

# Beyond Demographic Destiny

## An Analysis of Massachusetts Minority and White Student Achievement Gaps

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**PIONEER INSTITUTE**  
PUBLIC POLICY RESEARCH

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# **Beyond Demographic Destiny**

## **An Analysis of Massachusetts Minority and White Student Achievement Gaps**

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### **Introduction**

While Massachusetts is widely recognized for the high academic achievement of its students when compared to other states, unacceptably large achievement gaps persist between historically under-achieving minority groups—African-American and Hispanic students—and White students.<sup>1</sup> Using the 2009 results from the Massachusetts Comprehensive Assessment System (MCAS), for example, 61 percent of White students in Grade 4 achieved Proficiency in English Language Arts (ELA) but only 29 percent of African-American students in the same grade attained Proficiency, resulting in an achievement gap of 32 percentage points. Similarly, 56 percent of White students in Grade 8 met Proficiency standards in Mathematics, but only 22 percent of Hispanic students in the same grade achieved Proficiency, resulting in a gap of 34 percentage points.

Massachusetts is not unusual in reporting such large achievement gaps. The federally-administered National Assessment of Educational Progress (NAEP) has regularly documented large achievement gaps in its nationally representative sample of American students. In 2007, NAEP reported that 83 percent of White students in grade 8 achieved Basic skills or higher in Reading, while only 57 percent of Hispanic students attained the same level, resulting in an achievement gap of 26 percent. In 2005, NAEP reported that 70 percent of White students in grade 12 achieved Basic or higher skills in Mathematics, while only 30 percent of African-American students attained the same level, resulting in an achievement gap of 40 percentage points. In fact, the academic performance of minority students in 12th grade on the NAEP is closer to that of White students in 8th grade than it is to White students at the same grade.<sup>2</sup>

It is in our nation's interest for achievement gaps of this magnitude to be narrowed substantially. Each student has but one chance to obtain a high

quality elementary and secondary education before facing the highly competitive world of higher education or work. Addressing basic academic skill deficits after students have left high school presents practical challenges. Many students lacking such skills never develop them. With limited skills, they are hobbled in the modern work world and face drastically limited choices for post-secondary education. If they do attempt higher education, such students have difficulty completing it and often remain substantially behind as their higher-skilled peers add to a stronger foundation.

This report analyzes achievement gaps for African-American and Hispanic minority students in selected Massachusetts school districts. It examines the gaps in English Language Arts and Mathematics achievement on the state assessment, MCAS, between each minority group and White students.

Typically, analyses of the achievement gap compare the performance African-American or Hispanic students in a district with local White students in the same district. When situations are found where minority students appear to be receiving less educational benefit than majority students, such cases should be investigated and addressed. Often, however, Massachusetts school districts that are not very effective in educating minority students to high standards are also not very effective in educating White students to high standards. African-American or Hispanic students from less successful school districts, after they leave school, will still have to compete with better educated White students from other school systems. From the perspective of Hispanic or African-American students and their parents, little solace can be taken from knowing that they obtained an education that is as deficient as that received by the White students sitting next to them in school. For this reason, this report analyzes the achievement gaps between African-American and Hispanic students in each district and White students state-wide, rather than simply the gaps with local White students in the same district.

Further, the report also analyzes the achievement gaps between local district White students and White students state-wide. Often, districts are found to outperform others in educating one student subgroup but not another. Only a few outperform other districts in educating both their minority and White students, while a comparable few under-perform their peers in educating both minority and White students.

Racial and ethnic differences in academic achievement are an important concern for general policymakers and the public, not only for those who are affected directly. As noted above, such differences impact success on the job as well in post-secondary education. The United States remains committed to ameliorating socially divisive gaps in employment, income, housing and other areas that manifest themselves along racial and ethnic lines. Many of these are, at

Figure 1: Individual District Report for Boston

COMMUNITY PARTNERS INITIATIVE		Boston (#D12)																							
		2009 MCAS Proficiency - All Subjects and Grades (District)																							
		District Less State (Achievement Gap vs. White Students)																							
Boston																									
		Percent Advanced+Proficient - 2009																							
		Average English	Average Math	English										Math											
				2	3	4	5	6	7	8	9	10	11	12	2	3	4	5	6	7	8	9	10	11	12
<b>All Students</b>																									
Dis. Less St. White	-29.5	-27.5		-35	-31	-33	-31	-29	-26							-34	-27	-27	-30	-28	-28				
District			31	30	38	43	48	59	64						33	27	33	33	28	28					
State White			66	61	71	74	77	85	86						67	54	60	63	56	56					
District - # Students Taking Test			3962	3938	3799	3273	3777	3916	3933						3971	3971	3795	3299	3833	3972					
<b>African American</b>																									
Dis. Less St. White	-36.2	-37.4		-41	-36	-39	-37	-37	-34							-44	-33	-34	-42	-40	-40				
District			25	25	32	37	40	51	56						23	21	26	21	16	16					
State White			66	61	71	74	77	85	86						67	54	60	63	56	56					
District - # Students Taking Test			1401	1567	1519	1274	1514	1603	1537						1404	1585	1517	1286	1538	1632					
<b>Asian</b>																									
Dis. Less St. White	-8.3	9.4		-21	-10	-11	-8	-2	-5							-6	5	12	11	13	16				
District			45	51	60	66	75	80	81						61	59	72	74	69	72					
State White			66	61	71	74	77	85	86						67	54	60	63	56	56					
District - # Students Taking Test			283	274	317	305	348	374	401						286	277	320	307	354	375					
<b>Hispanic</b>																									
Dis. Less St. White	-35.8	-34.3		-41	-35	-40	-38	-38	-30							-40	-32	-34	-36	-35	-37				
District			25	26	31	36	39	55	59						27	22	26	27	21	19					
State White			66	61	71	74	77	85	86						67	54	60	63	56	56					
District - # Students Taking Test			1643	1444	1410	1218	1307	1320	1328						1649	1453	1412	1234	1333	1338					
<b>Limited English Proficient</b>																									
Dis. Less St. White	-57.9	-41.8		-45	-46	-60	-63	-69	-71							-38	-36	-44	-48	-48	-46				
District			21	15	11	11	8	14	16						29	18	16	15	8	10					
State White			66	61	71	74	77	85	86						67	54	60	63	56	56					
District - # Students Taking Test			1020	743	711	604	548	410	491						1026	751	713	637	583	432					
<b>Low Income</b>																									
Dis. Less St. White	-34.9	-32.6		-40	-36	-38	-36	-36	-30							-40	-31	-31	-34	-34	-34				
District			26	25	33	38	41	55	59						27	23	29	29	22	22					
State White			66	61	71	74	77	85	86						67	54	60	63	56	56					
District - # Students Taking Test			3195	3151	3121	2675	2791	2901	2626						3201	3181	3116	2694	2841	2941					
<b>SPED</b>																									
Dis. Less St. White	-60.6	-51.6		-56	-54	-60	-62	-66	-64							-54	-45	-51	-55	-51	-51				
District			10	7	11	12	11	21	23						13	9	9	8	5	5					
State White			66	61	71	74	77	85	86						67	54	60	63	56	56					
District - # Students Taking Test			835	892	937	828	882	900	650						840	906	933	827	893	919					
<b>White</b>																									
Dis. Less St. White	-7.9	-6.9		-11	-12	-12	-9	-9	-3							-12	-8	-10	-6	-10	-4				
District			55	49	59	65	68	82	85						55	46	50	57	46	52					
State White			66	61	71	74	77	85	86						67	54	60	63	56	56					
District - # Students Taking Test			525	548	473	405	529	541	586						525	555	472	408	536	551					

**Figure 2: District Actual Gap by Subgroup and Subject (2007-2009)**

least in part, exacerbated by differences in academic skills and outcomes; it is difficult to imagine sustained progress in these other areas without progress in closing achievement gaps. As many business groups and others have recognized, the large achievement gap also implies underutilization of a substantial part of our economy’s human capital, reducing our ability to compete and create well-paying employment in a global market.

*Actual Achievement Gap*

In addressing achievement gaps, data can be illuminating. Analysis of well-designed reports can highlight areas to target for improvement and provide evidence of progress, or the lack of it.<sup>3</sup> School system administrators can find it useful to review detailed reports that track achievement gaps at each grade and subject. Figure 1 provides an example of such a report for the Boston school district. This report, developed by the Community Partners Initiative (CPI)<sup>4</sup>, provides a detailed break out of the achievement gaps between various student subgroups and White students state-wide. Achievement gaps are disaggregated in each subject and grade, for each student subgroup. Overall averages across the grades are also provided in the columns on the left. As shown on the report, the achievement gaps can be quite large, including -34.3 percentage points for Hispanic students in Mathematics, and -36.2 percentage points for African-American students in ELA. When considering only a single district, the size of the gaps may appear daunting. (Results using the same report type for select school districts in this study are provided in Appendix C.)

