Massachusetts Department of
ELEMENTARY & SECONDARY
EDUCATION

Report to the Legislature:
Equity Effects of Regional Allocation Methodology on Regional Vocational Technical Schools

Chapter 182 of the Acts of 2008 Section 109
December, 2008

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Mitchell D. Chester, Ed.D.
Commissioner

December 30, 2008

Dear Members of the General Court:

Pursuant to Chapter 182 of the Acts of 2008, Section 109, I respectfully submit this *Report to the Legislature: Equity Effects of the Regional School Allocation Methodology on Regional Vocational Technical Schools* in accordance with the following:

> *"SECTION 109. Notwithstanding any general or special law to the contrary, the department of education shall report on the equity effects of the recently phased-in regional school allocation methodology on regional vocation technical schools; provided further that said report shall be filed with the house and senate committee on ways and means and the joint committee on education by no later than December 31, 2008."*

The Chapter 70 state education aid formula stipulates how much each city and town should pay out of local revenue sources toward the cost of achieving its pupils' "foundation budget," which is calculated based on the functional costs associated with each student's grade level, program, and demographic characteristics. The amount a city or town should pay towards this cost, the "minimum local contribution," is based upon the city or town's property valuation and residents' income, relative to its pupils' overall foundation budget. Since most Massachusetts communities belong to between two and four school districts, the total contribution must be fairly divided among the local and regional districts to which they belong.

Since the beginning of education reform, the Chapter 70 formula has used three different methods to allocate minimum local contributions to school districts. This report focuses on the current method, which was implemented in FY05. Unlike previous approaches, this one allocates each town's total contribution requirement directly in proportion to the foundation budgets of their pupils, which has made the formula more equitable.

In school finance, equity is commonly used to apply to a school finance system's fairness in regards to two separate groups of stakeholders. There is equity for pupils (the quality of education should not hinge on where a pupil lives) and there is equity for taxpayers (the funding for education should be fairly distributed in relation to ability to pay). The focus of this report is taxpayer equity.

Each city and town's total required contribution must be apportioned between all the pupils it is educating, whether those pupils are attending local schools, academic regional schools, vocational schools, county agricultural schools, collaborative programs, private

special education schools, or any of the other publicly-funded settings in which educational services are delivered. The Chapter 70 statute does not specify the specific methodology by which this “regional allocation” is to be calculated. There have been three separate methods used since FY94, all of which were developed by the Massachusetts Department of Elementary and Secondary Education (ESE).

The current method, used since FY05, was designed to eliminate the underlying inequities in the base contributions. The goal was to tie a town’s total contributions directly to the foundation budget dollars associated with its pupils. For example, if the foundation budget for a town’s pupils at its vocational regional represented three percent of the towns’ overall foundation budget, then three percent of its required contribution should be apportioned to the vocational district.

The new regional allocation methodology has succeeded at its goal—ensuring that a town’s required school contributions are fairly allocated amongst the various school districts to which it may belong. The report details this accomplishment.

If you have questions, please feel free to contact me or Roger Hatch in the Department’s School Finance center at 781 338-6527.

Sincerely,

Mitchell D. Chester, Ed.D.
Commissioner of Elementary and Secondary Education

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Introduction

The Department of Elementary and Secondary Education respectfully submits this Report to the Legislature: Equity Effects of the Regional School Allocation Methodology on Regional Vocational Technical Schools pursuant to Chapter 182 of the Acts of 2008, Section 109:

> *"SECTION 109. Notwithstanding any general or special law to the contrary, the department of education shall report on the equity effects of the recently phased-in regional school allocation methodology on regional vocation technical schools; provided further that said report shall be filed with the house and senate committee on ways and means and the joint committee on education by no later than December 31, 2008."*

The Chapter 70 state education aid formula stipulates how much each city and town should pay out of local revenue sources toward the cost of achieving its pupils' "foundation budget." The foundation budget is an estimate of how much spending is needed to provide an adequate education to the students in each of the Commonwealth's 328 school districts. It is calculated based on the functional costs associated with each student's grade level, program, and demographic characteristics.[1]

The amount a city or town should pay towards this cost is called the "minimum local contribution." This amount is based upon the city or town's property valuation and residents' income, relative to its pupils' overall foundation budget. Since most Massachusetts communities belong to between two and four school districts, the total contribution must be fairly divided among the local and regional districts to which they belong.

Since the beginning of education reform, the Chapter 70 formula has used three different methods to allocate minimum local contributions to school districts. This report focuses on the current method, which was implemented in FY05. Unlike previous approaches, this one allocates each town's total contribution requirement directly in proportion to the foundation budgets of their pupils, which has made the formula more equitable.

What Is Equity?

In school finance, equity is commonly used to apply to a school finance system's fairness in regards to two separate groups of stakeholders. There is equity for pupils (the quality of education should not hinge on where a pupil lives) and there is equity for taxpayers (the funding for education should be fairly distributed in relation to ability to pay). The focus of this report is taxpayer equity.

Regarding taxpayer equity, there are two generally accepted concepts. *Horizontal* equity means that two towns with *similar* needs and ability to pay should make the same effort from local taxes. *Vertical* equity is the corollary. Two towns with *different* needs and abilities to pay should *not* have to make the same effort from local taxes.

[1] For a detailed description of how the foundation budget is determined see http://finance1.doe.mass.edu/chapter70/chapter_cal.pdf

These concepts can be seen in three distinct perspectives as they relate to regional school finance, particularly vocational regional districts:

1. **Once a town's total minimum contribution is calculated there should be equity *within* a town regarding how much it is required to pay for its pupils at various districts**. Wakefield should pay approximately the same per pupil amount for its local district pupils as it does for its pupils at Northeast Metropolitan Vocational (after adjusting for the higher costs of vocational education.) Both horizontal and vertical equity are important here. A town should fairly allocate its local resources to benefit its children equally (horizontal equity). It should also recognize that its vocational pupils' programs are more expensive (they must simultaneously teach both academics and vocational skills), and so a higher amount in per pupil terms should be apportioned to that particular group (vertical equity).

2. **There should be equity *between* towns around the Commonwealth in regards to their total school populations**. The less wealthy city of Lawrence should not be required to pay the same amount for *all* of its pupils, as the wealthier town of Wellesley (vertical equity). In Massachusetts, beginning in FY07, the "aggregate wealth" methodology defined what each community town should pay toward the foundation budgets of all of its pupils. It set in place a phase-in period which brought each town closer to its target amount over a five-year phase-in period.

3. **If (2) is true, then it should be reflected in equity *between member towns of a regional district***. Lawrence is a member of the Greater Lawrence Vocational Regional District, along with Andover, Methuen and North Andover. The Chapter 70 formula assigns it a target local contribution percentage of 15.65 percent of foundation budget, compared to 46.29 percent for Methuen and the maximum of 82.5 percent for Andover and North Andover. Lawrence should not be required to pay the same amount from local taxes for its vocational pupils as Andover does (also vertical equity).

Two recent changes to the formula are intended to address these three issues. Beginning in FY05, the formula instituted a phase-in that over four years (culminating in FY08 and continuing into FY09) would directly tie a town's contributions to the costs of its pupils at the districts it belongs to. This is the specific mechanism known as the "regional allocation." It addressed *within-town* equity and has succeeded at resolving the disparities that existed.

Beginning in FY07, the Chapter 70 formula instituted very aggressive measures to address *between-town* equity. The aggregate wealth methodology stipulated that a town's total required contribution is now directly tied to its property values, its residents' income and the costs of its students.

These two formulaic mechanisms have separate goals, but should both result in reduced inequities at vocational regional districts. This report will focus on the regional allocation methodology, and then look at the extent to which those inequities at

vocational regional districts have changed over time. While it addresses the impact of the aggregate wealth method to a lesser extent, it is important to keep in mind that the regional allocation shifted far less money than the aggregate wealth method. Both are important though, when we look at the results for vocational regional districts.

