke	*	8.4
Everett		8.0
Lawrence	*	7.9
Revere		7.9
Somerville		7.8
Brockton	*	7.6

Source: U.S. Census, American Community Survey, 2006-2008

Finally, although the study uses these three particular indicators, the methodology described here should be suitable for nearly any indicator for which data are available. Importantly, while this particular set of indicators showed strong performance on the part of certain cities, other indicators might highlight other areas of performance excellence.

A Benchmark for Neighborhood Stability

Stemming the Increase of Vacant Units

As a first substantive example for a useful benchmark, we’ll now turn to the problem of vacant residential property. Regardless of the causes of vacancy, empty houses are fairly universally accepted by academic authorities and reasonable people alike as an indicator of a problem. Beyond this, there are fiscal implications: cities in Massachusetts rely almost exclusively on local property taxes to balance their budgets, and when the owners of vacant houses pays taxes at all (and often they don’t), these properties tend to be far from the “highest and best use” of urban land; in many locations, especially when abandoned, such property can add significantly to the costs of running a city as well. From a community-development perspective, the fabric of an entire neighborhood can be seriously affected by just a handful of vacant homes and the problems they attract. A great deal of scholarly and policy work has focussed on what cities can do to get people back into vacant houses and to get vacant houses back onto the tax rolls, and most municipalities in Massachusetts—especially the 14 Middle Cities identified by the Pioneer Institute—have specifically stated the desire to reduce the number of such houses. So how have they done? Let’s see.

The proportion of housing units that are vacant varies significantly across the state, from a low of just 1.6% to a high of over 34%. (Figures here are drawn from the 2006-2008 American Community Survey, which provides much more recent data

than the 2000 Census, but is limited to 94 of the larger communities in the State). Zeroing in on the 14 Middle Cities, we are not surprised to see some problems: 11 of the 25 communities on this list most plagued by vacant homes are Middle Cities, including Worcester, Fall River, Springfield, and Fitchburg, all of which have vacancy percentages in the double digits. (See Table 1 for the top 25.)

Finding Problems in the Middle

Looking closer, it becomes clear that we are really capturing too much variability in here: by this indicator, the “worst” five communities—and the only ones listed with over 15% of the units vacant at the time of the ACS—are towns on (or nearly on) the Cape: Falmouth (34%), Yarmouth (31%), Wareham (23%), Sandwich (20%), and Plymouth (16%—also the only town in this group with more than 35,000 people). Vacant housing units in these places may be a problem, but it likely that we are actually witnessing two different phenomena: one based more on Cape Cod’s particular housing market, and one that is more closely tied to larger cities (with the latter suggesting associated problems, such as abandoned or foreclosed property). To group these two types of places together may obscure some of the problems (and, as we shall see, also some of the possible solutions).

Removing these five, along with Marshfield, Beverly, and Gloucester for similar reasons, and the problem of vacant homes in the Middle Cities becomes even more severe: now representatives from the Middle Cities occupy all five of the top slots for highest rates of vacant units. Nearly 9.5% of all the units in the 14 Middle Cities were

estimated to be vacant in the 2006-2008 American Community Survey data, compared to 6.3% for the balance of the state; if all 94 communities in the survey had a rate as bad as the Middle Cities, it would mean an additional 40,801 vacant units. (See Table 2 for more detail.) Clearly, the Middle Cities are struggling with a problem.

Evaluating Changes Over Time

So far, we’ve established that vacancy rates in the Middle Cities are significantly higher than the rest of the state (with the exception of some coastal outliers), and have further illustrated that within the Middle Cities, the vacancy rates vary as well (see the Figure 1 for a graphic depiction of this variability). However, this is not surprising: these cities were partially selected by Pioneer as a result of problems such as disinvestment (including higher vacancy rates), and nearly everything that can be measured will vary somewhat from town to town. So what’s the next step?

Remember that the goal of this effort is not simply to describe the current state of these cities: the entire Middle Cities Initiative is concerned with assessing performance, not categorizing problems. Cities change over time, and if we are to recognize success (or failure) in planning, development, and management, we must think more about trajectories and targets, rather than static statistics.

For this task, our benchmarks take on an added dimension: time, which allows us to think more about the important relative nature of our indicators. Rather than comparing a given city to the state as a whole—or even to the other Middle

Table 2: Vacant Units in Middle Cities and Balance of ACS Communities, 2009 (94 Cities and Towns Statewide)

	Total Units (#)	Vacant Units (#)	Vacant Units (%)
Middle Cities	478,337	45,392	9.5%
Coastal Outliers	122,931	25,477	20.7%
Balance of ACS	1,286,505	81,416	6.3%
All Communities	1,887,773	152,285	8.1%

Source: U.S. Census American Community Survey, 2006-2008

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Table 3: Vacant Units in Middle Cities and Balance of ACS Communities: Changes Over Time

	Vacant Units					
	2000		2006/8		Change	
	#	%	#	%	#	%
Middle Cities	25,795	5.5%	45,392	9.5%	+19,597	+4.0%
Coastal Outliers	20,931	17.8%	25,477	20.7%	+4,546	+2.9%
Balance of ACS Communities	39,936	3.2%	81,416	6.3%	+41,480	+3.1%
All 94 ACS Communities	86,662	4.7%	152,285	8.1%	+65,623	+3.4%

Source: U.S. Census, American Community Survey, 2006-2008

Cities—we can compare it first to itself. In the present example, we can ask “How have vacancy rates changed in this place over time?”, and then explore how this change compares to the relative changes we see in other members of the group.

To investigate change over time, we will need some older data. Table 3 draws on the 2006-2008 American Community Survey data described above, as well as the 2000 Decennial Census for these same 94 communities.