For policymakers and citizens interested in more than just one district, or for anyone seeking a broader context for interpreting a single district’s results, it is helpful to consider the achievement gaps in multiple school districts. Figure 2 provides overall (i.e., cross-grade) minority achievement

DISTRICT	BLACK		HISPANIC	
	ELA <i>Actual Gap*</i>	MATH <i>Actual Gap*</i>	ELA <i>Actual Gap*</i>	MATH <i>Actual Gap*</i>
Attleboro	**	**	-26.9	-27.1
Boston	-36.6	-36.4	-36.5	-33.4
Brockton	-29.6	-31.3	-30.0	-30.2
Brookline	-11.4	-17.9	-5.8	-5.2
Cambridge	-28.3	-31.0	-22.0	-27.0
Chelsea	-39.0	-32.3	-35.0	-26.3
Chicopee	**	**	-39.7	-40.0
Everett	**	**	-31.0	-31.5
Fall River	-36.9	-40.4	-43.8	-42.3
Fitchburg	**	**	-37.8	-34.0
Framingham	-18.7	-23.6	-34.8	-32.5
Haverhill	-23.0	-32.6	-40.6	-42.1
Holyoke	**	**	-52.5	-48.7
Lawrence	-32.5	-37.4	-41.3	-40.5
Leominster	**	**	-38.0	-30.9
Lowell	-30.2	-36.5	-44.3	-42.4
Lynn	-31.0	-32.8	-35.1	-31.3
Malden	-30.4	-35.6	-26.8	-28.3
Marlborough	**	**	-29.4	-25.7
Medford	-26.4	-30.7	-19.2	-20.4
Methuen	**	**	-37.1	-37.7
Milton	-20.0	-23.6	-25.2	-27.2
New Bedford	-36.9	-34.1	-43.4	-36.5
Newton	-17.6	-21.2	-8.1	-5.8
Northampton	**	**	-33.0	-40.3
Peabody	**	**	-26.0	-29.6
Pittsfield	-34.8	-34.4	-42.0	-41.2
Quincy	-28.3	-32.6	-29.3	-34.9
Randolph	-31.7	-35.5	**	**
Revere	**	**	-19.7	-16.7
Salem	**	**	-39.1	-37.5
Somerville	-35.1	-36.4	-32.4	-31.5
Springfield	-35.8	-40.3	-44.1	-41.7
Stoughton	-12.7	-18.5	**	**
Taunton	-27.2	-30.7	-25.9	-28.5
Waltham	-18.0	-29.2	-25.0	-32.1
Westfield	**	**	-35.3	-38.9
Worcester	-32.5	-33.5	-42.6	-39.8

\*Actual Gap = District Subgroup Proficiency minus State White Proficiency.  
 \*\* Data for subgroup in this district does not meet minimum requirements for inclusion in the study.

gaps for most medium- to large-sized school districts in Massachusetts. To ensure a sufficient amount of data to permit comparisons, it pools results from the three most recent state test administrations, including 2007, 2008, and 2009. It includes the “actual” achievement gaps, without any adjustments for differences in family background.

The actual achievement gap between African-American students and state White students can be quite large in both ELA and Mathematics. Notice in Figure 2, the gap in ELA performance ranges from a best case of -11.4 percentage points in Brookline (e.g., 61.5 percent Proficient for district African-Americans minus 72.9 percent Proficient for state Whites) to a high of -39.0 percentage points in Chelsea, while the gap in Mathematics ranges from -17.9 percentage points in Brookline to -40.4 percentage points in Fall River.

Similarly, the performance gap between Hispanic students and White students state-wide varies substantially in ELA as well as Mathematics. The gap in ELA performance ranges from a best case of -5.8 percentage points in Brookline to a high of -52.5 percentage points in Holyoke, while the gap in Mathematics ranges from -5.2 percentage points in Brookline to -48.7 percentage points in Holyoke.

#### *Actual v. Predicted Gap*

While reviewing achievement gap data from multiple districts can provide context, it can also be misleading. Certain family and community background characteristics tend to increase, or reduce, the challenge to school systems in educating students to high academic standards.<sup>5</sup> In Massachusetts, minority populations vary enormously between school districts on key background characteristics, including poverty and educational attainment, that have been shown to influence student achievement. For example, the proportion African-Americans lacking a high school education varies from less than 4 percent in one school district to nearly 47 percent

in another. Similarly, the proportion of Hispanic student families living below the federal poverty line varies from less than 6 percent in one district to nearly 66 percent in another district. Similar ranges between school districts are also present for White students.

While such differences should never be used to excuse or ignore low student achievement for students from more challenging backgrounds, considering them when comparing school districts provides important information. Taking into account non-school factors that influence academic achievement can identify school districts that are reducing achievement gaps despite a challenging social environment. At the same time, this type of analysis can expose districts that appear to have reduced gaps but which are, in fact, benefiting from a less challenging climate.

To the extent possible, this report analyzes data on all Massachusetts school districts for which data were available. Drawing on student demographic data for each district regarding educational attainment as well as the proportion of students living in poverty, it identifies the “predicted” achievement gaps that one might expect for each district based on the achievement gaps for similar students across the state. In effect, it compares each district’s success in reducing the achievement gaps with the success of other districts in the state serving students with similar background characteristics. It is thus based on actual results accomplished by Massachusetts school systems, not goals or aspirations. Districts that manage to shrink their achievement gaps to a greater extent than predicted are reported positively, while districts that have larger achievement gaps than predicted are reported negatively.

The benefits of this approach have already been mentioned. The risks associated with such an analysis, however, must also be acknowledged so that they may be avoided. If such an analysis were viewed as a *replacement* for addressing the

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large, actual achievement gaps that currently exist, it could well lead to lower expectations for school districts serving students from challenging backgrounds, which in turn could lead to lower expectations for the students. That would clearly be an injustice to many students.

Therefore, this analysis should instead be used to *accompany* and add to the information contained in the raw achievement data. Remaining differences in the size of academic achievement gaps, even after taking into account non-school factors, provide an opportunity to identify districts that may offer lessons on narrowing such gaps. Such differences can also provide an opportunity to identify districts that would benefit the most from intervention, because other school systems in Massachusetts have already shown that similar students can achieve at higher levels of performance. Perhaps just as important, a range of achievement gaps after accounting for differences in family background can help to counter the unspoken belief—sometimes present even among the best-intentioned—that there is really very little that communities and school systems can do when faced with challenging social conditions among some minority families. In fact, there is quite a lot that can be done, as some Massachusetts school districts are already demonstrating.

## Results

### *District Minority Achievement Gaps with State White Students*

Figures 3 and 4 indicate the extent to which individual school districts are performing statistically significantly better, or worse, than other Massachusetts districts in reducing the gap between minority students (i.e., African-American or Hispanic students) from similar household poverty and community education levels and state White students in ELA and Mathematics. The size of the achievement in gap in other Massachusetts districts serving similar students is the “predicted gap.” The graphs only include results for those districts where the gaps are significantly smaller—better—or significantly larger—worse—than those in other Massachusetts districts serving similar minority students; significant results tend to be larger districts or districts with larger gaps.<sup>6</sup>

Taunton and Cambridge stand out for *substantially smaller achievement gaps* between their African-American students and state White students, besting the predicted gap in ELA and in Mathematics. African-American students in Stoughton have a significantly smaller achievement gap with state White students in Mathematics. Boston Hispanic students

**Figure 3: ELA % Proficient Achievement Gap: African-American (AA) and Hispanic (H) Students and State White Students (2007-2009)**

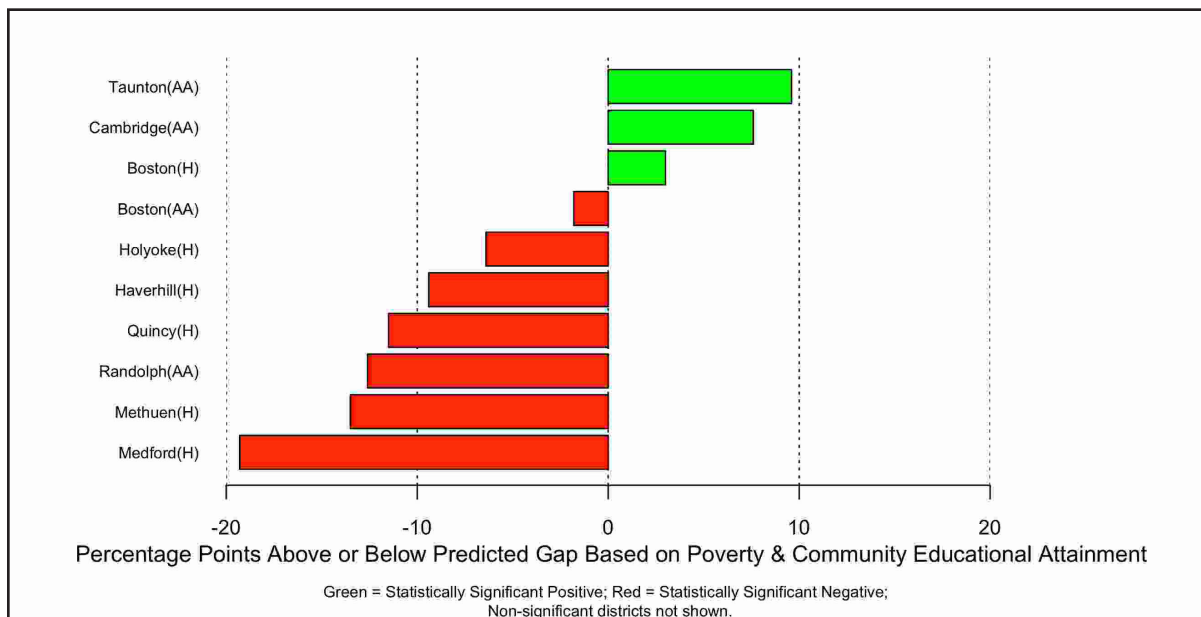
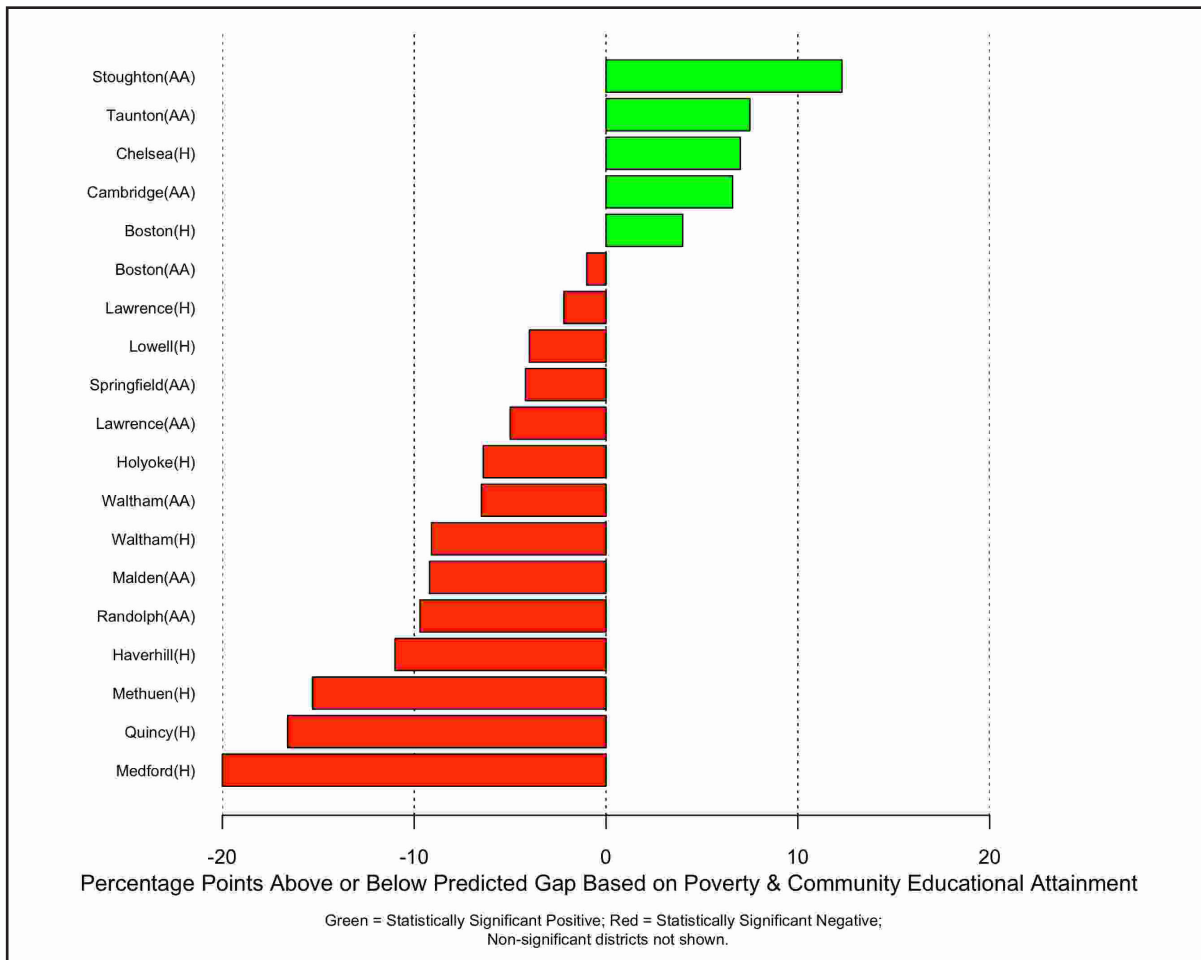