The Regional Allocation: Methodology

Each city and town's total required contribution must be apportioned between all the pupils it is educating, whether those pupils are attending local schools, academic regional schools, vocational schools, county agricultural schools, collaborative programs, private special education schools, or any of the other publicly-funded settings in which educational services are delivered. The Chapter 70 statute does not specify the specific methodology by which this "regional allocation" is to be calculated. There have been three separate methods used since FY94, all of which were developed by the Massachusetts Department of Elementary and Secondary Education (ESE).

Methods Used Between FY94 and FY04

The first method was used between FY94 and FY02. It was initially a valid way of doing the calculation, but it was not sensitive enough to enrollment change. In vocational regional school districts this was a problem because in percentage terms, individual towns' enrollments fluctuate much more from year to year than at academic regionals. After several years of enrollment change, the formula reached a point where there were pronounced disparities in what the Chapter 70 formula required cities and towns to pay for their vocational pupils.

By the late 1990's, after the first method had been in place for several years, the allocation formula resulted in a minimum contribution of zero for a number of towns even though they did have students enrolled at their vocational districts. This nonsensical result—not to mention less obvious inequities—made it clear that a change in methodology was needed.

In FY03, a second method was adopted which did improve the sensitivity to enrollment change. The base contribution remained the same as the previous year, but increases in required contribution were proportional to foundation budgets at each of the districts to which a town belonged. Over time this method would have resulted in a much fairer allocation, but it did nothing to correct the underlying inequities in the base contributions. It was only used in the FY03 and FY04 Chapter 70 calculations.

The Current Method, Used Since FY05

The current or third method was designed to eliminate the underlying inequities in the base contributions. The goal was to tie a town's total contributions directly to the foundation budget dollars associated with its pupils. For example, if the foundation budget for a town's pupils at its vocational regional represented three percent of the towns' overall foundation budget, then three percent of its required contribution should be apportioned to the vocational district.

Implementing this new plan all at once would have been disruptive to some local budgets, so it was scheduled for a four-year phase in. In FY05, 25 percent of the disparity

between the existing contribution percentage and a community's foundation percentage was eliminated. In FY06, 50 percent of the remaining disparity was reduced, and in FY07, 75 percent. Beginning in FY08, the disparity was completely reduced and again in FY09 required contributions were directly proportional to foundation budgets.

A big advantage of this methodology is its transparency. Previous methods were much more difficult for state officials to explain and for local officials to understand. The logic of the old calculations was complicated, and this frequently led to distrust of the results.

Table 1 shows how the new method works in FY09, using Arlington as an example. Arlington is a K-12 local district and also belongs to the Minuteman Regional Vocational Technical district[2]. The first four rows are shown for comparison purposes, so that the reasons for changes from one year to the next can be seen.

[2] The same presentation is available for any city or town by downloading the "complete formula spreadsheet" on ESE's website, at http://finance1.doe.mass.edu/chapter70/chapter_09.xls

Table 1: Apportionment of Local Contribution Across School Districts

	Prior Year (FY08) Allocation Percentage (for comparison purposes)	ARLINGTON	MINUTEMAN	COMBINED TOTAL ALL DISTRICTS
1	FY08 foundation enrollment	4,429	169	4,598
2	FY08 foundation budget	$35,888,203	$2,346,824	$38,235,027
3	Each district's share of municipality's combined FY08 foundation	93.86%	6.14%	100.00%
4	FY08 required contribution	$30,613,441	$2,001,893	$32,615,334
	Apportionment of FY09 contribution among community's districts			
5	FY09 total unapportioned required contribution			33,681,285
6	FY09 foundation enrollment	4,469	151	4,620
7	FY09 foundation budget	$38,070,505	$2,200,059	$40,270,564
8	Each district's share of municipality's total FY09 foundation (row 7)	94.54%	5.46%	100.00%
9	FY09 required contribution apportioned using row (row 8 x row 5)	$31,841,211	$1,840,074	$33,681,285

Row 5 is the FY09 total required contribution. This amount is determined by a separate calculation on the "municipal contribution" sheet within the formula spreadsheet. It is directly determined by a community's property valuation, residents' income, and foundation budget for all of its pupils.

Row 6 shows the October 1, 2007 headcount of pupils being financed by the two districts to which Arlington belongs. The foundation budget for each district's Arlington pupils is shown in row 7. Arlington's local district pupils account for 94.54 percent of the town's total foundation budget (row 8). The town's total required contribution in row five is allocated directly in proportion to the percentages in row 8.

Equity Effects

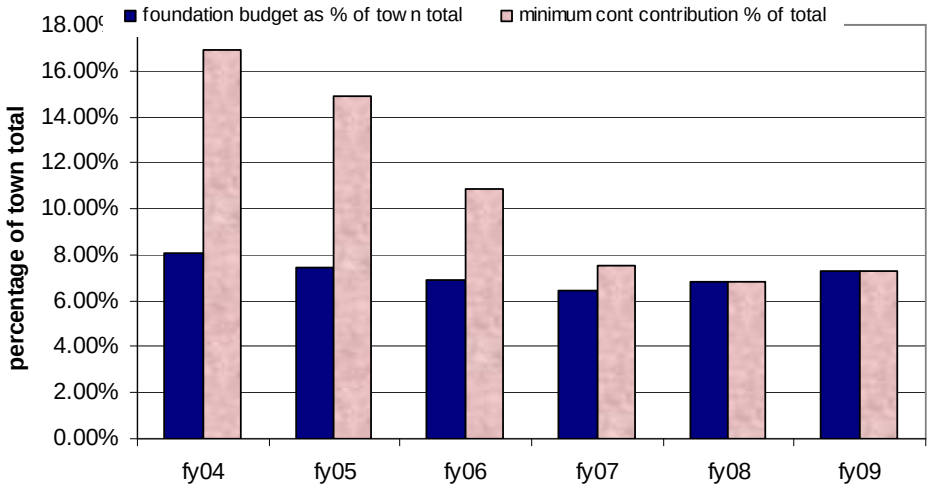
The Regional Allocation

The regional allocation phase-in is now complete. It was fully accomplished in FY08 and continues into FY09. Each city and town's contributions are tied directly to the costs of its pupils at the various districts to which it belongs. If a town's pupils at its vocational regional district represent five percent of the combined costs of its vocational and local district pupils, then five percent of its required contribution is allocated to its vocational district.

Townsend is an example of a community that in FY04 was required to make an exorbitantly high contribution to Nashoba Valley, its regional vocational district. This was not the fault of Nashoba Valley in any way. The required contribution was imposed by the Commonwealth's Chapter 70 calculations.