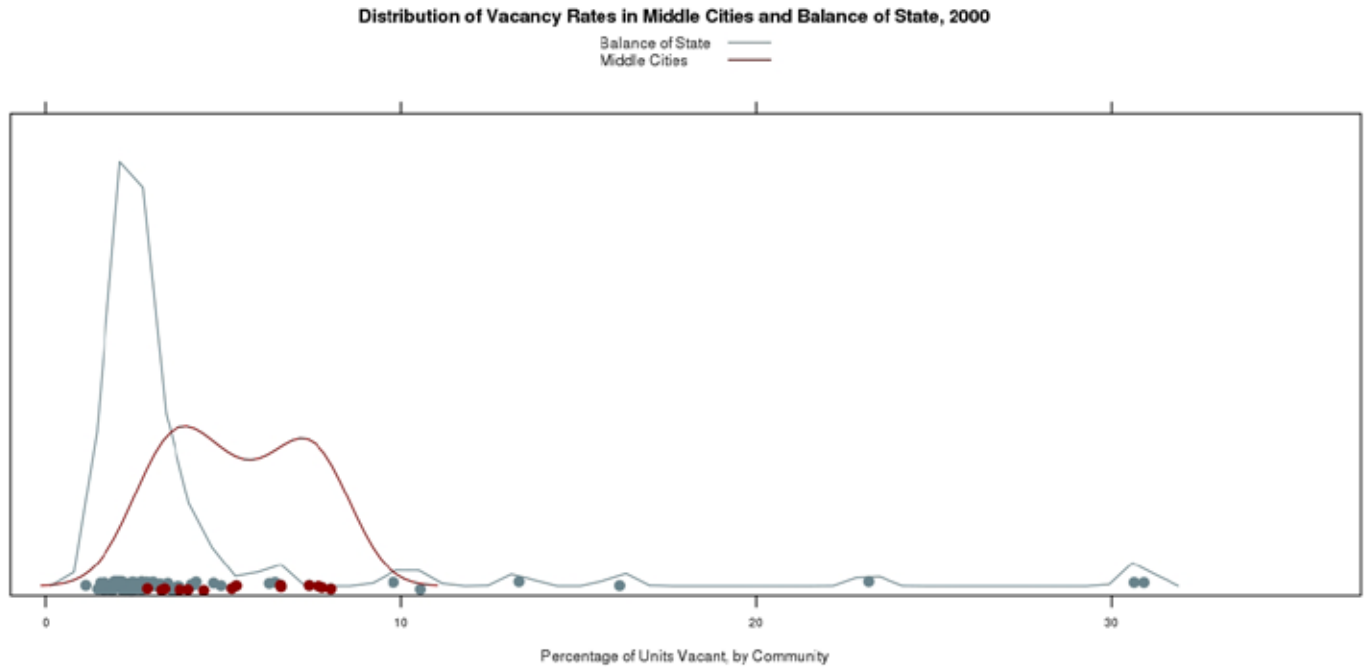
There are a number of statistically-valid ways to explore patterns of change over time (and even more statistically-invalid ways...). Table *3* provides a good first pass, but it misses some relevant detail in the interest of simplicity. Buried in those group means is a lot of within-group variation; see Figure 1 for a look at the variation in 2000 (top) and 2006/8 (bottom). Figure 2 begins to tease out some of these differences over time, by plotting each community’s 2000 vacancy rate on the x-axis (as an “indicator” or “independent” variable) and the 2006/8 data along the y-axis (as a “response” or “dependent” variable).

As you can quickly see from the graph, the percentage of vacant units increased for nearly every single municipality in the survey: the entire upper-left corner of the plot (shaded in pink) represents places where vacancy has increased since 2000. Only six communities fall outside of this zone, meaning that vacancy actually decreased (Agawam, Gardner, Stoughton, Wareham, Westfield, and Westford), and all of

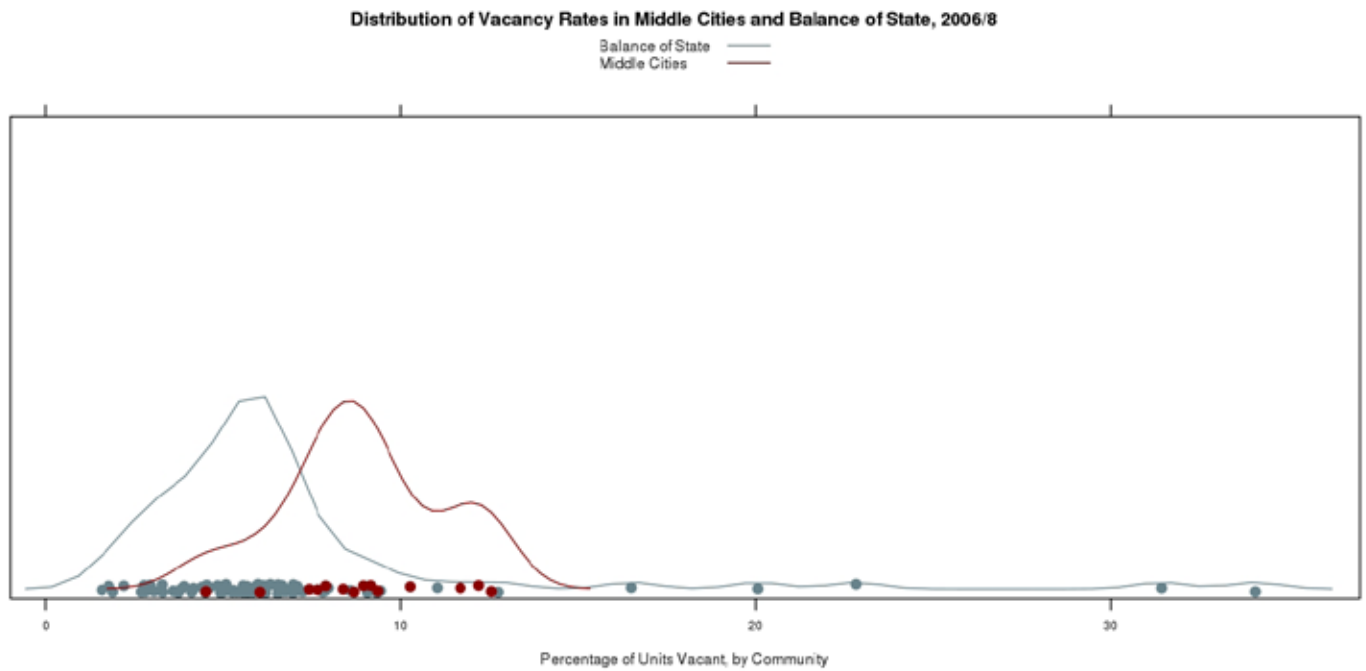
them just barely. The gray trend line represents a regression model fit to predict the 2006/8 rates based on the 2000 values for all 94 municipalities; as you can see, some municipalities ended up in 2006/8 worse than in 2000, but still better than this line would have predicted (i.e., below the line, with lower vacancy rates than expected). Others saw more dramatic increases in the rate than the line predicts. Not surprisingly, many of the Middle Cities—shown in dark red—find themselves in the upper edges of this distribution, and nine of the 14 perform “worse” than their non-Middle City counterparts when measured by this yardstick.

In order to develop a fairer benchmark for the Middle Cities, to allow for real within-group comparison, the red trend line represents a line of best fit for the Middle Cities alone. Using this line—which essentially can be interpreted as a way to predict 2006/8 vacancy rates for these places based (a) their individual rates from 2000, and (b) the fact that they are members of the Middle City group. Cities that fall below this line can be regarded as “beating the odds” in terms of the stemming the increase in vacancy seen by their counterparts; those above the line are “slipping” deeper into problem territory. Notice, for example, that Lawrence and Taunton perform “worse” than the state-wide prediction line, but are still noteworthy for “out-performing” their in-group expectation.