Figure 4: Math % Proficient Achievement Gap: African-American (AA) and Hispanic (H) Students and State White Students (2007-2009)



achieve a slightly smaller achievement gap in ELA and Mathematics, while Chelsea Hispanic students achieve a smaller achievement gap in Mathematics.

Unfortunately, several districts stand out for significantly larger achievement gaps for African-American students in ELA or Mathematics than students from similar backgrounds in other districts, including Randolph, Malden, Waltham, Lawrence, Springfield, and, to a slight extent, Boston. Similarly, a number of districts have significantly larger achievement gaps for Hispanic students in ELA or Mathematics than other districts serving students from similar backgrounds, including Medford, Methuen, Quincy, Haverhill, Waltham, Holyoke, Lowell and, to a slight extent, Lawrence.

*District White Achievement Gaps with State White Students*

This analysis also reviewed the extent of achievement gaps between district White students and state White students, comparing the district results to the size of achievement gaps in other Massachusetts districts serving students from similar backgrounds. Figures 5 and 6 indicate the extent to which individual school districts are performing statistically significantly better, or worse, than other Massachusetts districts in reducing the gap between district White students from similar poverty and education levels and state White students in ELA and Mathematics. The size of the achievement in gap in other Massachusetts districts serving similar students is the “predicted gap.” As might be expected since White students are more numerous than minority

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students in most Massachusetts districts, results for a larger number of districts were determined to be statistically significant. Cases where district Whites exceed the performance of state Whites are marked in gold on the graphs.<sup>7</sup>

Stoughton, Taunton, Holyoke, Newton, New Bedford, Lynn and, to a slight extent, Boston stand out for *significantly smaller than predicted achievement gaps* between their district White students and state White students in both ELA and in Mathematics. Leominster, Waltham and Revere attained smaller than predicted achievement gaps between district White students and state White students in either ELA or Mathematics.

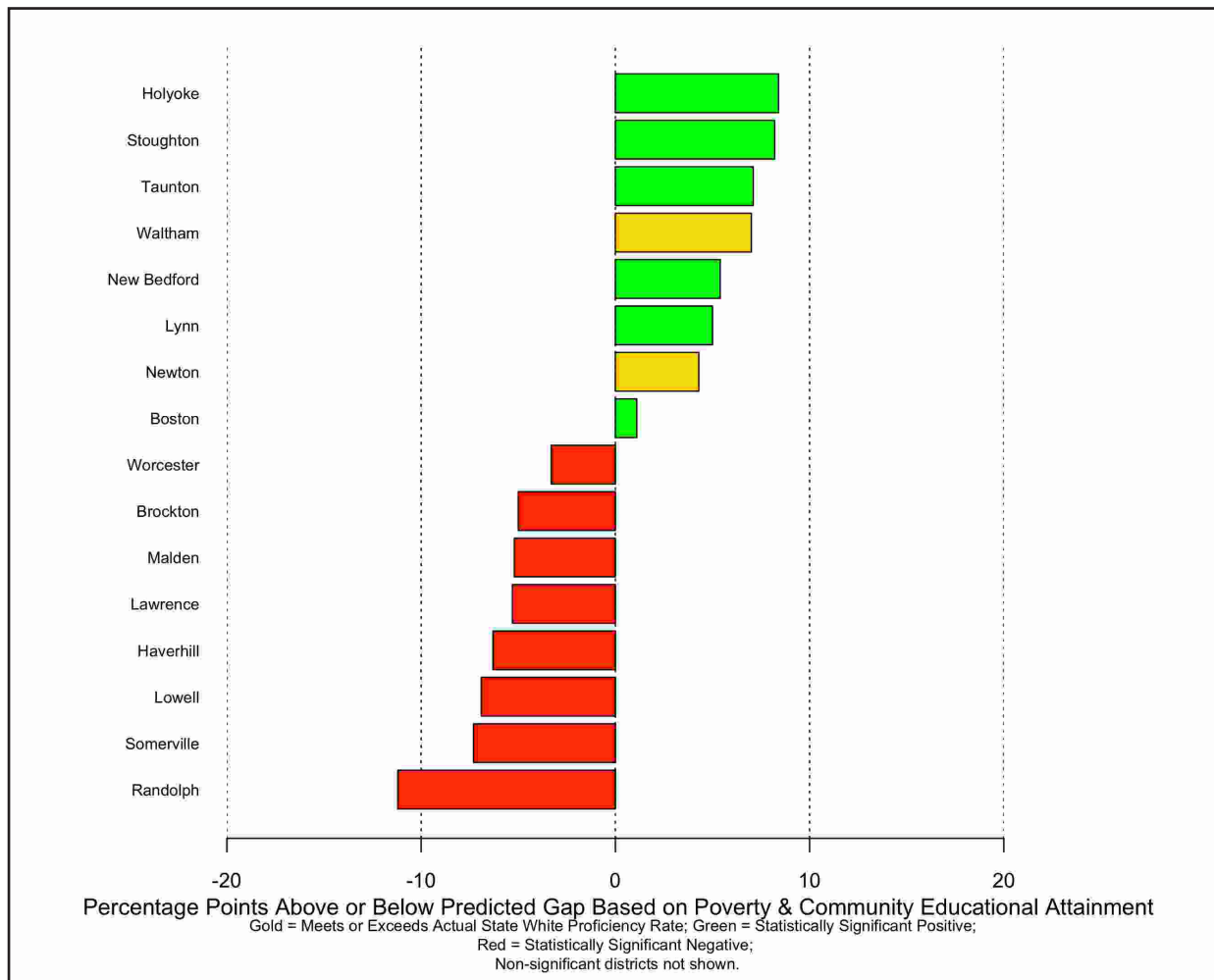
Unfortunately, several districts achieved *significantly larger than predicted achievement gaps* between their district White students

and state White students in both ELA and Mathematics. These include Randolph, Haverhill, Lawrence, Malden, Lowell and Somerville. Several districts attained larger than predicted achievement gaps predicted achievement gaps between district White students and state White students in either ELA or Mathematics, including Quincy, Northampton, Everett, Brockton, Chicopee and Worcester.

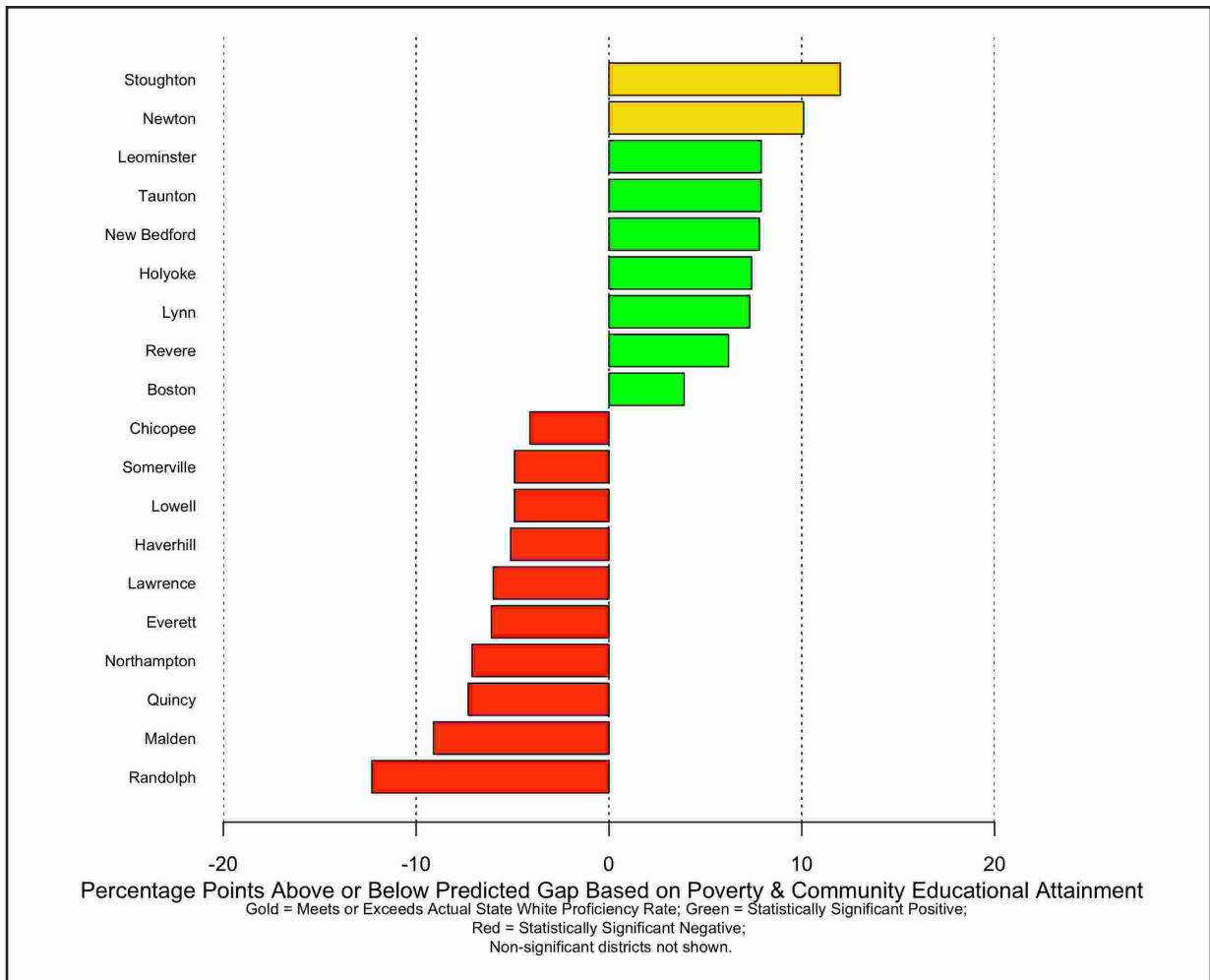
### *Districts Outperforming Others with Both Minority and White Students*