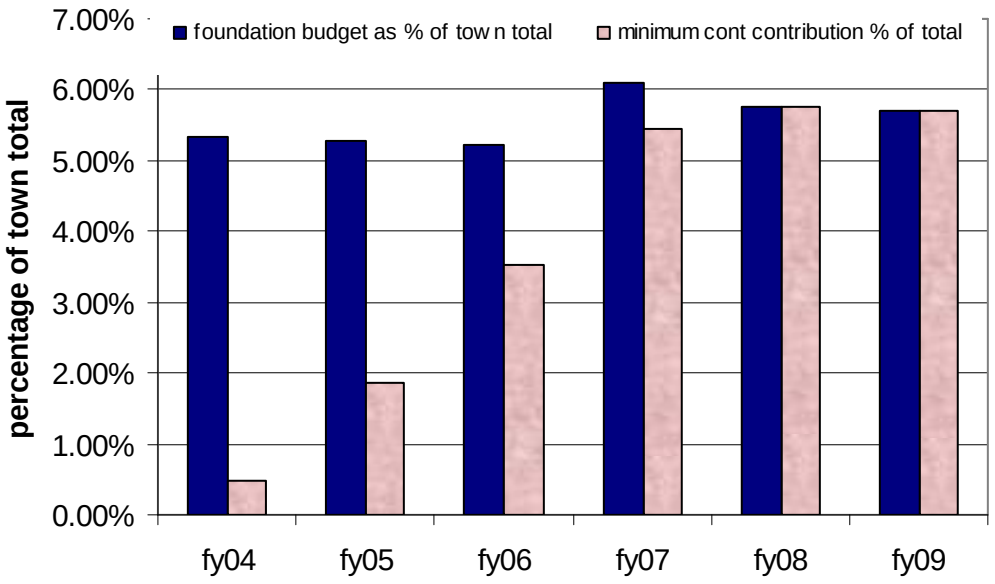
In FY04, there were 99 Townsend pupils enrolled at Nashoba Valley. Their foundation budget was $1,080,487. The foundation budget for its 1,832 pupils at North Middlesex, the K-12 academic regional district to which it belongs, was $12,246,431. The vocational pupils accounted for 8.11 percent of the combined $13,326,918 in foundation budget for all of the town's pupils. Yet out of Townsend's total required contribution of $5,754,644 that year, the Chapter 70 calculations required that $975,540 or 16.95% had to be paid to Nashoba Valley. Figure 1 shows that the regional allocation method corrected this inequity. By FY08 the vocational pupils represented 6.82 percent of the town's total foundation budget, and exactly 6.82 percent of the town's required contribution was allotted to them. In FY09, five more pupils chose Nashoba Valley than in the previous year, while the number of Townsend students stayed the same. They now represented 7.26 percent of the town's total foundation budget, and 7.26 percent of its FY09 total required contribution was assigned to Nashoba Valley.

Figure 1
Townsend Contribution to Nashoba Valley



Millbury is an example of the opposite type of correction: a town that was being required by the Commonwealth—through no fault of its own—to underfund its vocational pupils at Blackstone Valley, the vocational regional district of which it is a member.

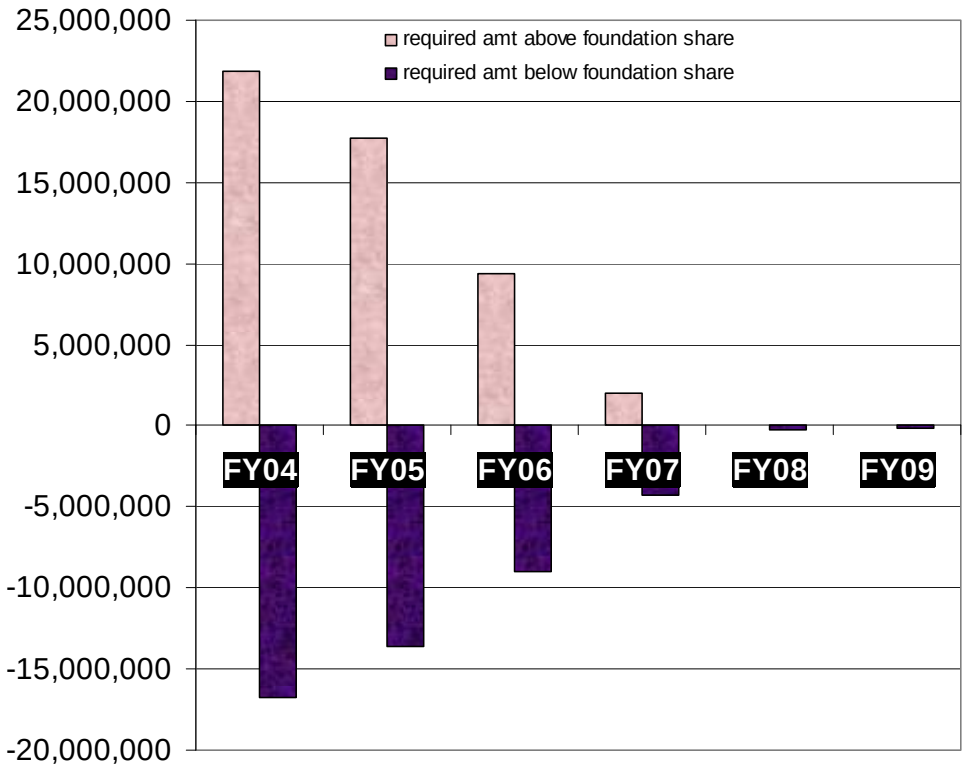
Figure 2
Millbury Contribution to Blackstone Valley



Millbury's enrollment and foundation share at Blackstone Valley stayed about the same over the six year period. The regional allocation drove Millbury's contribution to Blackstone from $35,937 in FY04 (for 74 pupils, which is $486 per pupil) to the much higher level of $582,054 for the 74 pupils the town sent there in FY08, which is $7,866 per pupil and much more in line with its fellow members' required contributions.

It is not difficult to quantify the total dollar impact of the new regional allocation methodology. If Townsend's FY04 contribution to Nashoba Valley had been directly in line with its foundation budget there, it would have had a required contribution of $466,561 instead of $1,080,487, which was $508,979 more than what would have been equitable. Statewide the total of the required contributions that *exceeded* foundation budget percentages in FY04 was $21,808,595 for 102 towns. On the other hand, there were 127 towns like Millbury that were not being required to pay an equitable share. If we add up the amounts that their required amounts were *lower* than their foundation percentages, it totals to $16,736,279 for 127 towns. Figure 3 shows that these disparities were systematically reduced to near-zero in FY08 and again in FY09[3]

Figure 3
Required Contributions at Regional Vocational Districts FY04 to FY09
Amounts Above and Below Foundation Share, Mass. Totals



Between-town disparities

Between-town disparities were dramatically reduced by the aggregate wealth method that was first used in FY07 (Figure 4). In that first year, required contributions in excess of target levels totaled $496 million statewide for 232 communities (Without the excess

[3] The assessments for Essex Agricultural Technical High School students are treated on a per-pupil basis by statute. There is an adjustment for this in line 10 of the regional allocation spreadsheet for those communities in northeastern Massachusetts that are affected. This calculation is the reason why the disparities are not reduced all the way to zero.

effort reduction component of the formula, it would have been $621 million). That amount fell to $371 million in FY08 and to $250 million in FY09.

For those being required to make *less* effort than the formula indicates they should be making, there has been a slight *deterioration* in equity. In FY07, there were 119 cities and towns whose required effort was below their target by $322 million. In FY09 there were 127 cities and towns who fell short by $328 million. This occurred in spite of a provision, implemented in FY08 and continued in FY09 that required an additional increase of one percent for those who were more than five percent below their target, and an increase of two percent for those who were more than ten percent below. This provision imposed increases of $20 and $21 million in those two years respectively.

Figure 4
Required Contributions, Statewide Amounts Above and BelowTarget

The Chapter 70 formula as it currently stands is very good at correcting effort that is above the target amount. Because of the limits of Proposition 2 1/2 , the formula is not designed to make the same level of progress toward bringing below-effort communities up to their targets. This is a more difficult problem which hopefully will be addressed over time.

Equity Between Members of Regional Districts

Equity for regional district members is directly related to within and between town equity. The regional allocation methodology successfully resolved a $21 million problem. Members now can see that their town's total contribution is fairly allocated among all of its pupils. There remains, however, a $250 million problem that requires 224 municipalities to pay more than they should, and allows 127 cities and towns to pay $328 million less than they should.

The disparities in how much regional district members must pay are due to two main factors. First, the concept of vertical equity dictates that **there *should* be disparities because no two towns have exactly the same ability to pay**. Secondly, the between-

town disparities have not been fully resolved in spite of the great progress that has been made toward reducing required contributions that are too high.

While it is statistically impossible to distinguish the impact of the regional allocation methodology from the other equity components of the formula, it is reasonable to assume that the changes to the regional allocation formula over the past several years have resulted in positive improvement. Appendix 1 compares vocational regional districts' member contributions, in dollar and per pupil terms, for FY04 and FY09.