Figure 1: Distribution of Percentages of Vacant Units in Middle Cities and Balance of Massachusetts ACS Communities (2000, above; 2006/8, below)



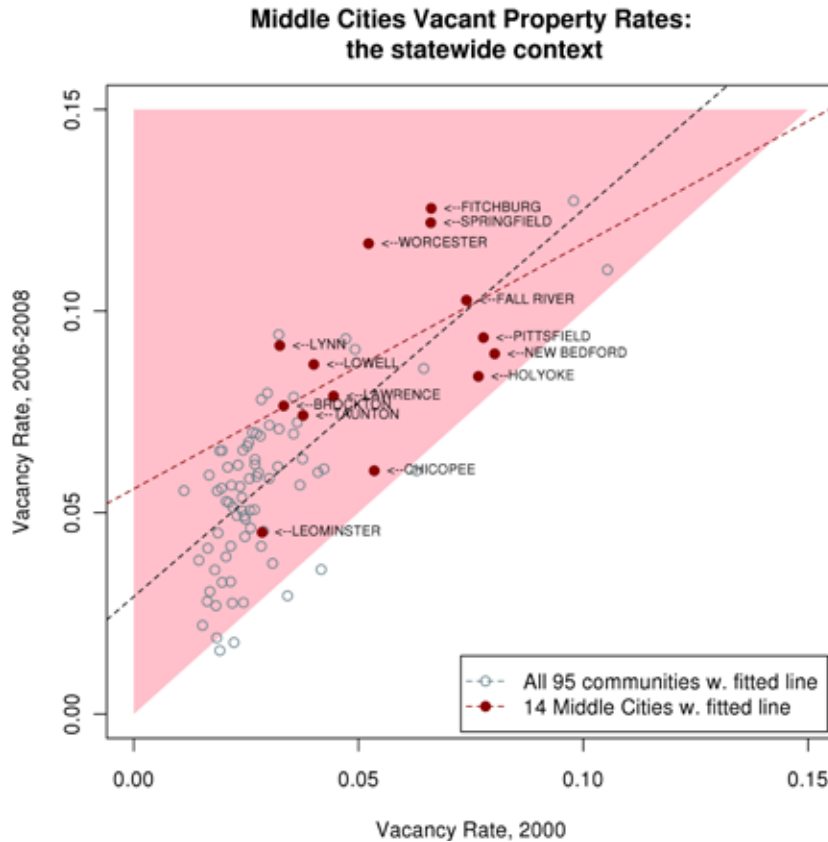
Source: U.S. Census, 2000



Source: U.S. Census American Community Survey, 2006-2008

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Figure 2: Regression for Percentage of Vacant Units, Middle Cities and Balance of State (see Table *8* for add'l information)



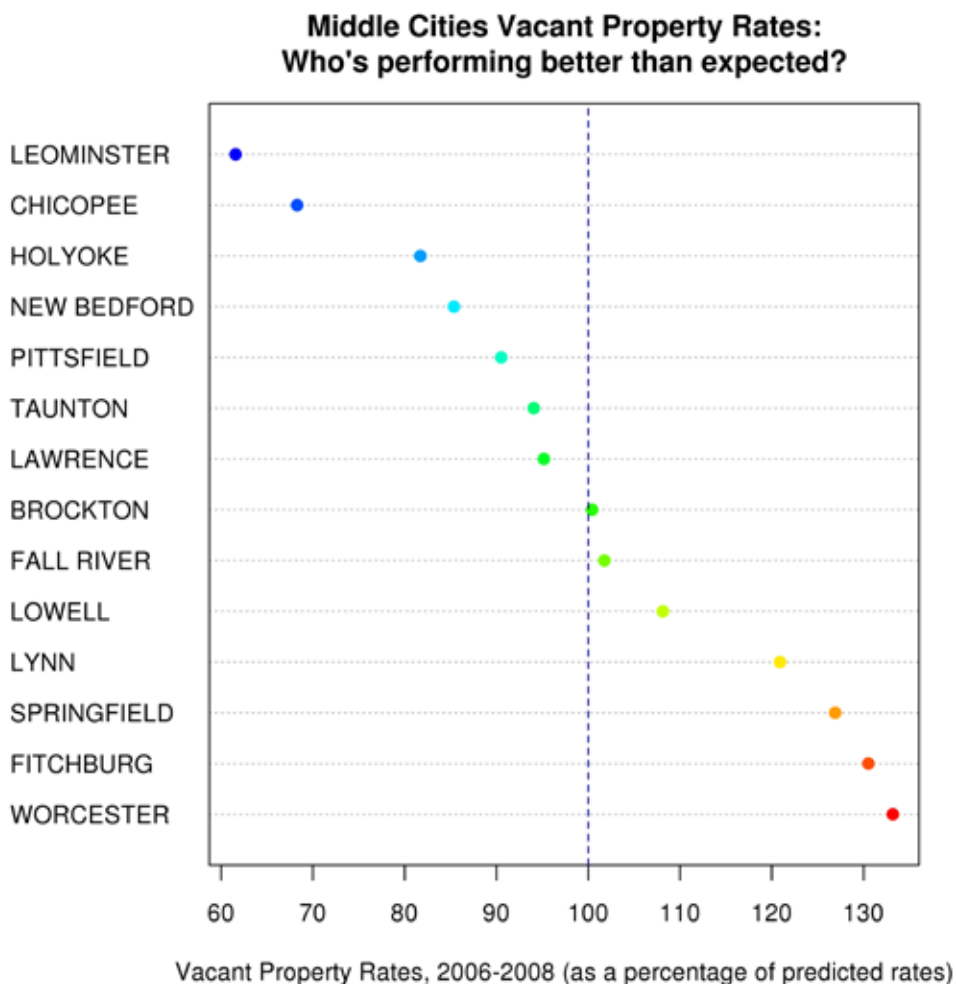
To visualize this performance indicator another way, we can plot each of the cities, ranked by how far they beat these expectations (or underperformed, as the case may be). Figure 3 provides this, measuring the difference between each city's actual rate for 2006/8 and that predicted by the model (values are shown as a percentage of the predicted value). Thus Brockton, with a 2006/8 vacancy rate of 7.6%, was pretty much right where we might have expected it to be, while Leominster (4.5%) and Chicopee (6.0%) had far fewer vacant units than might have been expected. Worcester, Fitchburg, and Springfield, on the other hand, saw a much greater increase in vacancy rates than expected, given their figures for 2000. (Interestingly, between 2000 and 2006/8, the three Middle Cities with the highest vacancy rates changed completely.)

A Benchmark for Strong Housing Markets

Increasing the Value of Owner Occupied Units

In the same way that we used the within-group variation in the Middle Cities to think about relative performance at reducing vacant housing, we can look at another indicator of neighborhood strength and investment: home values. For this section, our benchmarking indicator will be Median Values of Owner Occupied Units, and we will again use data from the 2000 Census and the 2006/8 American Community Survey on the same 94 communities in Massachusetts (essentially, cities and towns with more than 20,000 people). Although there are a number of different indicators of housing values, this one tends to be a pretty good one for comparison,

Figure 3: Middle Cities Performance: Reducing the Percentage of Vacant Units



Source: US Census 2000, ACS 2006-2008

especially given that we will be looking at similar cities, rather than statewide comparisons. (As with “vacant units” above, the biggest problem here is that things called “owner occupied units” may vary significantly from place to place in terms of size, age, and quality, and it can be hard to tease out what is due to location and what is due to these other factors; when we limit our study to similar places, like the Middle Cities, this becomes less of a concern.)