Two districts stand out as *significantly exceeding the performance of other Massachusetts districts in serving both minority and White students*, achieving smaller than predicted gaps with state White students for both groups. Taunton achieved smaller gaps in both ELA and Mathematics with its African-American students, as well as smaller

**Figure 5: ELA % Proficient Achievement Gap: Local White Students and State White Students (2007-2009)**



**Figure 6: Math % Proficient Achievement Gap: Local White Students and State White Students (2007-2009)**



gaps in both ELA and Mathematics with its White students. Stoughton achieved a smaller gap in Mathematics with its African-American students, as well as smaller gaps in both ELA and Mathematics with its White students.

*Districts Underperforming Others with Both Minority and White Students*

Three districts stand out as performing significantly worse than other Massachusetts districts in serving both minority and White students, resulting in larger than predicted gaps with state White students for both groups. Randolph had larger gaps in both ELA and Mathematics with its African-American students, as well as larger gaps in both ELA and Mathematics with its White students. Haverhill

had larger gaps in both ELA and Mathematics with its Hispanic students, as well as larger gaps in ELA and Mathematics with its White students. Similarly, Malden had a larger gap in Mathematics with its African-American students, as well as larger gaps in both ELA and Mathematics with its White students.

*Districts with a Substantial Disparity in Success Between Minority and White Students*

Some school districts outperformed other districts in serving one group of students, but did not outperform with other groups of students. Other districts underperformed in serving one group of students, but did not underperform with other groups of students. One district, however, stood out for underperforming other

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districts in serving its minority students, while outperforming other districts in serving its White students. Holyoke had larger than predicted gaps in both ELA and Mathematics with its Hispanic students, but smaller than predicted gaps in both ELA and Mathematics with its White students. While Holyoke is to be commended for its relative success with White students, it should investigate the reasons for this apparent disparity and take the steps necessary to ensure that its minority students are receiving equitable educational opportunities.

### **Study Design Overview**

This study analyzed the size of “actual” achievement gaps in 93 Massachusetts school districts for local minority and White students with state White students by comparing them to the size of “predicted” gaps. Results from approximately 1.7 million student test administrations over three years in ELA, as well as a similar number in Mathematics, were incorporated in the analysis. Since it is assumed that reducing or eliminating such gaps is an important educational goal, a district with a smaller than predicted gap is described in this report as performing better than the predicted gap or exceeding the predicted gap. A district with a larger than predicted gap is referred to as performing worse than the predicted gap or below the predicted gap.

The actual achievement gap is defined as the difference between the academic achievement of the student subgroup and the comparable figure for state White students. The predicted gap for each district was determined through a regression analysis that took into account poverty of households with children in the school district, educational attainment of community members in the school district, and the size of the actual achievement gap for all Massachusetts districts for which data were available. Three years of data from the American Community Survey (ACS),

conducted by the United States Census Bureau, were used as an estimate of household poverty and community educational attainment in districts with a population large enough to permit a reliable sample (over 20,000 total population). Poverty and educational attainment data were analyzed for each racial or ethnic group at the district level. The ACS survey is used by the federal government to generate Title I funding allocations to school districts based on poverty and is an independent and sufficiently reliable indicator for this purpose. It should be noted that Free and Reduced Lunch statistics collected by school districts, which are often used as a proxy for poverty data when these are not available, are calculated differently and are not directly comparable. Free and Reduced Lunch data are also not publicly available for individual school districts in a form that is disaggregated by racial or ethnic group.

Three years of achievement data for each school district were used to generate results for enough students that reliable analysis could be performed. Achievement data, which were obtained online from the Massachusetts Department of Elementary and Secondary Education (DESE), were based on the percent of students attaining Proficient or above on the state Massachusetts Comprehensive Assessment System (MCAS) test in ELA or Mathematics.

If the actual gap was found to be smaller than the predicted gap, the difference between the two was reported in the graphs as a positive number. If the actual gap was larger than the predicted gap, the difference was reported in the graphs as a negative number.

Statistical tests were used to determine whether the actual gap was significantly different from the predicted gap. The likelihood that a result was statistically significant was a function of the magnitude of the result and the number of participants in the Census survey. The statistical test used was designed to permit identification of districts that accomplish positive (or negative)

results in a subject with a high level of confidence that the results were not simply due to chance.

The graphs in the main body of this report only included districts with achievement gaps that were statistically significantly different from the predicted achievement gaps, or where the district minority or district White students exceeded the performance of state Whites.

Extensive additional technical information about the design of the analysis is included in Appendix A.

## **Conclusion**

The findings in this report lead to one overwhelming conclusion – demography is *not* destiny. Higher poverty and lower educational attainment levels certainly pose additional challenges to educators. But some Massachusetts school systems are substantially more successful in reducing African-American and Hispanic student achievement gaps than other districts serving students with similar backgrounds in these key areas. Similarly, some districts are also more successful in educating their White students than other districts in the state serving students from similar backgrounds. The results stand out, positively as well as negatively, indicating that even relevant family and community characteristics need not be decisive in determining the future of Massachusetts students.

Taunton, Cambridge, Chelsea, and certain other school districts are significantly more successful than most Massachusetts districts in reducing ELA or Mathematics achievement gaps between minority students and White students state-wide. Unfortunately, a number of school systems are less successful in reducing achievement gaps than other districts serving students with similar backgrounds. African-American students in Randolph, Malden, and several other districts have significantly larger achievement gaps,

while Hispanic students in Medford, Haverhill, and other districts also face significantly larger achievement gaps.

It is noteworthy that, after accounting for non-school factors, Taunton and Stoughton appear to significantly reduce achievement gaps with state White students in ELA or in Mathematics, for both minority students and district White students. It is vital, however, not to lose sight of the actual, unadjusted achievement gaps, which indicate how much work still remains. For example, a significant proportion of Taunton's minority students are from communities of poverty and limited education; even though Taunton is more successful than other districts in reducing achievement gaps for minority students, the gaps that remain are still too large. Conversely, Randolph, and Haverhill stand out for the opposite reason. Such districts perform significantly worse in ELA and in Mathematics than other Massachusetts districts serving students from similar backgrounds. Minority students perform worse than predicted, as do local White students.

Some school districts are effectively addressing the challenge of educating disadvantaged students. Even these more successful communities need to continue to find new ways to accelerate their work and further reduce achievement gaps; but they deserve credit for what they have accomplished so far and less effective districts might derive useful lessons from them. Others districts should focus on improving their practices, not their students' demographics. State education officials have a responsibility to investigate the more egregious situations thoroughly and, if the findings of this study are confirmed, to intervene expeditiously.

## Endnotes

1. See *Closing the Achievement Gap: An Annual Massachusetts Report on Performance Based High School Interventions and Turnarounds* (Boston: Mass Insight Education, 2009), retrieved on November 12, 2009 from: [www.massinsight.org](http://www.massinsight.org).

2. A. Vanneman, L. Hamilton, J. Anderson Baldwin, and T. Rahman, *Achievement Gaps: How Black and White Students in Public Schools Perform in Mathematics and Reading on the National Assessment of Educational Progress* (NCES 2009-455) (National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC 2009).

3. For a review of ways to use MCAS data to make instructional, grouping, and organizational decisions, see Madigan, K., Rebarber, T., and Bean. B., *Closing Springfield's Achievement Gap: Innovative Ways to Use MCAS Data to Drive School Reform* (Boston: Pioneer Institute 2009).

4. The Community Partners Initiative (CPI) provides school districts with many other types of reports beyond the one included here. Additional information on CPI reports is available on their website: <http://www.cpieducate.org>.

5. See Caroline Hoxby's study for more complete discussion of the degree to which different demographic factors are correlated with student achievement in "If Families Matter Most, Where Do Schools Come In?" in Terry M. Moe (ed.) *A Primer on America's Schools* (Stanford University: Hoover Institute Press, 2001). Or see V.E. Lee and D.T. Burkam, "Inequality at the Starting Gate: Social Background Differences in Achievement as Children Begin School," *Economic Policy Institute* (2002), from <http://epicpolicy.org/files/Inequality%20at%20the%20Starting%20Gate.pdf> retrieved on November 20, 2009. Or see L. Woessmann, *How Equal are Educational Opportunities? Family Background*

*and Student Achievement in Europe and the US.* CESifo Working Paper Series No. 1162 (March 2004), abstract available at: <http://ssrn.com/abstract=528209>. For more information about community influences on student achievement see: Christopher Jencks and Susan Mayer in their oft cited work "The Social Consequences of Growing up in a Poor Neighborhood," in L. Lynn and M. McCreary (eds.) *Inner-city Poverty in the United States* (Washington, D.C.: National Academy Press 1990). Jencks and Mayer propose that communities could influence student achievement, for example, by providing role models or enforcement of social norms, such as earning a high school diploma (or not). For an interesting discussion on the community variables impacting student achievement, see Gary Solon, M.E. Page, and Greg J. Duncan's paper, "Correlations between neighboring children in their subsequent educational attainment," in *The Review of Economic and Statistics*, August 2000, 82(3): 383-392.