Complaints about inequities in vocational district contributions often focus on the disparities between the highest and lowest dollar amounts. Figure 5 shows the range between lowest and highest per pupil contribution in FY04. For example, Berlin's contribution to Assabet Valley was $2,462 per pupil, the leftmost end of the bar. Westborough's contribution was $13,100, the rightmost end.

Clearly there were some significant disparities that year. Harvard paid $30,518 for one pupil at Montachuset and West Newbury $41,515 for one pupil at Whittier. At the other extreme Whittier was required to charge Georgetown only $507 for five pupils.

Figure 5
Required Contribution Per Pupil, Lo-Hi Range FY04

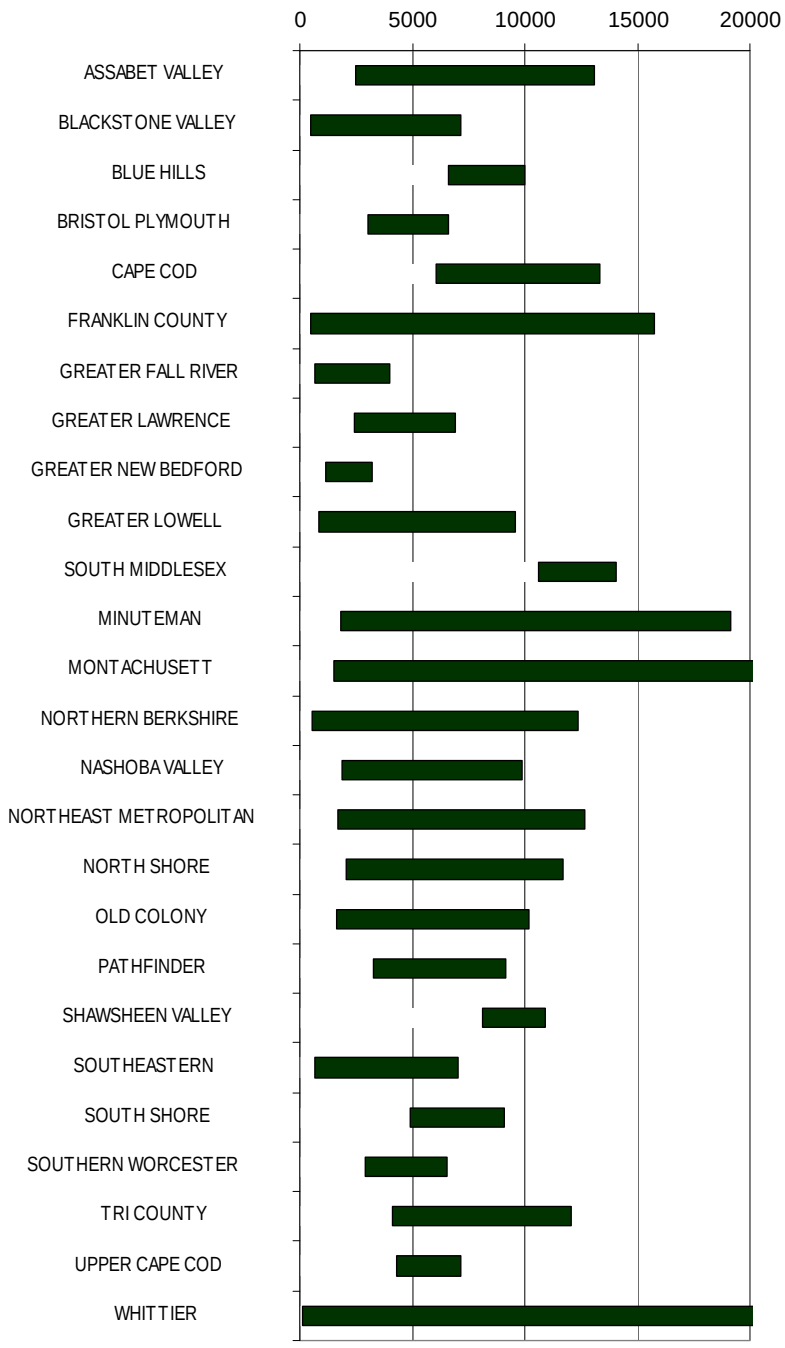
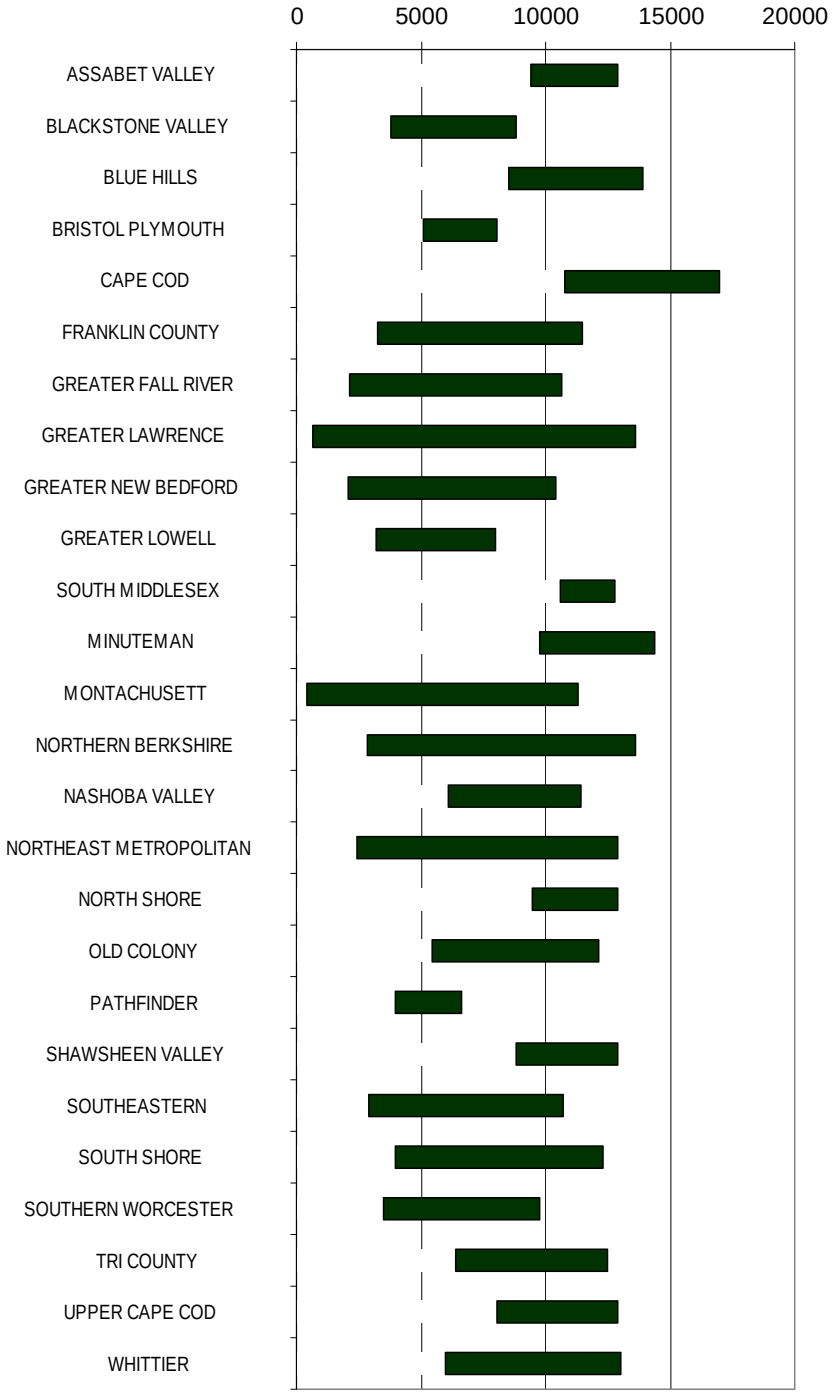


Figure 6 shows the range of required contributions at the same districts in FY09. The upper-end disparities have disappeared. That improvement *can* be attributed to the regional allocation methodology. A visual comparison of Figures 5 and 6 would seem to indicate that the ranges between high and low contributions per pupil were smaller in

FY09. Statistically, out of the 26 vocational regional districts, 17 had lower ranges. The median range was $6,989 in FY04 and $6,169 in FY09. Disparities were markedly reduced.