Figure 4 shows the distribution of median values for owner-occupied units by community for the 94 cities and towns covered in the survey for 2000 (top) and 2006/8 (bottom). As you can

see from these two plots alone, a number of key points become clear:

1. the Middle Cities have a very different profile from the rest of the state;
2. within the Middle Cities, there is still significant variation;
3. over the decade, values increased in both the Middle Cities and the balance of the state; and
4. although all of the Middle Cities gained value over this period, they also spread out considerably.

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The final point here is a very important one for the purpose of benchmarking: if we are willing to look at these places in the context of their group, not the state overall, we are likely to find evidence of “performance leaders” who are exceeding expectations.

Interestingly, despite the fact that the overall distribution of home values spreads out considerably for these 14 cities—look at how much wider the red curve is in the lower plot in Figure *4*—the data have behaved in an extremely predictable way. As before, we can fit a trend line to the scatterplot of the 14 Middle Cities to visualize how they changed as a group over this time period (see Figure *5*). Even though the 14 points spread out considerably (from a range of \$86,500 to \$145,300 in 2000, to a range of \$157,600 to \$306,400 in 2006/8—see Table 4), they did so almost perfectly along the trend line shown for the group. (In the language of regression, the line predicts over 82% of the variation observed in data.)

That said, there is still some variation: some of the points fall above the trend line, indicating 2006/8 values above what might be expected, and others fall below, indicating the opposite. As with vacancy rates, performance against this benchmark is presented in Figure *6*, plotting the actual 2006/8 median values as a percentage of those predicted by the model. Two of the “high performers” here—Lawrence and New Bedford—were also ranked highly in the previous benchmark, possibly indication the interrelated effects of housing markets and

vacancy. At the same time, some of the top performers from the previous section—Pittsfield, Leominster, Chicopee, and Holyoke—are found on the negative side of the benchmark here.

A Benchmark for Fiscal Sustainability

Developing the Local Commercial and Industrial Tax Base

Our third and final benchmark looks at efforts to spur economic development in the Middle Cities. Using data from the Massachusetts Department of Revenue from 2000-2009, we can examine how assessed values have changed for each municipality in different categories (Residential, Commercial, Industrial, etc.), as both absolute numbers and as a percentage of overall assessments. Table 5 presents some of these numbers for the 14 Middle Cities.

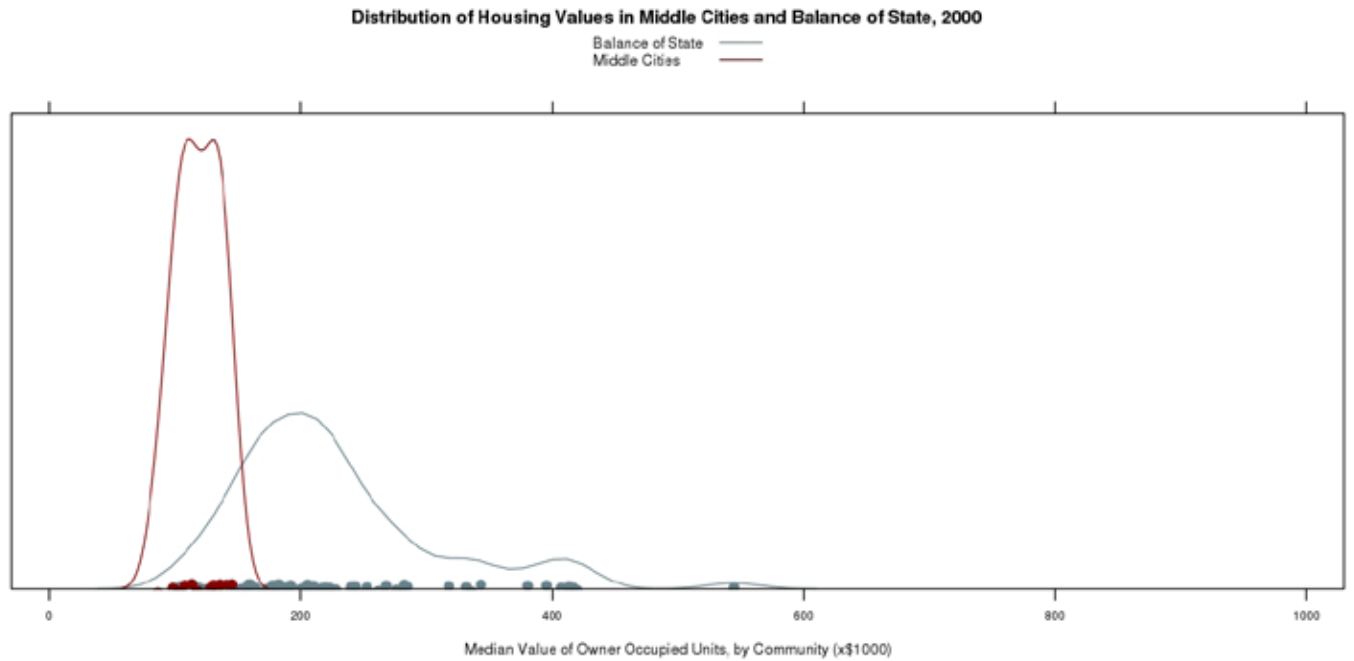
The data in Table 5 is a bit too raw, and include a lot of background noise that may actually distract us from our purpose. We are able to learn a lot about assessments in each of these cities, but it’s hard to put it all into context. Worcester, Springfield, and Brockton are the only places with more than a billion dollars in commercial property ... but they are also larger cities overall. Both commercial and industrial assessments nearly double in Lawrence and Fall River over this period ... but residential values almost tripled in both, so the percentage of economic growth may actually be less there. Even more problematic, the contributions from true economic development may be lost in the