6. Achievement gap data for all districts in the analysis, including non-statistically significant results, may be found in Appendix B.

7. No statistical test for significance was performed on results where district Whites exceed state Whites, but they are included in the graphs and are discussed in this section along with the results that are statistically significant.

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***About Pioneer:***

Pioneer Institute is an independent, non-partisan, privately funded research organization that seeks to change the intellectual climate in the Commonwealth by supporting scholarship that challenges the “conventional wisdom” on Massachusetts public policy issues.

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*Follow the Money: Charter School Funding and District Funding in Massachusetts*, White Paper, November 2009

**Appendices**

**for**

**Beyond Demographic Destiny**  
**An Analysis of Massachusetts Minority and White**  
**Student Achievement Gap**

**By Richard Cross, Theodor Rebarber, Kathleen Madigan, and Bruce Bean**



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## Appendix A: Study Design, Methods and Procedures

### Introduction

The goal of this research study was to examine the differences in district-wide academic achievement of selected subgroups (Hispanic, African-American and Local White) with the academic performance of state White students. For the purposes of this report the difference between actual performance of each subgroup and state White performance is labeled as the “actual gap”. Although educators, civic leaders, and policy makers, have discussed the issue of closing the “actual gap”, this report seeks to provide a different lens for examining the issue by controlling for what are often called “non-school factors”. The non-school factors used for this study have been strongly correlated with student achievement, but not directed or regulated by the school.

### Which Non-School Factors Were Controlled?

Evidence from academic research suggests that a student’s achievement is strongly connected to certain family and community characteristics.<sup>1</sup> The data sources used in this study had sufficient information for analysis using two well-established factors: household income level and community educational attainment.<sup>2</sup> That is, students living in poverty in a neighborhood with few high school graduates tend to perform worse in mathematics, reading, and writing than students who are not living in poverty and live in a community with a majority of individuals who have graduated from high school. Unless, the students are systematically provided with excellent educational opportunity and instruction, the gap between those who are poor and live in a less well-educated neighborhood tends to widen.<sup>3</sup>

#### *The Poverty Metric*

Support for the correlation between poverty and student achievement is not only cited in research, but also can be found in school policy and finance decisions. Specifically, recognizing the challenges associated with teaching students

who come from poverty, Massachusetts provides additional funding for students in poverty. Kevin Carey in his paper reviewing state poverty based funding options indicates that the Massachusetts funding formula generated \$2,405 in additional funding per student in grades 1 – 6 receiving free and reduced lunch; in 2001 – 2002. The base per student funding level for all students in grades 1 – 6 was \$5,180.<sup>4</sup> More recently the Education Trust’s EdWatch State report detailing information about Massachusetts noted that in MA high poverty and high minority districts received more funds (5% and 15 % more respectively) than low poverty or low minority districts. Given that a student’s status below poverty level tends to negatively impact the results of educational effects and this status is outside the control of the school, this study controlled for the poverty level associated with each subgroup.

#### *Community Educational Attainment*

ACS provides estimates of the educational attainment by ethnic groups of all persons who were over 25 years of age within a school district’s geographic region. These data would likely capture the student’s family’s educational level, plus the educational attainment of other individuals in the community who could also influence the student’s achievement level.<sup>5</sup> Given that a student living in a community with fewer high school graduates tends to negatively impact the results of educational effects, this study controlled for the community educational attainment level associated with each subgroup.

#### *Non-School Factors and the Predicted Gap*

For the purposes of this study, a student subgroup’s poverty and community education characteristics, along with estimated regression coefficients, were used to calculate predicted test scores and the “predicted gap.” By subtracting the “predicted gap” from the “actual gap,” the study was able to measure the size of the gap after accounting for key inputs outside the school district’s control.

### *Rationale for Poverty Data Source*

In research there are often two main sources of data often used for determining the proportion of low-income students in a school district: 1) Free and/or reduced lunch and 2) Census Bureau Data from the American Community Survey Program (ACS)<sup>6</sup>. The following provides a description for the rationale for selecting ACS as the data source for determining the poverty level for each group.

Schools can receive cash subsidies and donated commodities in return for offering free or reduced-price lunches to eligible children by participating in the Department of Agriculture's National School Lunch Program. Eligibility for free and reduced lunch is based on the family's income level compared to a federally established standard for poverty. For example, free lunch qualification is set at 130 percent of the poverty level or below, and reduced-price lunch qualification is set at between 130 and 185 percent of the poverty level. (See <http://www.fns.usda.gov/cnd/lunch> for more information.) A common procedure in educational research is to use free and/or reduced lunch data as a proxy for poverty level data. The challenge with using free and reduced lunch information was that data were collected at the school level, which can result in questions about the accuracy of those data.<sup>7</sup> In addition, some eligible low-income students in the upper grades may fail to enroll in the free and reduced-price lunch program because of the social stigma associated with poverty.<sup>8</sup> Plus, poverty/low-income information for each school or district, generated by free and/or reduced lunch program participation, was not broken out by ethnicity or race.

Without the specific information about poverty level for each sub group, estimating gaps could be biased when applying a whole district or school-wide low-income index across all students. Specifically, just because a student is African-American, does not indicate that he/she is from a low-income background. For example, if the study had used the district wide poverty rate reported by Lawrence as 83% (see District information from October, 2007) for all

minority student, then differences in achievement rates between African-American, Hispanic and local White Students would not have been detected. Specifically, the most recent ACS data in Lawrence indicated that African-American students have a 21% poverty rate, while Hispanic have a 40% and White students have 15%. This indicates that educating Hispanic students may present more challenges than educating African-American or White students in Lawrence who have roughly comparable poverty rates.

District level poverty data broken out by ethnic groups, was available from the United States Census Bureau, American Community Survey (ACS) School District Tabulation. The ACS provides household level poverty statistics by ethnic group for students who attended public schools in the Commonwealth. Importantly, these data were provided at the district level for poverty for each ethnic group.<sup>9</sup>

Further, ACS is used by the United States Department of Education to determine Title I funding; since data were collected by an external agency there is no financial stake in the outcome. Using surveys, the census estimates were based on information from a sample of households in each school district.

### **Methods, Procedures, and Design**

#### *Data sources*

Massachusetts 2008-09 Enrollment By Race/Gender Report-District Level. [http://profiles.doe.mass.edu/state\\_report/enrollmentbyracegender.aspx?mode=district&orderBy=&year=2009](http://profiles.doe.mass.edu/state_report/enrollmentbyracegender.aspx?mode=district&orderBy=&year=2009)

2007 - 2009 MCAS Report (DISTRICT) for Grade 3 - 10 / Black or Afr. Amer., Hispanic, White Students; 2006 Rules/Policies Applied [http://profiles.doe.mass.edu/state\\_report/mcas.aspx](http://profiles.doe.mass.edu/state_report/mcas.aspx)

United States Census Bureau, American Community Survey School District Tabulation (ST030) School District Demographics System American Community Survey 2006-08 – three year estimates

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[http://factfinder.census.gov/servlet/DatasetMainPageServlet?\\_program=ACS&submenuId=datasets\\_2&lang=en](http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=ACS&submenuId=datasets_2&lang=en)

- Total Relevant Children enrolled --Public
- Race & Ethnic Groups--Social, Economic, and Housing Characteristics
  - Black or Afr. American/ Hispanic or Latino /White alone, not Hispanic or Latino
  - Householder Alone
    - ACS Poverty Status tables C17020x<sup>10</sup>
    - ACS Educational Attainment tables C15002x.

ACS Public Use Microdata Sample  
<http://www.census.gov/acs/www/Products/PUMS/>

(PUMS) 2005-2007 3-Year. (See the “2005-2007 PUMS Accuracy of the Data (Accuracy PUMS.pdf) and the ACS PUMS DATA DICTIONARY – 2005-2007 HOUSING January 26, 2009 for details on how to access and use the data files.)

### **District and Group Selection – Criteria of Inclusion**

#### *District size*

Beginning in 2008, the Census Bureau released its first 3-year estimates based on ACS data collected from 2005 through 2007. These 3-year estimates were available annually for geographic areas with a population of 20,000 or more, including the nation, all states and the District of Columbia, all congressional districts, approximately 1,800 counties, and 900 metropolitan and micropolitan statistical areas, among others. For areas with a population less than 20,000, 5-year estimates will be available. The first 5-year estimates, based on ACS data collected from 2005 through 2009, will be released in 2010.<sup>11</sup>

The initial review of the Massachusetts school districts included only districts with 2006-2008 average enrollments of at least 2000 students; these were deemed large in this study. Districts with enrollments below 2000 students were not reviewed or reported. From among this original district pool characteristics of minority enrollment

and poverty level were reviewed to ensure adequate number of students in each subgroup.

#### *Poverty estimates*

The tabulated ACS district poverty estimates were provided by subgroups based upon all children under the age of 18, including students in both public and private schools, and children younger than school age. As such, in order to arrive at a more accurate estimate of poverty level for each subgroup of children enrolled in public schools, the study used 1) the ACS Public Use Microdata Sample (PUMS) estimates, which contained a sub-sample of the ACS sample at the individual household level including children’s ages and enrollment status in public school; and compared that to 2) ACS tabulated estimates of the poverty percentage of all children in the district under the age of 18. This resulted in two poverty estimates. Districts where these two poverty estimates diverged by more than 15% points within a group were not included in the analysis. In the included districts, an adjustment to the tabulated ACS poverty estimate was made based upon the PUMS estimate.<sup>12</sup> The average adjustment by district amounted to fewer than 3 percentage points.

#### *Minority Participation for Academic Achievement*

Because the focus was on the achievement gap between the minority student groups and the state white groups, the minority sample sizes needed to be large enough to provide statistically reliable results, thus the study included district groups that had at least 500 student-test results (pooled over three years) in either subgroups: Hispanic or African-American students. Further, in all districts with the minimum level of Hispanic and/or African-American participation, the local white student performance was evaluated.

#### *Community Educational Attainment*

Educational attainment in the ACS survey is measured by answers to Question #11. Individuals responded to the highest degree or education attained. For example, they could

respond that they received a high school diploma or had a high school diploma and some college. Distinctions were made between regular high school diploma and GED or other alternatives. In addition, individuals who were educated in a foreign or ungraded system were asked to report their attainment level as an equivalent in the regular American system. The ACS community educational attainment by subgroup data were drawn from persons 25 years of age and over in the school district geographic region who do not obtain a high school diploma or a GED.