Figure 6
Required Contribution Per Pupil, Lo-Hi Range FY09



Conclusion

We have gone through a period of adjustment from a regional allocation methodology, that was in some cases nonsensical, to one which is rational and can be clearly explained. From this point on, annual changes in contributions to regional districts should be more moderate and understandable to local officials.

The new regional allocation methodology has succeeded at its goal—ensuring that a town's required school contributions are fairly allocated amongst the various school districts to which it may belong.

When viewed in per-pupil terms, significant disparities remain among vocational district members' required contributions, though they are not as extreme as they were in FY04. Some of these are due to the fact that the planned five-year phase-in of the aggregate wealth methodology is not yet complete. Even if it were, it would not have corrected all cases where communities' contributions are below their targets. The remaining disparities are legitimately due to the fact that members of vocational districts all have different abilities to pay no matter how slight, and that the Chapter 70 formula should recognize these differences.

Appendix 1

Change in Minimum Contributions, FY04 to FY09, Vocational Regional Districts

School District		Member City/Town	FY04 Net Minimum Contribution	FY04 enroll-ment	FY04 contribution per pupil		FY09 Net Minimum Contribution	FY09 enroll-ment	FY09 contribution per pupil		change in contribution	change per pupil	lea	lea
ASSABET VALLEY		BERLIN	46,769	19	2,462		373,305	29	12,873		326,536	10,411	801	28
ASSABET VALLEY		HUDSON	1,505,605	166	9,070		1,292,387	137	9,433		-213,218	364	801	141
ASSABET VALLEY		MARLBOROUGH	3,652,183	363	10,061		3,435,949	320	10,737		-216,234	676	801	170
ASSABET VALLEY		MAYNARD	446,496	71	6,289		782,270	74	10,571		335,774	4,283	801	174
ASSABET VALLEY		NORTHBOROUGH	517,893	59	8,778		590,690	53	11,145		72,797	2,367	801	213
ASSABET VALLEY		SOUTHBOROUGH	157,476	18	8,749		183,444	16	11,465		25,968	2,717	801	276
ASSABET VALLEY		WESTBOROUGH	615,722	47	13,100		665,808	53	12,562		50,086	-538	801	321
BLACKSTONE VALLEY		BELLINGHAM	40,547	43	943		609,736	72	8,469		569,189	7,526	805	25
BLACKSTONE VALLEY		BLACKSTONE	530,938	74	7,175		477,710	79	6,047		-53,228	-1,128	805	32
BLACKSTONE VALLEY		DOUGLAS	325,861	74	4,404		349,351	66	5,293		23,490	890	805	77
BLACKSTONE VALLEY		GRAFTON	349,346	75	4,658		747,002	85	8,788		397,656	4,130	805	110
BLACKSTONE VALLEY		HOPEDALE	89,201	26	3,431		97,455	22	4,430		8,254	999	805	138
BLACKSTONE VALLEY		MENDON	124,409	25	4,976		200,884	34	5,908		76,475	932	805	179
BLACKSTONE VALLEY		MILFORD	545,538	95	5,743		1,302,827	154	8,460		757,289	2,717	805	185
BLACKSTONE VALLEY		MILLBURY	35,937	74	486		596,188	73	8,167		560,251	7,681	805	186
BLACKSTONE VALLEY		MILLVILLE	153,576	45	3,413		175,508	46	3,815		21,932	403	805	188
BLACKSTONE VALLEY		NORTHBRIDGE	541,823	114	4,753		562,616	111	5,069		20,793	316	805	214
BLACKSTONE VALLEY		SUTTON	374,384	60	6,240		638,833	77	8,297		264,449	2,057	805	290
BLACKSTONE VALLEY		UPTON	66,205	20	3,310		189,977	32	5,937		123,772	2,627	805	303
BLACKSTONE VALLEY		UXBRIDGE	627,956	124	5,064		1,358,037	195	6,964		730,081	1,900	805	304
BLUE HILLS		AVON	485,151	51	9,513		624,305	46	13,572		139,154	4,059	806	18

BLUE HILLS		BRAINTREE	1,091,205	129	8,459		1,422,965	127	11,204		331,760	2,745	806	40
BLUE HILLS		CANTON	468,626	58	8,080		975,446	78	12,506		506,820	4,426	806	50
BLUE HILLS		DEDHAM	509,730	58	8,788		625,366	45	13,897		115,636	5,109	806	73
BLUE HILLS		HOLBROOK	783,450	117	6,696		1,182,113	139	8,504		398,663	1,808	806	133
BLUE HILLS		MILTON	382,088	56	6,823		508,269	42	12,102		126,181	5,279	806	189
BLUE HILLS		NORWOOD	508,925	75	6,786		702,278	55	12,769		193,353	5,983	806	220
BLUE HILLS		RANDOLPH	2,555,095	255	10,020		2,788,133	307	9,082		233,038	-938	806	244
BLUE HILLS		WESTWOOD	72,918	11	6,629		138,134	11	12,558		65,216	5,929	806	335
BRISTOL PLYMOUTH		BERKLEY	462,342	87	5,314		564,928	103	5,485		102,586	170	810	27
BRISTOL PLYMOUTH		BRIDGEWATER	367,901	76	4,841		669,909	95	7,052		302,008	2,211	810	42
BRISTOL PLYMOUTH		MIDDLEBOROUGH	660,238	100	6,602		866,548	137	6,325		206,310	-277	810	182
BRISTOL PLYMOUTH		RAYNHAM	219,879	73	3,012		850,871	106	8,027		630,992	5,015	810	245
BRISTOL PLYMOUTH		TAUNTON	1,614,289	535	3,017		3,768,034	739	5,099		2,153,745	2,081	810	293
CAPE COD		BARNSTABLE	1,255,662	155	8,101		2,796,641	221	12,654		1,540,979	4,553	815	20
CAPE COD		BREWSTER	565,120	59	9,578		683,012	55	12,418		117,892	2,840	815	41
CAPE COD		CHATHAM	147,951	17	8,703		196,909	13	15,147		48,958	6,444	815	55
CAPE COD		DENNIS	863,674	104	8,305		1,238,252	98	12,635		374,578	4,331	815	75
CAPE COD		EASTHAM	177,252	25	7,090		272,470	19	14,341		95,218	7,250	815	85
CAPE COD		HARWICH	671,398	87	7,717		843,993	68	12,412		172,595	4,694	815	126
CAPE COD		MASHPEE	363,223	42	8,648		496,423	45	11,032		133,200	2,383	815	172
CAPE COD		ORLEANS	206,292	16	12,893		221,838	15	14,789		15,546	1,896	815	224
CAPE COD		PROVINCETOWN	32,485	3	10,828		153,030	9	17,003		120,545	6,175	815	242
CAPE COD		TRURO	133,282	10	13,328		94,697	6	15,783		-38,585	2,455	815	300
CAPE COD		WELLFLEET	135,240	14	9,660		120,262	8	15,033		-14,978	5,373	815	318
CAPE COD		YARMOUTH	863,363	143	6,038		1,871,168	174	10,754		1,007,805	4,716	815	351
FRANKLIN COUNTY		BERNARDSTON	144,952	23	6,302		181,410	26	6,977		36,458	675	818	29
FRANKLIN COUNTY		BUCKLAND	99,108	14	7,079		132,045	17	7,767		32,937	688	818	47
FRANKLIN COUNTY		COLRAIN	152,686	17	8,982		160,769	25	6,431		8,083	-2,551	818	66
FRANKLIN COUNTY		CONWAY	157,335	10	15,734		94,040	11	8,549		-63,295	-7,184	818	68