Table 4: Median Values, Owner-Occupied Units

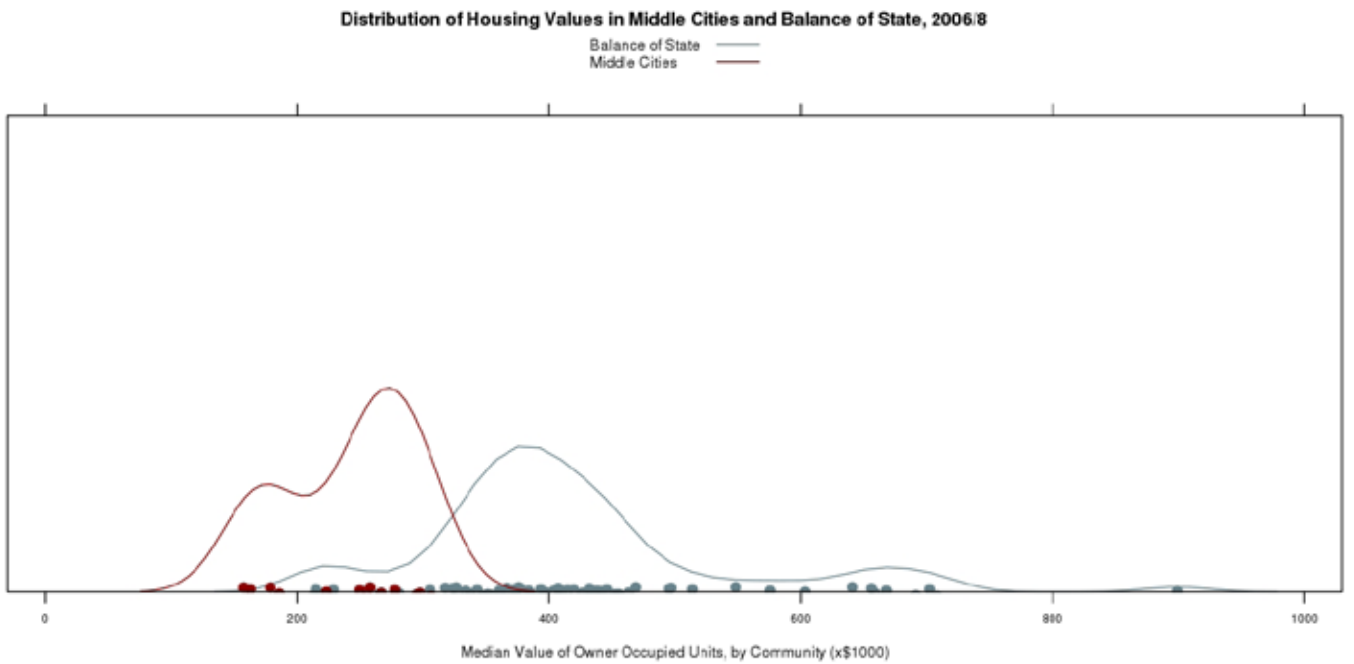
	Median Values: Owner-Occupied Units					
	2000			2006/8		
	Min Community	Max Community	Mean of Medians	Min Community	Max Community	Mean of Medians
Middle Cities	\$86,500	\$145,300	\$118,543	\$157,600	\$306,400	\$242,264
Balance of ACS Communities	\$157,600	\$306,400	\$226,776	\$213,200	\$899,400	\$418,501

Source: U.S. Census, American Community Survey, 2006-2008

Figure 4: Distribution of Housing Values in Middle Cities and Balance of Massachusetts ACS Communities (2000, above; 2006/8, below).



Source: U.S. Census, 2000

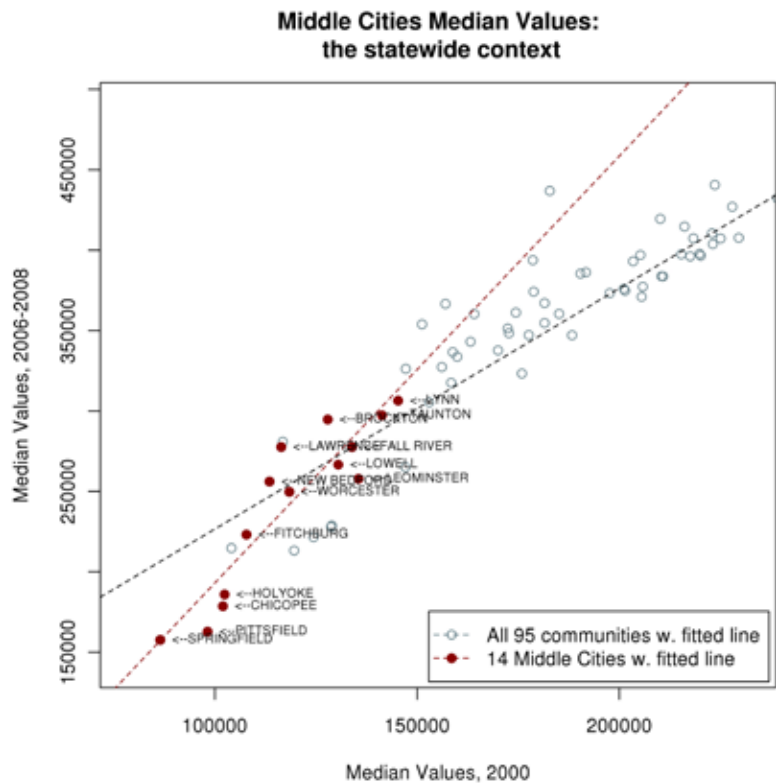


Source: U.S. Census American Community Survey, 2006-2008

Source: Source: U.S. Census, 2000; American Community Survey, 2006-2008

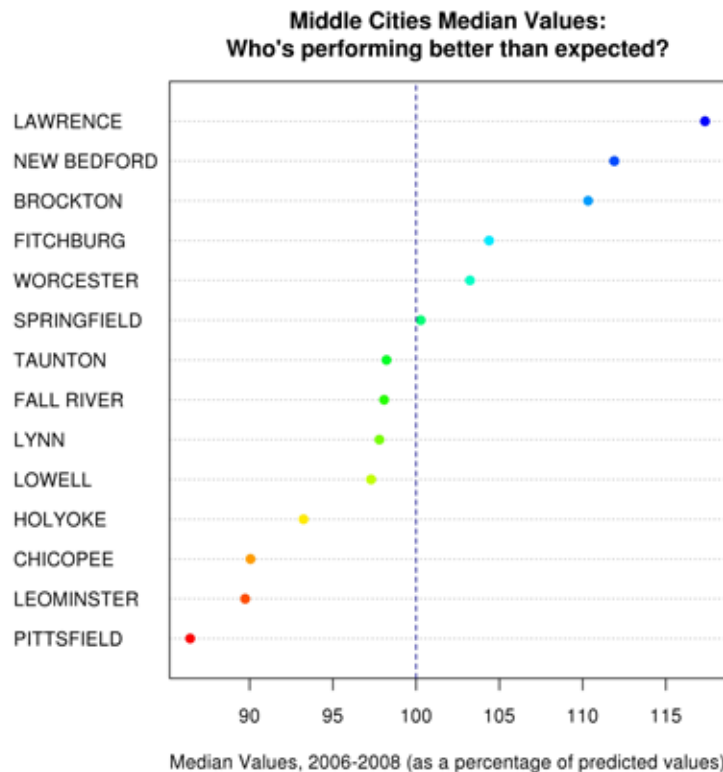
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Figure 5: Regression for Median Values of Owner Occupied Units in Middle Cities and Balance of Massachusetts ACS Communities (close-up of area of interest; see Table 9 for add'l information)



Source: US Census 2000, ACS 2006-2008

Figure 6: Middle Cities Performance: Increasing Housing Values



Source: US Census 2000, ACS 2006-2008

background of increases in property values and the peculiarities of assessment practices in the state. So how are we to bring order to the apparent chaos, in order to settle on a meaningful benchmark here?