For a list of the districts used in the analysis and their data sets see Figures 8-10 in Appendix B.

### **Procedures**

The analysis objective is to evaluate selected school districts in MA using MCAS African-American and Hispanic student academic performance in English Language Arts (ELA) and Mathematics (Math) while noting any discrepancies with the state's white student performance with a specific analysis that controls for the effects of each district's subgroup's poverty level and that subgroup's community educational attainment level.

These discrepancies were measured for ELA and Math using the District Performance Discrepancy (DPD) with state white student. The DPD had two forms, the Actual DPD (DPD\_actual) and the Expected DPD (DPD\_expected), defined by the following equations:

### **Definitions**

$DPD\_actual = \text{State white percent proficient} - \text{district group percent proficient}$

$DPD\_expected = \text{State white percent proficient} - \text{district group poverty/education adjusted percent proficient}$

The DPD\_expected score served as the control. In all instances, the percent proficient includes all students at or above proficient on the MCAS pooled across the three years 2007 - 2009. The DPD\_actual and DPD\_expected results were

derived for Math and ELA percent proficient results.

The DPD\_actual scores for each district group were based on the MCAS results disaggregated by subgroup within grade level (3, 4, 5, 6, 7, 8, and 10). Grade level results were pooled into an overall result, that is the proficient N counts within each district for each grade were added, and then divided by the total number of students tested. This provided the actual percent proficient.

The DPD\_expected scores were derived from regression equations on state-provided MCAS data as well as the 2006-2008 American Community Survey three-year estimates for poverty and community educational attainment. Equation predictors were taken from the ACS data on poverty (which was adjusted using PUMS data to account for the difference between private and public school students) and the community educational attainment proxy in the proportion of adults without a high school diploma within the district.

All districts with ACS provided statistics were used to generate six (6) regression-adjusted prediction formulas (see Figure 7a): African-American, ELA; African-American, Math; Hispanic, ELA; Hispanic, Math; Local White, ELA; White, Math.

A multivariate regression was conducted on MCAS ELA and Math results using educational and poverty estimates. These regression estimates were used to determine the predicted district performance. The predicted district performance and the actual gap with state whites were used to calculate the predicted gap. Separate regressions of MCAS Math and ELA performance across poverty and education levels for each subgroup were weighted for district subgroup size based on the ACS estimates of student counts within the district. Since ACS data were estimates, it was also important to correct for regression dilution due to any measurement error associated with those estimates.<sup>13</sup> Therefore, the regression coefficients were "adjusted" (see equation in Figure 7b) to correct for the regression dilution.

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Prediction scores for each district included three scores for ELA (African-American, Hispanic, Local White), and Mathematics (African-American, Hispanic, Local White). Poverty/educational-adjusted proportions were used in the DPD\_expected equation. Sampling standard errors from the ACS scores were computed<sup>14</sup> and applied to the predicted scores for each district and group. The application of the ACS standard errors created a confidence interval about the predicted score. The DPD\_Actual scores that fell beyond the confidence interval of the DPD\_expected scores were deemed significant.

**Figure 7a: Prediction Equations**

African American

$$Y_{\text{predicted ELA logit}} = -0.96 - 0.226 * \gamma_1 \text{African American} - 0.256 * \gamma_2 \text{African American}$$

$$Y_{\text{predicted Math logit}} = -1.21 - 0.226 * \gamma_1 \text{African American} - 0.014 * \gamma_2 \text{African American}$$

Hispanic

$$Y_{\text{predicted ELA logit}} = -0.95 - 0.314 * \gamma_1 \text{Hispanic} - 0.262 * \gamma_2 \text{Hispanic}$$

$$Y_{\text{predicted Math logit}} = -1.32 - 0.338 * \gamma_1 \text{Hispanic} - 0.176 * \gamma_2 \text{Hispanic}$$

White

$$Y_{\text{predicted ELA logit}} = -0.70 - 0.016 * \gamma_1 \text{White} - 0.525 * \gamma_2 \text{White}$$

$$Y_{\text{predicted Math logit}} = -1.07 - 0.121 * \gamma_1 \text{White} - 0.505 * \gamma_2 \text{White}$$

$\gamma_1$  = ACS Poverty Logit

$\gamma_2$  = ACS no High School Diploma Logit

**Figure 7b: Regression Dilution Adjustment Equation**

Regression dilution correction were made to each regression coefficient for poverty and community education level using:

$$B = \hat{\beta} * \left( 1 + \frac{\text{var}(P_{err})}{\text{var}(P_t)} \right)$$

where  $P_t$  is the true score proportion estimated by  $P_t = \left( 1 - \frac{P_{err}}{P_{estimate}} \right)$

and  $P_{err}$  and  $P_{estimate}$  are the ACS standard errors of the proportion and estimated proportions respectively for each district's (i) ethnic groups.

## **Definition of Selected Terms for American Community Survey (ACS) from the United States Census Bureau**

### *What is the ACS?*

The ACS asks essentially the same questions as the Census 2000 long form. However, it offers different data products, and there were some differences in resulting estimates because of differences in reference periods and in how the data were collected (U.S. Census Bureau, 2006b). The ACS has been producing one-year estimates of population demographics since 1997 for selected geographic areas. The ACS sample was increased to its full size starting in 2005, and starting with estimates for 2005 the ACS provides full sets of estimates annually for all states and for all communities of 65,000 persons or more. For less populous communities, such as rural areas, city neighborhoods, or very small population groups, the sample size is too small to make reliable estimates from one year of ACS sample. Starting in 2008, geographic entities with populations of at least 20,000 received three-year estimates (U.S. Census Bureau, 2009).<sup>15</sup> ACS data were available using prepared summary tabulations or Public Use Microdata Sample files (PUMS). PUMS data files contain actual participant responses to non-confidential ACS survey questions. Each record has an individual weight, which allows researchers to develop population estimates. Plus, each record provides replicate weights that were used to produce standard errors and to do statistical testing.<sup>16</sup>

### *School Districts*

School districts were defined as geographic entities within which state, county, or local officials or the Department of Defense that provided public educational services for the areas residents. The U.S. Census Bureau obtained the boundaries and names for school districts from state officials. The U.S. Census Bureau first provided data for school districts in conjunction with the 1970 census. For Census 2000, the U.S. Census Bureau tabulated data for three types of school districts:

elementary, secondary, and unified. Each school district was assigned a five-digit code that was unique within state. School district codes were assigned by the Department of Education and were not necessarily in alphabetical order by school district name.<sup>17</sup>

### *Income used for Poverty Classification*

“Total income” was defined as the sum of the amounts reported separately for wage or salary income; net self-employment income; interest, dividends, or net rental or royalty income, or income from estates and trusts; social security or railroad retirement income; Supplemental Security Income; public assistance or welfare payments; retirement, survivor, or disability pensions; and all other income. The estimates were inflation-adjusted using the Consumer Price Index.<sup>18</sup>

## **Understanding Statistical Significance**

The poverty-adjusted and community educational attainment predictors were based on ACS samples of persons within the districts, and as such the results were subject to sampling error. In order to determine if the differences between the actual and expected scores exceed the margin of error, the study applied statistical tests for significance based upon the sampling error estimated in the ACS. The term significant does imply a judgment about the degree or relevance of the difference. It means that these results were most likely due to something other than the margin of error. By the same token, if the results were not significant, it doesn't mean that they lack relevance. It merely means that the ACS error estimates were large enough that one needs to be cautious in interpreting the results. For the purposes of this study, significance levels at .05 level or at the 95% level of confidence were used.<sup>19</sup>

## **References for More Information About American Community Survey**

Census Bureau (2006a). “Design and Methodology: American Community Survey.” Technical Paper 67. Issued May

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2006; <http://www.census.gov/acs/www/Downloads/tp67.pdf>

Census Bureau (2006b). “2006 Data Users Handbook The American Community Survey” <http://www.census.gov/acs/www/Downloads/Handbook2006.pdf>

Census Bureau (2007a). Census Bureau Website on Population Estimates. <http://www.census.gov/popest/estimates.php>

Census Bureau (2007b). Multiyear Estimates Study, “Accuracy of the Data”. [http://www.census.gov/acs/www/Downloads/Accuracy\\_of\\_the\\_Data\\_MYE.pdf](http://www.census.gov/acs/www/Downloads/Accuracy_of_the_Data_MYE.pdf)

Census Bureau (2007c). “About the Data (Methodology): The Multiyear Estimates Study: Overview”. [http://www.census.gov/acs/www/AdvMeth/Multi\\_Year\\_Estimates/overview.html](http://www.census.gov/acs/www/AdvMeth/Multi_Year_Estimates/overview.html)

Census Bureau (2007d). “About the Data (Methodology): The Multiyear Estimates Study: About the Multiyear Estimates Study”. [http://www.census.gov/acs/www/AdvMeth/Multi\\_Year\\_Estimates/study\\_details.html](http://www.census.gov/acs/www/AdvMeth/Multi_Year_Estimates/study_details.html)

Census Bureau (2008a). “A Compass for Understanding and Using American Community Survey Data.” [http://www.census.gov/acs/www/UseData/Compass/compass\\_series.html](http://www.census.gov/acs/www/UseData/Compass/compass_series.html)



Appendix B: Data Tables for Districts – Non-School Factors, Actual and Predicted Gaps

Figure 8a: ACS Estimated District Poverty and Educational Attainment – African-American

District	ACS N (est.)	Below Poverty (prop.)	Below Poverty stdErr (prop.)	No HS Diploma 25+ (prop.)	No HS Diploma stdErr (prop.)
Boston	39,752	0.35	0.02	0.22	0.01
Brockton	9,865	0.13	0.03	0.21	0.02
Cambridge	3,007	0.47	0.08	0.17	0.02
Chelsea	819	0.31	0.16	0.48	0.05
Fall River	852	0.52	0.15	0.14	0.05
Haverhill	739	0.28	0.08	0.10	0.04
Lawrence	528	0.21	0.07	0.32	0.07
Lowell	1,813	0.20	0.13	0.10	0.03
Lynn	4,684	0.24	0.07	0.25	0.03
Malden	2,042	0.08	0.12	0.09	0.03
Milton	692	0.02	0.14	0.14	0.04
New Bedford	1,871	0.36	0.11	0.31	0.03
Quincy	842	0.29	0.11	0.05	0.02
Randolph	2,759	0.07	0.03	0.12	0.03
Somerville	666	0.37	0.32	0.17	0.05
Springfield	9,901	0.38	0.04	0.20	0.02
Stoughton	781	0.17	0.08	0.07	0.03
Taunton	1,082	0.51	0.12	0.17	0.04
Waltham	670	0.04	0.05	0.17	0.05
Worcester	4,331	0.32	0.07	0.16	0.02

ACS N (est.): Estimated student N by ACS in computing proportion of students at or below poverty; used also as weighting estimate in the regression equations.