FRANKLIN COUNTY		DEERFIELD	132,562	20	6,628		139,642	15	9,309		7,080	2,681	818	74
FRANKLIN COUNTY		ERVING	18,996	12	1,583		80,494	7	11,499		61,498	9,916	818	91
FRANKLIN COUNTY		GILL	32,692	9	3,632		67,977	10	6,798		35,285	3,165	818	106
FRANKLIN COUNTY		GREENFIELD	866,213	125	6,930		948,387	138	6,872		82,174	-57	818	114
FRANKLIN COUNTY		HEATH	54,253	11	4,932		43,238	6	7,206		-11,015	2,274	818	130
FRANKLIN COUNTY		LEYDEN	78,437	11	7,131		47,403	5	9,481		-31,034	2,350	818	156
FRANKLIN COUNTY		MONTAGUE	437,051	79	5,532		466,996	69	6,768		29,945	1,236	818	192
FRANKLIN COUNTY		NEW SALEM	46,977	9	5,220		46,024	7	6,575		-953	1,355	818	206
FRANKLIN COUNTY		NORTHFIELD	177,978	17	10,469		221,183	29	7,627		43,205	-2,842	818	216
FRANKLIN COUNTY		ORANGE	286,349	81	3,535		229,094	70	3,273		-57,255	-262	818	223
FRANKLIN COUNTY		SHELBURNE	106,634	13	8,203		110,232	12	9,186		3,598	983	818	268
FRANKLIN COUNTY		SUNDERLAND	34,711	5	6,942		89,996	13	6,923		55,285	-19	818	289
FRANKLIN COUNTY		WARWICK	49,515	8	6,189		49,067	8	6,133		-448	-56	818	312
FRANKLIN COUNTY		WENDELL	5,049	10	505		57,631	8	7,204		52,582	6,699	818	319
FRANKLIN COUNTY		WHATELY	26,716	10	2,672		81,172	8	10,147		54,456	7,475	818	337
GREATER FALL RIVER		FALL RIVER	611,795	933	656		2,313,072	1,100	2,103		1,701,277	1,447	821	95
GREATER FALL RIVER		SOMERSET	182,901	61	2,998		1,076,818	101	10,662		893,917	7,663	821	273
GREATER FALL RIVER		SWANSEA	359,726	90	3,997		1,272,886	123	10,349		913,160	6,352	821	292
GREATER FALL RIVER		WESTPORT	303,221	85	3,567		966,739	93	10,395		663,518	6,828	821	331
GREATER LAWRENCE		ANDOVER	82,790	12	6,899		340,131	25	13,605		257,341	6,706	823	9
GREATER LAWRENCE		LAWRENCE	4,049,298	1,435	2,822		762,951	1,196	638		-3,286,347	-2,184	823	149
GREATER LAWRENCE		METHUEN	544,572	227	2,399		1,396,514	205	6,812		851,942	4,413	823	181
GREATER LAWRENCE		NORTH ANDOVER	74,424	19	3,917		264,447	20	13,222		190,023	9,305	823	211
GREATER NEW BEDFORD		DARTMOUTH	444,815	158	2,815		1,955,665	188	10,402		1,510,850	7,587	825	72
GREATER NEW BEDFORD		FAIRHAVEN	593,696	184	3,227		1,972,334	254	7,765		1,378,638	4,538	825	94
GREATER NEW BEDFORD		NEW BEDFORD	1,686,062	1,486	1,135		3,244,649	1,580	2,054		1,558,587	919	825	201
GREATER LOWELL		DRACUT	1,669,997	307	5,440		2,335,586	325	7,186		665,589	1,747	828	79
GREATER LOWELL		DUNSTABLE	95,806	10	9,581		135,386	17	7,964		39,580	-1,617	828	81

GREATER LOWELL		LOWELL	4,598,796	1,590	2,892		5,249,231	1,634	3,213		650,435	320	828	160
GREATER LOWELL		TYNGSBOROUGH	55,146	64	862		790,794	101	7,830		735,648	6,968	828	301
SOUTH MIDDLESEX		ASHLAND	814,439	58	14,042		543,555	47	11,565		-270,884	-2,477	829	14
SOUTH MIDDLESEX		FRAMINGHAM	6,123,768	528	11,598		5,845,486	504	11,598		-278,282	0	829	100
SOUTH MIDDLESEX		HOLLISTON	492,367	38	12,957		275,951	26	10,614		-216,416	-2,344	829	136
SOUTH MIDDLESEX		HOPKINTON	292,669	25	11,707		282,369	24	11,765		-10,300	59	829	139
SOUTH MIDDLESEX		NATICK	923,362	87	10,613		768,140	60	12,802		-155,222	2,189	829	198
MINUTEMAN		ACTON	501,272	41	12,226		350,935	33	10,634		-150,337	-1,592	830	2
MINUTEMAN		ARLINGTON	965,245	140	6,895		1,840,074	151	12,186		874,829	5,291	830	10
MINUTEMAN		BELMONT	391,059	27	14,484		397,190	32	12,412		6,131	-2,071	830	26
MINUTEMAN		BOLTON	172,947	15	11,530		130,466	11	11,861		-42,481	331	830	34
MINUTEMAN		BOXBOROUGH	20,086	11	1,826		142,241	13	10,942		122,155	9,116	830	37
MINUTEMAN		CARLISLE	53,765	7	7,681		94,552	7	13,507		40,787	5,827	830	51
MINUTEMAN		CONCORD	229,706	12	19,142		301,471	21	14,356		71,765	-4,786	830	67
MINUTEMAN		DOVER	30,174	2	15,087		13,947	1	13,947		-16,227	-1,140	830	78
MINUTEMAN		LANCASTER	454,637	34	13,372		292,764	30	9,759		-161,873	-3,613	830	147
MINUTEMAN		LEXINGTON	517,628	43	12,038		882,483	67	13,171		364,855	1,134	830	155
MINUTEMAN		LINCOLN	70,970	7	10,139		54,387	4	13,597		-16,583	3,458	830	157
MINUTEMAN		NEEDHAM	159,545	22	7,252		224,077	18	12,449		64,532	5,197	830	199
MINUTEMAN		STOW	467,925	51	9,175		521,176	41	12,712		53,251	3,537	830	286
MINUTEMAN		SUDBURY	109,159	20	5,458		131,807	11	11,982		22,648	6,525	830	288
MINUTEMAN		WAYLAND	83,072	9	9,230		244,686	18	13,594		161,614	4,363	830	315
MINUTEMAN		WESTON	9,242	2	4,621		42,647	3	14,216		33,405	9,595	830	330
MONTACHUSETT		ASHBURNHAM	354,212	52	6,812		334,583	48	6,970		-19,629	159	832	11
MONTACHUSETT		ASHBY	353,802	45	7,862		266,113	42	6,336		-87,689	-1,526	832	12
MONTACHUSETT		ATHOL	195,738	102	1,919		51,158	117	437		-144,580	-1,482	832	15
MONTACHUSETT		BARRE	74,385	16	4,649		128,244	32	4,008		53,859	-641	832	21
MONTACHUSETT		FITCHBURG	1,417,199	348	4,072		1,452,990	408	3,561		35,791	-511	832	97
MONTACHUSETT		GARDNER	257,529	135	1,908		517,287	146	3,543		259,758	1,635	832	103