Selecting the Right Benchmark

Luckily, as a result of the State’s Proposition 2½, the Department of Revenue keeps data on “New Growth” in each municipality. New Growth includes increases to a community’s tax base that results from development or substantial improvement to a property, but excludes the effects of reevaluation and the general increase (or

Table 5: Property Tax Assessments for the Middle Cities, 2000 and 2009

Town	FY	Residential	Commercial	Industrial	Total
Brockton	2000	2,339,278,634	581,205,921	150,054,270	3,176,017,855
	2009	5,747,722,410	1,028,389,930	229,330,470	7,174,223,590
Chicopee	2000	1,537,806,600	251,154,700	167,377,700	2,012,834,330
	2009	3,027,774,535	355,943,979	241,662,100	3,748,947,324
Fall River	2000	2,163,503,900	382,817,800	182,031,800	2,832,554,600
	2009	5,110,606,514	753,380,255	400,850,991	6,429,439,920
Fitchburg	2000	895,731,407	148,564,453	91,924,200	1,185,012,530
	2009	2,225,181,532	237,146,816	120,085,700	2,673,490,274
Holyoke	2000	749,541,362	323,262,897	116,804,872	1,298,731,781
	2009	1,558,881,989	469,782,233	127,671,919	2,197,306,051
Lawrence	2000	987,537,062	171,757,938	93,400,600	1,330,733,480
	2009	2,831,666,497	324,058,403	200,200,100	3,482,154,660
Leominster	2000	1,397,187,850	243,295,050	160,366,600	1,848,672,000
	2009	3,069,036,195	479,316,109	247,835,160	3,881,011,364
Lowell	2000	2,160,890,020	303,894,680	182,528,400	2,737,456,929
	2009	5,925,042,931	554,782,840	387,437,820	7,028,422,911
Lynn	2000	2,353,777,938	224,464,562	126,554,700	2,807,439,890
	2009	5,348,742,422	507,754,589	145,147,500	6,208,089,401
New Bedford	2000	2,107,259,942	342,578,858	185,293,100	2,752,564,140
	2009	5,497,681,345	637,580,655	292,122,100	6,594,831,510
Pittsfield	2000	1,331,908,931	267,056,889	105,289,600	1,879,249,750
	2009	2,732,591,204	416,272,988	126,407,240	3,454,552,912
Springfield	2000	2,971,462,500	704,024,580	189,568,010	4,099,869,190
	2009	5,484,722,870	1,072,958,950	242,991,100	7,241,274,580
Taunton	2000	1,766,178,475	379,192,325	168,020,300	2,365,501,790
	2009	4,476,697,250	773,045,254	256,335,100	5,646,112,804
Worcester	2000	4,021,970,100	966,878,800	333,472,900	5,604,100,100
	2009	9,816,041,700	1,477,436,400	455,813,100	12,137,258,500

Source: Massachusetts Department of Revenue; Note: “Total” includes additional categories not listed)

■ **Municipal Benchmarks for Massachusetts Middle Cities**

Table 6: Middle Cities Commercial and Industrial Growth, 2000-2009

	2000 Assessments (Commercial+Industrial)	New Growth, 2000-2009 (2000 constant dollars)	Growth Factor (Growth/2000Assessments)
Brockton	731.26	275.37	0.38
Chicopee	418.53	247.94	0.59
Fall River	564.85	317.31	0.56
Fitchburg	240.49	113.08	0.47
Holyoke	440.07	127.57	0.29
Lawrence	265.16	207.87	0.78
Leominster	403.66	229.35	0.57
Lowell	486.42	328.26	0.67
Lynn	351.02	276.64	0.79
New Bedford	527.87	270.62	0.51
Pittsfield	372.35	289.63	0.78
Springfield	893.59	751.06	0.84
Taunton	547.21	426.88	0.78
Worcester	1300.35	715.88	0.55

Source: Massachusetts Department of Revenue; (all figures in \$1M, constant 2000 dollars)

decrease) in property values. Figure 7 shows the annual increases in local nonresidential assessments due to reported new growth for each of the Middle Cities. As the lines demonstrate, these figures vary quite a bit from year to year, although there may be a slight upward trend for some cities. (The values have been corrected to constant year 2000 dollars, to avoid the effects of inflation.) However, rather than being distracted by this micro-level variation from year to year, we can instead aggregate these growth figures over the decade, as shown in Figure 8; The second column of Table 6 presents this aggregated data as well, but as the first column makes clear, these 14 cities began this period with varying levels of commercial and industrial development. A better indicator would be to view the decade's total new growth as a percentage of this starting level; the figures in the third column of Table 6 and the lines of Figure 9 depict this.

These figures can now be regarded as a meaningful benchmark, showing how much each city grew beyond its initial starting position. Interestingly, they also help demonstrate the value of the regression methodology introduced

in the previous sections. As shown in Figure 10, each city's 2000 commercial and industrial assessments can be used to predict nonresidential new growth for the decade. As with vacancy rates and home values, we can use this line to generate "expectations" based on each city's own starting point and the "within-group" Middle City trend, and use this to rank the cities by how far they exceed or fall short of these predictions (Figure 11). The two methodologies are nearly identical from a statistical point of view, and we are thus not surprised to find the exact same rankings.