Below Poverty (prop.): ACS estimate of proportion of students in district at or below poverty; PUMS adjusted for students in public schools.

Below Poverty stdErr (prop.): Standard error term of the proportion for poverty.

No HS Diploma 25+ (prop.): ACS estimate of proportion of persons 25 and older in district who have not attained a high school diploma.

No HS Diploma 25+ stdErr (prop.): Standard error term of the proportion for no high school diploma.

**Figure 8b: ACS Estimated District Poverty and Educational Attainment – Hispanic**

District	ACS N (est.)	Below Poverty (prop.)	Below Poverty stdErr (prop.)	No HS Diploma 25+ (prop.)	No Diploma stdErr (prop.)
Attleboro	760	0.29	0.13	0.37	0.10
Boston	29,647	0.41	0.02	0.37	0.01
Brockton	3,283	0.18	0.05	0.31	0.04
Brookline	846	0.38	0.24	0.10	0.04
Cambridge	1,200	0.20	0.08	0.12	0.04
Chelsea	6,325	0.25	0.05	0.43	0.03
Chicopee	2,803	0.49	0.10	0.34	0.06
Everett	1,683	0.23	0.12	0.43	0.08
Fall River	1,517	0.67	0.08	0.38	0.05
Fitchburg	3,016	0.50	0.10	0.30	0.05
Haverhill	2,748	0.27	0.09	0.25	0.05
Holyoke	7,236	0.58	0.04	0.46	0.03
Lawrence	18,141	0.40	0.03	0.45	0.02
Leominster	1,811	0.47	0.14	0.30	0.06
Lowell	5,795	0.44	0.06	0.40	0.04
Lynn	7,873	0.27	0.05	0.50	0.03
Malden	1,310	0.20	0.10	0.22	0.12
Medford	1,274	0.02	0.04	0.08	0.04
Methuen	3,617	0.08	0.04	0.36	0.05
Newton	1,007	0.24	0.20	0.21	0.06
Northampton	550	0.65	0.19	0.18	0.06
Pittsfield	551	0.43	0.12	0.17	0.07
Quincy	528	0.07	0.07	0.21	0.06
Revere	3,345	0.04	0.03	0.51	0.05
Somerville	1,097	0.33	0.18	0.28	0.05
Springfield	19,214	0.57	0.03	0.40	0.02
Waltham	1,524	0.09	0.08	0.37	0.07
Westfield	907	0.45	0.20	0.14	0.07
Worcester	10,775	0.51	0.04	0.33	0.02

**Figure 8c: ACS Estimated District Poverty and Educational Attainment—Local White**

District	Mean enrollment N*	ACS N (est)	Below Poverty (prop.)	Below Poverty stdErr (prop.)	No HS Diploma 25+ (prop.)	No Diploma stdErr (prop.)
Attleboro	6,075	8,540	0.04	0.02	0.13	0.01
Boston	56,635	44,569	0.26	0.02	0.10	0.01
Brockton	15,615	8,312	0.12	0.03	0.14	0.01
Brookline	6,108	7,884	0.08	0.04	0.02	0.00
Cambridge	5,695	5,831	0.08	0.02	0.04	0.01
Chelsea	5,518	4,331	0.16	0.06	0.27	0.03
Chicopee	7,657	9,267	0.12	0.04	0.17	0.01
Everett	5,433	5,225	0.17	0.04	0.19	0.02
Fall River	10,512	15,584	0.21	0.03	0.34	0.01
Fitchburg	5,511	6,335	0.27	0.06	0.16	0.02
Haverhill	7,525	10,156	0.11	0.02	0.11	0.01
Holyoke	6,287	8,995	0.46	0.04	0.22	0.02
Lawrence	12,259	4,087	0.15	0.04	0.23	0.02
Leominster	6,175	7,807	0.18	0.05	0.13	0.01
Lowell	13,834	10,973	0.18	0.03	0.18	0.01
Lynn	13,685	11,239	0.22	0.03	0.19	0.01
Malden	6,331	6,074	0.15	0.04	0.11	0.01
Medford	4,796	6,425	0.09	0.03	0.12	0.01
Methuen	7,438	7,680	0.04	0.02	0.13	0.01
Natick	4,612	7,182	0.06	0.02	0.03	0.01
New Bedford	13,178	15,949	0.35	0.03	0.36	0.01
Newton	11,633	16,036	0.06	0.02	0.03	0.00
Northampton	2,861	3,330	0.07	0.03	0.07	0.01
Pittsfield	6,353	7,297	0.18	0.03	0.11	0.01
Quincy	8,810	8,676	0.10	0.04	0.09	0.01
Randolph	3,410	1,977	0.06	0.03	0.10	0.02
Revere	5,864	9,453	0.13	0.04	0.21	0.02
Somerville	5,003	4,554	0.15	0.04	0.10	0.01
Springfield	25,410	13,402	0.42	0.03	0.19	0.01
Stoughton	3,941	4,758	0.08	0.03	0.15	0.02
Taunton	8,133	11,026	0.14	0.03	0.17	0.01
Waltham	4,764	5,235	0.11	0.03	0.10	0.01
Westfield	6,375	8,936	0.19	0.05	0.10	0.01
Worcester	23,501	23,372	0.24	0.03	0.15	0.01

\* Entire enrollment including all racial/ethnic groups 2006-2008.

**Figure 9a: African-American Actual and Predicted Achievement Gaps:  
MCAS English Language Arts Achievement (2007 – 2009)**

District	Tested N <sup>20</sup> (African American ELA)	%Prof <sup>+21</sup>	Gap Upper-Bound 95% <sup>22</sup>	Predicted Gap% <sup>23</sup>	Gap Lower Bound 95% <sup>24</sup>	Actual Gap% <sup>25</sup>	Gap Difference% <sup>26</sup>	Significant
Boston	98,778	36.3	33.7	34.8	36.6	36.6	-1.8	*
Brockton	34,668	43.3	21.8	27.5	30.1	29.6	-2.0	
Cambridge	9,171	44.6	32.2	36.0	41.3	28.4	7.6	*
Chelsea	1,737	33.9	25.2	41.1	47.8	39.1	2.0	
Fall River	3,981	36.0	24.0	35.5	46.2	36.9	-1.4	
Haverhill	1,341	49.9	14.8	27.3	35.5	23.0	4.3	
Lawrence	1,137	40.4	24.8	34.2	39.4	32.5	1.7	
Lowell	4,041	42.7	-3.3	25.1	34.6	30.2	-5.2	
Lynn	8,250	41.9	25.3	33.0	37.9	31.0	2.0	
Malden	5,688	42.5	-4.2	18.3	30.6	30.5	-12.2	
Milton	3,885	52.9	-2.0	13.4	32.2	20.0	-6.6	
New Bedford	7,191	36.0	30.2	37.9	43.7	36.9	1.0	
Quincy	2,118	44.6	7.3	22.7	32.9	28.3	-5.6	
Randolph	8,235	41.2	5.2	19.1	24.3	31.7	-12.6	*
Somerville	2,916	37.8	-0.7	33.5	51.3	35.2	-1.6	
Springfield	27,375	37.1	32.7	35.0	38.2	35.8	-0.7	
Stoughton	2,775	60.2	4.3	21.1	29.8	12.7	8.4	
Taunton	3,030	45.7	29.6	36.8	44.8	27.2	9.6	*
Waltham	1,884	54.9	-0.9	18.3	26.9	18.0	0.3	
Worcester	13,500	40.4	26.9	31.9	36.9	32.5	-0.7	

**Figure 9b: Hispanic Actual and Predicted Achievement Gaps:  
MCAS English Language Arts Achievement (2007 – 2009)**

District	Tested N (Hispanic ELA)	%Prof+	Gap Upper- Bound 95%	Predicted Gap%	Gap Lower Bound 95%	Actual Gap%	Gap Difference%	Significant
Attleboro	2,610	46.0	16.3	35.7	45.5	26.9	8.7	
Boston	84,486	36.4	37.5	39.5	41.0	36.5	3.0	*
Brockton	9,927	42.9	19.4	29.3	34.2	30.0	-0.6	
Brookline	2,205	67.1	-13.3	28.2	45.8	5.8	22.4	
Cambridge	3,531	50.9	6.7	22.6	30.9	22.0	0.6	
Chelsea	18,390	37.9	28.4	35.5	39.3	35.0	0.5	
Chicopee	8,859	33.2	33.0	41.0	47.9	39.7	1.3	
Everett	5,841	41.9	12.8	34.9	43.8	31.0	3.9	
Fall River	6,855	29.1	41.6	46.8	53.0	43.8	2.9	
Fitchburg	9,765	35.1	32.3	40.2	47.3	37.8	2.3	
Haverhill	7,164	32.3	18.5	31.2	38.6	40.6	-9.4	*
Holyoke	20,673	20.4	43.4	46.1	49.1	52.5	-6.4	*
Lawrence	50,391	31.6	38.4	41.2	43.2	41.3	-0.1	
Leominster	6,678	34.9	27.9	39.5	48.8	38.0	1.4	
Lowell	15,003	28.6	35.8	40.9	45.1	44.3	-3.4	
Lynn	26,310	37.8	32.4	38.3	41.6	35.1	3.2	
Malden	5,178	46.1	-5.1	27.1	38.6	26.8	0.3	
Medford	2,175	53.7	-15.5	0.0	13.4	19.3	-19.3	*
Methuen	8,010	35.8	4.0	23.7	29.6	37.1	-13.5	*
Newton	3,183	64.8	-8.9	28.7	42.9	8.1	20.6	
Northampton	1,821	39.9	25.0	40.7	59.1	33.0	7.6	
Pittsfield	1,818	30.9	18.4	34.0	44.2	42.1	-8.1	
Quincy	1,809	43.6	-8.9	17.8	28.1	29.3	-11.5	*
Revere	9,480	53.2	-1.3	22.6	29.3	19.7	2.9	
Somerville	6,996	40.5	8.7	34.4	45.6	32.4	1.9	
Springfield	62,874	28.8	43.0	44.7	46.9	44.1	0.5	
Waltham	5,727	47.9	-4.8	24.4	34.2	25.0	-0.6	
Westfield	2,889	37.6	9.2	33.1	48.0	35.3	-2.3	
Worcester	36,180	30.3	38.1	41.1	44.2	42.6	-1.5	