MONTACHUSETT		HARVARD	30,518	1	30,518		56,390	5	11,278		25,872	-19,240	832	125
MONTACHUSETT		HOLDEN	282,742	38	7,441		383,409	42	9,129		100,667	1,688	832	134
MONTACHUSETT		HUBBARDSTON	171,119	35	4,889		203,301	53	3,836		32,182	-1,053	832	140
MONTACHUSETT		LUNENBURG	271,256	44	6,165		498,770	55	9,069		227,514	2,904	832	162
MONTACHUSETT		PETERSHAM	35,793	10	3,579		27,213	4	6,803		-8,580	3,224	832	234
MONTACHUSETT		PHILLIPSTON	37,485	16	2,343		91,405	17	5,377		53,920	3,034	832	235
MONTACHUSETT		PRINCETON	241,600	23	10,504		189,248	17	11,132		-52,352	628	832	241
MONTACHUSETT		ROYALSTON	28,869	19	1,519		32,960	25	1,318		4,091	-201	832	255
MONTACHUSETT		STERLING	238,850	52	4,593		522,732	55	9,504		283,882	4,911	832	282
MONTACHUSETT		TEMPLETON	84,685	50	1,694		205,834	67	3,072		121,149	1,378	832	294
MONTACHUSETT		WESTMINSTER	244,724	56	4,370		375,183	60	6,253		130,459	1,883	832	328
MONTACHUSETT		WINCHENDON	249,495	92	2,712		573,072	141	4,064		323,577	1,352	832	343
NORTHERN BERKSHIRE		ADAMS	235,600	113	2,085		444,850	136	3,271		209,250	1,186	851	4
NORTHERN BERKSHIRE		CLARKSBURG	80,538	31	2,598		132,389	38	3,484		51,851	886	851	63
NORTHERN BERKSHIRE		FLORIDA	92,985	27	3,444		165,695	28	5,918		72,710	2,474	851	98
NORTHERN BERKSHIRE		MONROE	24,778	2	12,389		16,717	2	8,359		-8,061	-4,031	851	190
NORTHERN BERKSHIRE		NORTH ADAMS	1,075,345	219	4,910		559,486	197	2,840		-515,859	-2,070	851	209
NORTHERN BERKSHIRE		SAVOY	100,197	11	9,109		78,044	14	5,575		-22,153	-3,534	851	263
NORTHERN BERKSHIRE		WILLIAMSTOWN	7,776	15	518		231,128	17	13,596		223,352	13,077	851	341
NASHOBA VALLEY		CHELMSFORD	775,107	93	8,334		1,334,714	117	11,408		559,607	3,073	852	56
NASHOBA VALLEY		GROTON	436,490	46	9,489		338,456	43	7,871		-98,034	-1,618	852	115
NASHOBA VALLEY		LITTLETON	37,555	20	1,878		461,854	42	10,997		424,299	9,119	852	158
NASHOBA VALLEY		PEPPERELL	700,063	116	6,035		653,697	107	6,109		-46,366	74	852	232
NASHOBA VALLEY		SHIRLEY	126,308	42	3,007		337,220	54	6,245		210,912	3,237	852	270
NASHOBA VALLEY		TOWNSEND	975,540	99	9,854		508,369	78	6,518		-467,171	-3,336	852	299
NASHOBA VALLEY		WESTFORD	346,763	47	7,378		495,813	55	9,015		149,050	1,637	852	326
NORTHEAST METROPOLITAN		CHELSEA	1,318,103	269	4,900		500,735	205	2,443		-817,368	-2,457	853	57
NORTHEAST METROPOLITAN		MALDEN	996,957	163	6,116		1,217,003	218	5,583		220,046	-534	853	165

NORTHEAST METROPOLITAN		MELROSE	66,958	40	1,674		741,668	68	10,907		674,710	9,233	853	178
NORTHEAST METROPOLITAN		NORTH READING	137,930	29	4,756		359,510	34	10,574		221,580	5,818	853	217
NORTHEAST METROPOLITAN		READING	143,894	23	6,256		353,897	33	10,724		210,003	4,468	853	246
NORTHEAST METROPOLITAN		REVERE	1,866,941	273	6,839		1,552,868	242	6,417		-314,073	-422	853	248
NORTHEAST METROPOLITAN		SAUGUS	1,027,521	148	6,943		1,861,097	145	12,835		833,576	5,892	853	262
NORTHEAST METROPOLITAN		STONEHAM	314,391	28	11,228		580,300	46	12,615		265,909	1,387	853	284
NORTHEAST METROPOLITAN		WAKEFIELD	292,204	34	8,594		892,935	72	12,402		600,731	3,808	853	305
NORTHEAST METROPOLITAN		WINCHESTER	65,039	9	7,227		73,032	6	12,172		7,993	4,945	853	344
NORTHEAST METROPOLITAN		WINTHROP	163,061	40	4,077		510,837	51	10,016		347,776	5,940	853	346
NORTHEAST METROPOLITAN		WOBURN	1,203,079	95	12,664		1,109,870	86	12,905		-93,209	241	853	347
NORTH SHORE		BEVERLY	878,752	104	8,450		1,218,832	101	12,068		340,080	3,618	854	30
NORTH SHORE		BOXFORD	45,111	5	9,022		100,009	9	11,112		54,898	2,090	854	38
NORTH SHORE		DANVERS	573,907	66	8,696		902,354	71	12,709		328,447	4,014	854	71
NORTH SHORE		ESSEX	39,062	5	7,812		97,715	8	12,214		58,653	4,402	854	92
NORTH SHORE		GLOUCESTER	283,001	53	5,340		665,051	56	11,876		382,050	6,536	854	107
NORTH SHORE		HAMILTON	35,007	9	3,890		104,053	9	11,561		69,046	7,672	854	119
NORTH SHORE		LYNNFIELD	93,628	8	11,704		76,194	7	10,885		-17,434	-819	854	164
NORTH SHORE		MANCHESTER	38,557	5	7,711		25,781	2	12,891		-12,776	5,179	854	166
NORTH SHORE		MARBLEHEAD	34,939	10	3,494		113,372	10	11,337		78,433	7,843	854	168
NORTH SHORE		MIDDLETON	60,728	14	4,338		201,141	19	10,586		140,413	6,249	854	184
NORTH SHORE		NAHANT	42,997	6	7,166		62,882	5	12,576		19,885	5,410	854	196
NORTH SHORE		ROCKPORT	225,652	21	10,745		112,952	9	12,550		-112,700	1,805	854	252
NORTH SHORE		SALEM	586,050	97	6,042		1,110,851	117	9,494		524,801	3,453	854	258
NORTH SHORE		SWAMPSCOTT	20,372	10	2,037		207,271	17	12,192		186,899	10,155	854	291
NORTH SHORE		TOPSFIELD	36,771	5	7,354		21,688	2	10,844		-15,083	3,490	854	298