Figure 7: Yearly New Growth in the Middle Cities

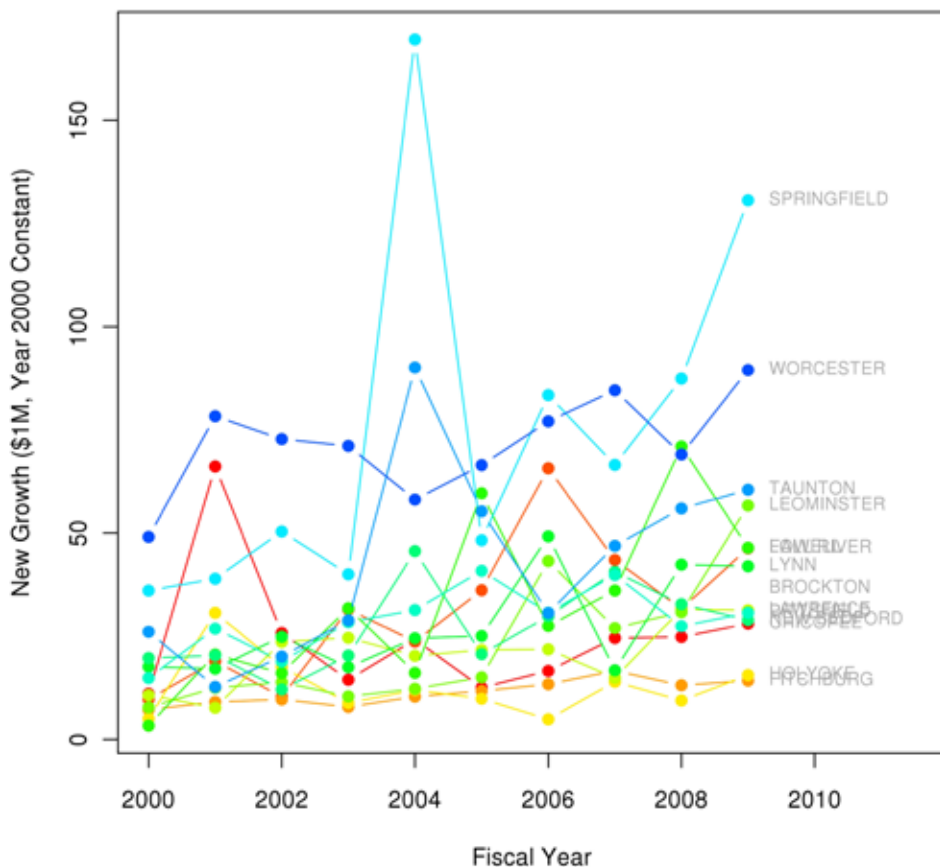
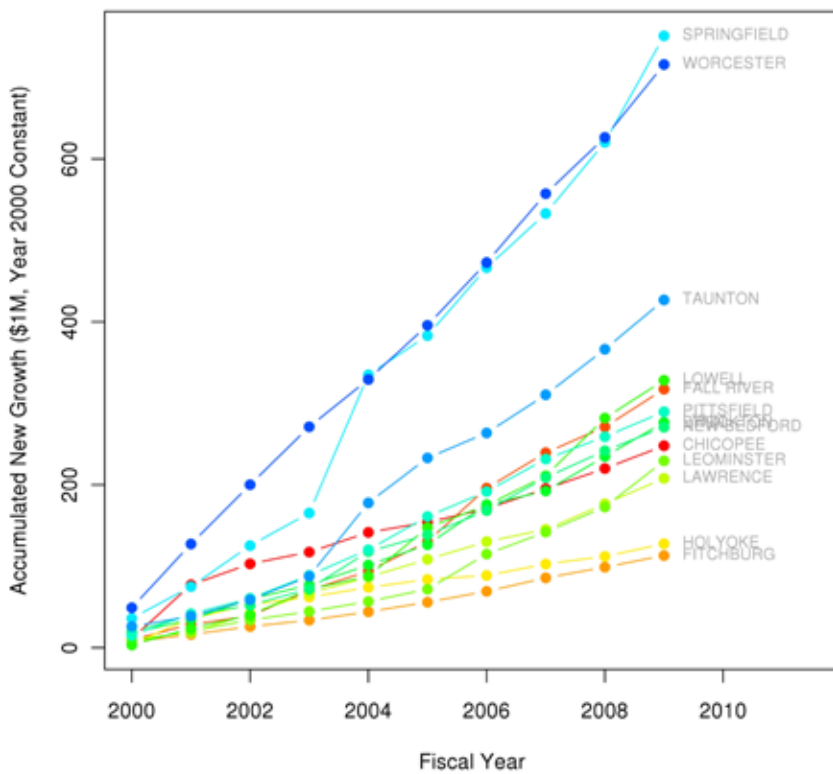
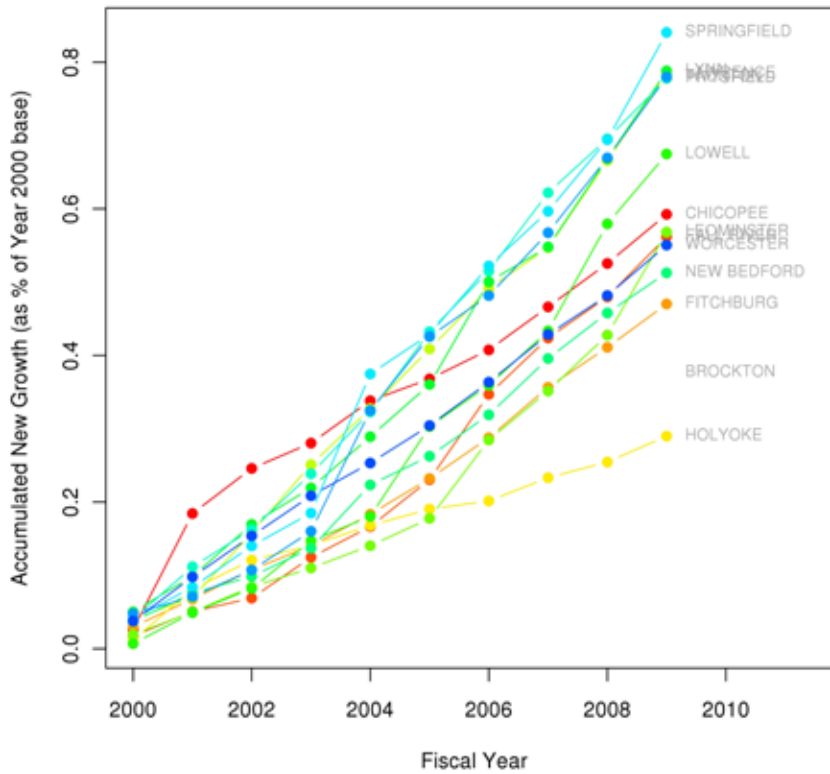


Figure 8: Accumulated New Growth in the Middle Cities



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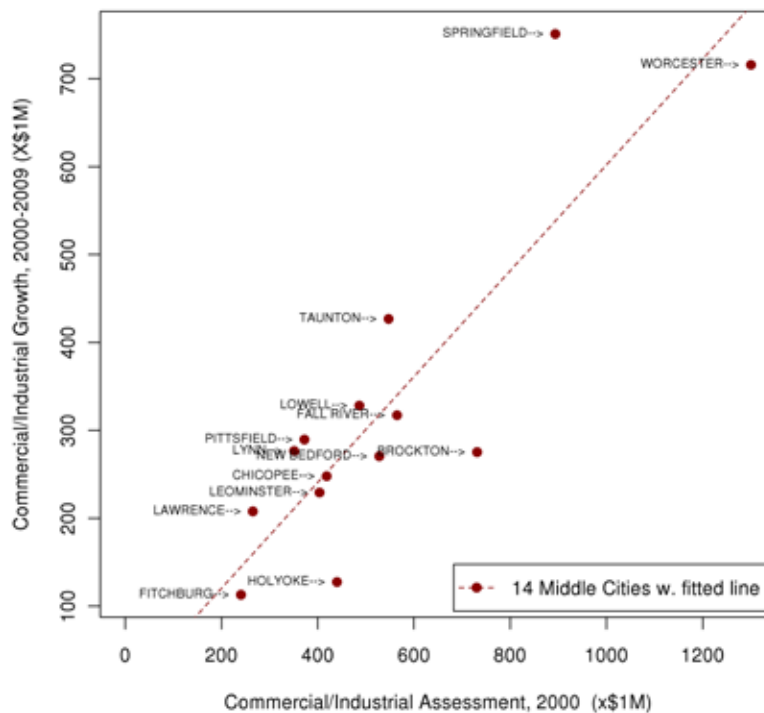
Figure 9: Accumulated New Growth as a Percentage of 2000 Assessments