NORTH SHORE		WENHAM	34,308	5	6,862		10,320	1	10,320		-23,988	3,458	854	320
OLD COLONY		ACUSHNET	912,074	170	5,365		1,443,225	222	6,501		531,151	1,136	855	3
OLD COLONY		CARVER	165,406	102	1,622		524,890	96	5,468		359,484	3,846	855	52
OLD COLONY		LAKEVILLE	689,072	103	6,690		605,576	79	7,666		-83,496	975	855	146
OLD COLONY		MATTAPOISETT	244,596	24	10,192		363,791	30	12,126		119,195	1,935	855	173
OLD COLONY		ROCHESTER	245,378	60	4,090		609,126	72	8,460		363,748	4,370	855	250
PATHFINDER		BELCHERTOWN	751,999	96	7,833		526,079	90	5,845		-225,920	-1,988	860	24
PATHFINDER		GRANBY	385,102	42	9,169		218,979	33	6,636		-166,123	-2,533	860	111
PATHFINDER		HARDWICK	78,874	24	3,286		85,070	21	4,051		6,196	765	860	124
PATHFINDER		MONSON	521,183	96	5,429		470,956	85	5,541		-50,227	112	860	191
PATHFINDER		NEW BRAINTREE	41,678	8	5,210		43,652	7	6,236		1,974	1,026	860	202
PATHFINDER		PALMER	595,682	123	4,843		867,599	180	4,820		271,917	-23	860	227
PATHFINDER		WARE	562,813	106	5,310		660,893	120	5,507		98,080	198	860	309
PATHFINDER		WARREN					205,912	52	3,960		205,912	3,960	860	311
SHAWSHEEN VALLEY		BEDFORD	161,989	20	8,099		296,199	23	12,878		134,210	4,779	871	23
SHAWSHEEN VALLEY		BILLERICA	4,866,242	525	9,269		4,915,862	545	9,020		49,620	-249	871	31
SHAWSHEEN VALLEY		BURLINGTON	947,001	87	10,885		1,078,046	86	12,535		131,045	1,650	871	48
SHAWSHEEN VALLEY		TEWKSBURY	2,808,834	311	9,032		3,271,319	371	8,818		462,485	-214	871	295
SHAWSHEEN VALLEY		WILMINGTON	2,428,086	246	9,870		2,286,673	239	9,568		-141,413	-303	871	342
SOUTHEASTERN		BROCKTON	2,572,528	782	3,290		2,397,619	822	2,917		-174,909	-373	872	44
SOUTHEASTERN		EAST BRIDGEWATER	257,308	63	4,084		497,695	76	6,549		240,387	2,464	872	83
SOUTHEASTERN		EASTON	333,849	66	5,058		699,807	73	9,586		365,958	4,528	872	88
SOUTHEASTERN		FOXBOROUGH	76,014	46	1,652		273,685	29	9,437		197,671	7,785	872	99
SOUTHEASTERN		MANSFIELD	181,852	44	4,133		343,001	42	8,167		161,149	4,034	872	167
SOUTHEASTERN		NORTON	373,984	80	4,675		904,729	128	7,068		530,745	2,393	872	218
SOUTHEASTERN		SHARON	10,282	16	643		117,381	11	10,671		107,099	10,028	872	266
SOUTHEASTERN		STOUGHTON	603,498	125	4,828		1,073,007	120	8,942		469,509	4,114	872	285
SOUTHEASTERN		WEST BRIDGEWATER	282,259	40	7,056		299,297	28	10,689		17,038	3,633	872	323

SOUTH SHORE		ABINGTON	561,413	92	6,102		1,011,878	118	8,575		450,465	2,473	873	1
SOUTH SHORE		COHASSET	48,676	7	6,954		110,636	9	12,293		61,960	5,339	873	65
SOUTH SHORE		HANOVER	334,542	41	8,160		589,126	59	9,985		254,584	1,826	873	122
SOUTH SHORE		HANSON	285,175	52	5,484		314,297	79	3,978		29,122	-1,506	873	123
SOUTH SHORE		NORWELL	87,938	18	4,885		104,778	9	11,642		16,840	6,757	873	219
SOUTH SHORE		ROCKLAND	675,622	96	7,038		1,084,643	150	7,231		409,021	193	873	251
SOUTH SHORE		SCITUATE	286,062	42	6,811		526,067	48	10,960		240,005	4,149	873	264
SOUTH SHORE		WHITMAN	973,591	107	9,099		526,305	112	4,699		-447,286	-4,400	873	338
SOUTHERN WORCESTER		AUBURN	388,015	80	4,850		915,636	94	9,741		527,621	4,891	876	17
SOUTHERN WORCESTER		CHARLTON	855,830	131	6,533		626,885	121	5,181		-228,945	-1,352	876	54
SOUTHERN WORCESTER		DUDLEY	259,041	71	3,648		338,489	97	3,490		79,448	-159	876	80
SOUTHERN WORCESTER		NORTH BROOKFIELD					203,529	41	4,964		203,529	4,964	876	215
SOUTHERN WORCESTER		OXFORD	450,982	105	4,295		961,105	148	6,494		510,123	2,199	876	226
SOUTHERN WORCESTER		PAXTON					145,673	15	9,712		145,673	9,712	876	228
SOUTHERN WORCESTER		RUTLAND	104,056	36	2,890		266,403	53	5,026		162,347	2,136	876	257
SOUTHERN WORCESTER		SOUTHBRIDGE	1,026,969	261	3,935		1,137,067	303	3,753		110,098	-182	876	277
SOUTHERN WORCESTER		SPENCER					397,873	110	3,617		397,873	3,617	876	280
SOUTHERN WORCESTER		WEBSTER	777,094	135	5,756		781,037	113	6,912		3,943	1,156	876	316
TRI COUNTY		FRANKLIN	1,287,001	169	7,615		1,257,132	192	6,548		-29,869	-1,068	878	101
TRI COUNTY		MEDFIELD	32,862	8	4,108		146,651	14	10,475		113,789	6,367	878	175
TRI COUNTY		MEDWAY	191,211	44	4,346		507,079	62	8,179		315,868	3,833	878	177
TRI COUNTY		MILLIS	225,597	37	6,097		499,167	53	9,418		273,570	3,321	878	187
TRI COUNTY		NORFOLK	137,483	30	4,583		360,892	41	8,802		223,409	4,219	878	208
TRI COUNTY		NORTH ATTLEBOROUGH	1,072,072	212	5,057		1,603,025	251	6,387		530,953	1,330	878	212
TRI COUNTY		PLAINVILLE	713,469	83	8,596		620,780	76	8,168		-92,689	-428	878	238
TRI COUNTY		SEEKONK	695,706	77	9,035		708,449	63	11,245		12,743	2,210	878	265
TRI COUNTY		SHERBORN	84,477	7	12,068		24,949	2	12,475		-59,528	406	878	269
TRI COUNTY		WALPOLE	424,829	56	7,586		635,055	59	10,764		210,226	3,177	878	307
TRI COUNTY		WRENTHAM	436,641	76	5,745		652,112	80	8,151		215,471	2,406	878	350

UPPER CAPE COD		BOURNE	428,948	99	4,333		1,319,077	126	10,469		890,129	6,136	879	36
UPPER CAPE COD		FALMOUTH	1,160,477	162	7,163		2,407,305	187	12,873		1,246,828	5,710	879	96
UPPER CAPE COD		MARION	90,991	13	6,999		297,016	24	12,376		206,025	5,376	879	169
UPPER CAPE COD		SANDWICH	670,956	97	6,917		1,523,934	139	10,964		852,978	4,046	879	261
UPPER CAPE COD		WAREHAM	1,465,579	257	5,703		1,562,090	194	8,052		96,511	2,349	879	310
WHITTIER		AMESBURY	584,026	81	7,210		563,489	62	9,089		-20,537	1,878	885	7
WHITTIER		GEORGETOWN	507	5	101		142,421	16	8,901		141,914	8,800	885	105
WHITTIER		GROVELAND	234,632	33	7,110		256,714	34	7,550		22,082	440	885	116
WHITTIER		HAVERHILL	5,590,669	828	6,752		4,614,524	649	7,110		-976,145	358	885	128
WHITTIER		IPSWICH	148,298	21	7,062		395,737	33	11,992		247,439	4,930	885	144
WHITTIER		MERRIMAC	317,837	51	6,232		196,772	33	5,963		-121,065	-269	885	180
WHITTIER		NEWBURY	6,983	9	776		87,325	8	10,916		80,342	10,140	885	203
WHITTIER		NEWBURYPORT	98,913	20	4,946		286,691	22	13,031		187,778	8,086	885	204
WHITTIER		ROWLEY	34,517	5	6,903		147,090	15	9,806		112,573	2,903	885	254
WHITTIER		SALISBURY	84,892	41	2,071		296,477	31	9,564		211,585	7,493	885	259
WHITTIER		WEST NEWBURY	41,515	1	41,515		42,311	5	8,462		796	-33,053	885	329