Source: Massachusetts Department of Revenue

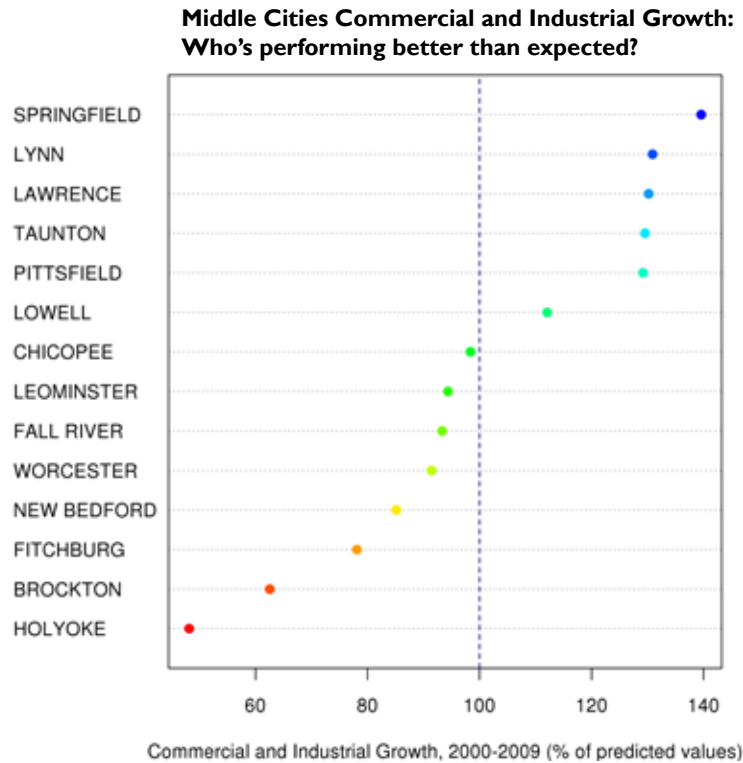
Figure 10: Regression for Commercial and Industrial New Growth (Middle Cities only; see Table 10 for add'l information)

Middle Cities Commercial and Industrial Growth



Source: Massachusetts Department of Revenue

Figure 11: Middle Cities Performance: Commercial and Industrial Development



Source: MA DOR

Conclusion

We have selected three different benchmarks—the percentage of vacant housing units, the median value of owner occupied housing units, and the accumulated value of commercial and industrial new growth in each city—and analyzed their change over time using a consistent methodology that is sensitive to both within-group performance trends and different starting points. As a result, these performance indicators can be considered “forgiving,” to the extent that they give credit for the difficulty of achieving results when one is a Middle City (in general) and a particularly challenged one (in any particular case); at the same time, on the higher end of the scale, the expectations can be viewed as “demanding,” and the benchmarks are less likely to confuse easier circumstances with performance.

Thus, for example, when Holyoke’s performance at increasing economic development is rated as

“below expectations,” it is important to recognize that these expectations (a target of \$265,000,000 in combined growth between 2000 and 2009, in this particular case) were based on Holyoke’s commercial and industrial assessments in 2000, and the overall level of performance of its Middle City counterparts; Holyoke “fell short” of this particular target (the actual inflation-adjusted figure for nonresidential new growth over this period was \$127,500,000), or about 48% of the target). Similarly, although the percentage of vacant units in Holyoke in 2006/8 was high (8.4%), it was significantly lower than the model’s expectations (a predicted vacancy rate of 10.3%), which is therefore deemed noteworthy.

Table 7 summarizes the results from these three analyses, noting particularly strong (+) or weak (-) performances. Due to concerns over margins of error, statistical significance, and the dubious importance of small differences, the chart does not distinguish cities performing close to the model’s

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Table 7: Summary of Performance Indicators. (For detailed results, see Figures 2, 6, and 11)

	Benchmark		
	Vacant Units	Home Values	Economic Development
Brockton		+	-
Chicopee	+	-	
Fall River			
Fitchburg	-		-
Holyoke	+	-	-
Lawrence		+	+
Leominster	+	-	
Lowell			
Lynn	-		+
New Bedford		+	-
Pittsfield		-	+
Springfield	-		+
Taunton			+
Worcester	-		

expectations (usually with 5-10% points of either side). Importantly, in interpreting these results, we must remain mindful of the following:

1. These are just three out of dozens of possible benchmarks. One strength of this methodology is that it can be easily replicated with other indicators, and the reader is encouraged to attempt this, with other datasets related to these topics, as well as altogether different aspects of municipal performance.
2. There may be some indicators (these included) for which there is no single direction for all communities—or even all Middle Cities—to be “moving towards.” It may be, for example, that Holyoke or Fitchburg has “too much” commercial development, while Fall River or Lowell need more. In this situation, “progress” for one community would be the exact opposite of progress for another, and (in theory) some places might be best served by not changing at all. For these sorts of indicators, this methodology would not be appropriate.

3. Not all communities are working on the same issues. Making progress at addressing one set of challenges (say, increasing median values or reducing vacancy), while “losing ground” in some other area (say, economic development), might actually represent a deliberate strategy. No city can work on all the issues at once, and prioritization is usually required and desired, especially when resources are scarce and problems are many.

Finally, as mentioned at the outset, while benchmarks are useful in tracking relative changes, they cannot necessarily be equated with “performance” without knowing a good deal more about the particular community, its stated and unstated goals, the context it is operating in, the limitations it faces, and the efforts it has undertaken to achieve results. For practitioners of community and economic development, all progress is hard-earned, and the simple fact that some communities obtain better results than others should not be used to discount the efforts or achievements of those on the lower end of the curve. In the same way that “beating the pool”

by 20 or 30% may not be sufficient to reverse decline, a city that “fails to meet the expectations of the model” may still be making meaningful strides. While this methodology can help sift through a great deal of data and a wide variety of approaches to suggest some possible “success stories” or “problem cases,” there is no substitute for on-the-ground knowledge.

Regression Equations and Output

Table 8: Regression Output: Vacancy Rates (Middle Cities only; see Figure 2)

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	0.0559	0.0173	3.23	0.0073
Vacancy Rate, 2000	0.6084	0.3016	2.02	0.0666

Model: $Vacancy2008_i = \beta_0 + \beta_1 Vacancy2000_i + \varepsilon_i$
 Residual standard error: 0.02035 on 12 degrees of freedom;
 Multiple R-squared: 0.2533, Adjusted R-squared: 0.191

Table 9: Regression Output: Median Values (Middle Cities only; see Figure 6)

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	-72561.9489	40333.4312	-1.80	0.0972
Median Value, 2000	2.6558	0.3367	7.89	0.0000

Model: $Value2008_i = \beta_0 + \beta_1 Value2000_i + \varepsilon_i$
 Residual standard error: 21,580 on 12 degrees of freedom; Multiple
 R-squared: 0.8383, Adjusted R-squared: 0.8248

Table 10: Regression Output: Commercial and Industrial Growth (Middle Cities only; see Figure 10)

	Estimate	Std. Error	t value	Pr(> t)
Commercial and Industrial Assessments, 2000	0.6021	0.0429	14.04	0.0000

Model: $Growth2000-2009_i = \beta_1 Assessments2000_i + \varepsilon_i$
 Residual standard error: 96.68 on 13 degrees of freedom; Multiple R-squared:
 0.9381, Adjusted R-squared: 0.9333

■ **Municipal Benchmarks for Massachusetts Middle Cities**

About the Author:

Ezra Haber Glenn is a Lecturer in Urban Studies and Planning at the Massachusetts Institute of Technology, where he teaches on quantitative methods and the practice of community development. Prior to holding this position he served as Director of Community Development for the City of Lawrence, MA and as the Director of Planning & Development for the City of Somerville, MA.

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