■ **Beyond Demographic Destiny**

**Figure 9c: Local White Actual and Predicted Achievement Gaps:  
MCAS English Language Arts Achievement (2007 – 2009)**

District	Tested N (Local White ELA)	%Prof+	Gap Upper- Bound 95%	Predicted Gap%	Gap Lower Bound 95%	Actual Gap%	Gap Difference%	Significant
Attleboro	22,425	66.4	-2.3	4.5	8.4	6.5	-1.9	
Boston	33,036	66.0	7.2	8.0	10.3	6.9	1.1	*
Brockton	22,950	58.9	4.9	9.0	12.6	14.0	-5.0	*
Brookline	16,617	88.5	-16.1	-11.4	-7.1	-15.6	4.1	
Cambridge	8,988	77.5	-8.5	-5.7	-2.4	-4.6	-1.1	
Chelsea	2,358	51.4	13.1	20.7	25.9	21.5	-0.8	
Chicopee	23,850	57.3	8.1	12.4	15.9	15.7	-3.3	
Everett	13,659	55.2	9.7	14.9	19.6	17.7	-2.7	
Fall River	34,620	48.8	24.0	26.8	29.1	24.1	2.7	
Fitchburg	11,202	59.6	10.3	15.0	20.1	13.3	1.7	
Haverhill	25,695	61.5	1.8	5.1	8.5	11.4	-6.3	*
Holyoke	5,505	58.1	20.8	23.2	27.0	14.8	8.4	*
Lawrence	4,449	49.4	13.4	18.2	22.1	23.5	-5.3	*
Leominster	19,644	63.7	5.7	10.2	14.7	9.2	1.0	
Lowell	26,430	51.0	12.1	15.0	18.0	21.9	-6.9	*
Lynn	17,451	61.4	13.6	16.5	19.8	11.5	5.0	*
Malden	11,454	60.8	2.9	7.0	11.3	12.1	-5.2	*
Medford	14,721	66.6	1.4	6.0	9.9	6.3	-0.2	
Methuen	26,481	65.7	-2.4	3.8	7.5	7.2	-3.4	
Natick	18,846	82.6	-13.6	-9.8	-5.9	-9.7	-0.1	
New Bedford	31,452	47.9	28.7	30.4	32.4	25.0	5.4	*
Newton	38,523	86.0	-12.5	-8.8	-5.5	-13.1	4.3	*
Northampton	10,338	75.0	-6.6	-1.5	2.9	-2.1	0.6	
Pittsfield	22,848	61.8	3.8	7.4	11.5	11.1	-3.7	
Quincy	24,144	66.5	-2.3	3.0	7.2	6.4	-3.5	
Randolph	4,005	59.7	-9.8	2.0	8.3	13.2	-11.2	*
Revere	13,245	62.8	9.7	15.3	19.5	10.1	5.2	
Somerville	8,763	60.2	1.6	5.4	9.3	12.8	-7.3	*
Springfield	17,529	53.3	18.5	20.1	23.3	19.6	0.5	
Stoughton	14,190	72.4	2.4	8.7	13.5	0.5	8.2	*
Taunton	30,444	67.4	9.2	12.6	15.8	5.5	7.1	*
Waltham	12,093	75.6	-0.7	4.2	8.5	-2.7	7.0	*
Westfield	25,878	66.1	2.4	7.0	11.9	6.8	0.2	
Worcester	42,402	56.4	11.5	13.2	15.9	16.5	-3.3	*

**Figure 10a: African-American Actual and Predicted Achievement Gaps:  
MCAS Math Achievement (2007 – 2009)**

District	%Prof+	Gap Upper- Bound 95%	Predicted Gap%	Gap Lower Bound 95%	Actual Gap%	Gap Difference%	Significant
Boston	24.8	35.1	35.5	36.4	36.5	-1.0	*
Brockton	29.9	27.0	29.6	31.8	31.4	-1.8	
Cambridge	30.2	35.6	37.7	40.0	31.1	6.6	*
Chelsea	28.9	24.9	35.2	40.0	32.4	2.7	
Fall River	20.8	33.7	38.3	42.9	40.5	-2.2	
Haverhill	28.6	29.9	34.0	37.0	32.7	1.2	
Lawrence	23.8	28.4	32.5	35.5	37.5	-5.0	*
Lowell	24.7	9.6	31.9	36.9	36.6	-4.6	
Lynn	28.4	29.3	33.3	36.2	32.9	0.4	
Malden	25.6	9.5	26.5	34.3	35.7	-9.2	*
Milton	37.6	9.7	19.1	33.8	23.7	-4.6	
New Bedford	27.1	31.6	35.9	39.4	34.2	1.7	
Quincy	28.6	27.5	33.9	37.8	32.7	1.2	
Randolph	25.7	16.9	25.9	29.5	35.6	-9.7	*
Somerville	24.8	9.8	35.9	46.1	36.5	-0.6	
Springfield	20.9	35.1	36.2	37.7	40.4	-4.2	*
Stoughton	42.7	21.7	30.9	34.8	18.6	12.3	*
Taunton	30.5	35.0	38.3	41.8	30.8	7.5	*
Waltham	32.0	9.8	22.7	29.3	29.3	-6.5	*
Worcester	27.7	32.3	35.0	37.4	33.6	1.4	

■ **Beyond Demographic Destiny**

**Figure 10b: Hispanic Actual and Predicted Achievement Gaps:  
MCAS Math Achievement (2007 – 2009)**

District	%Prof+	Gap Upper- Bound 95%	Predicted Gap%	Gap Lower Bound 95%	Actual Gap%	Gap Difference%	Significant
Attleboro	34.1	16.4	34.0	41.5	27.2	6.8	
Boston	27.8	35.9	37.5	38.7	33.5	4.0	*
Brockton	31.0	19.4	28.7	32.6	30.3	-1.6	
Brookline	56.0	-16.7	30.9	44.6	5.3	25.5	
Cambridge	34.2	9.6	24.9	31.7	27.1	-2.2	
Chelsea	34.9	27.1	33.4	36.4	26.4	7.0	*
Chicopee	21.2	32.8	39.0	44.1	40.1	-1.1	
Everett	29.7	11.4	32.8	39.9	31.6	1.3	
Fall River	18.9	40.0	43.6	48.0	42.4	1.2	
Fitchburg	27.2	32.5	38.6	44.0	34.1	4.6	
Haverhill	19.1	19.9	31.2	37.0	42.2	-11.0	*
Holyoke	12.5	40.5	42.4	44.7	48.8	-6.4	*
Lawrence	20.7	36.0	38.3	39.9	40.6	-2.2	*
Leominster	30.3	28.6	38.1	45.2	31.0	7.1	
Lowell	18.8	34.6	38.5	41.7	42.5	-4.0	*
Lynn	29.9	30.3	35.4	37.9	31.4	4.0	
Malden	32.9	-1.7	27.7	36.3	28.4	-0.7	
Medford	40.8	-18.9	0.4	14.6	20.5	-20.0	*
Methuen	23.5	1.2	22.5	27.5	37.8	-15.3	*
Newton	55.4	-12.8	29.3	40.9	5.9	23.4	
Northampton	20.9	28.5	40.3	53.3	40.4	-0.1	
Pittsfield	20.0	22.9	34.7	42.1	41.3	-6.6	
Quincy	26.3	-12.8	18.4	27.5	35.0	-16.6	*
Revere	44.5	-6.9	19.8	25.7	16.8	3.1	
Somerville	29.7	8.2	33.7	42.7	31.6	2.1	
Springfield	19.5	40.4	41.6	43.3	41.8	-0.1	
Waltham	29.1	-9.5	23.2	31.7	32.3	-9.1	*
Westfield	22.3	13.7	34.3	45.5	39.0	-4.7	
Worcester	21.4	37.0	39.2	41.6	39.9	-0.7	




Figure 10c: Local White Actual and Predicted Achievement Gaps:  
MCAS Math Achievement (2007 – 2009)

District	%Prof+	Gap Upper-Bound 95%	Predicted Gap%	Gap Lower Bound 95%	Actual Gap%	Gap Difference%	Significant
Attleboro	55.6	-1.1	6.7	10.0	5.7	1.1	
Boston	56.1	8.0	9.2	11.2	5.2	3.9	*
Brockton	49.3	6.3	10.8	13.8	12.0	-1.2	
Brookline	80.8	-19.9	-13.3	-8.4	-19.5	6.2	
Cambridge	67.1	-9.6	-5.7	-2.3	-5.8	0.1	
Chelsea	41.0	15.0	22.0	26.0	20.3	1.7	
Chicopee	43.0	9.8	14.2	16.9	18.3	-4.1	*
Everett	38.7	11.2	16.5	20.3	22.6	-6.1	*
Fall River	33.0	24.7	27.2	28.7	28.3	-1.1	
Fitchburg	47.9	11.5	16.2	20.5	13.4	2.8	
Haverhill	49.5	2.8	6.8	9.7	11.8	-5.1	*
Holyoke	45.3	21.1	23.4	26.4	16.0	7.4	*
Lawrence	35.6	15.1	19.8	22.8	25.8	-6.0	*
Leominster	57.4	6.9	11.7	15.5	3.9	7.9	*
Lowell	39.9	13.5	16.5	18.8	21.4	-4.9	*
Lynn	50.8	14.7	17.8	20.4	10.5	7.3	*
Malden	43.8	3.8	8.5	12.3	17.5	-9.1	*
Medford	52.3	2.6	7.9	11.2	9.0	-1.1	
Methuen	52.9	-1.2	6.1	9.2	8.4	-2.2	
Natick	74.3	-16.4	-10.9	-6.5	-13.0	2.1	
New Bedford	39.2	28.4	29.9	31.3	22.1	7.8	*
Newton	80.9	-14.5	-9.5	-6.1	-19.6	10.1	*
Northampton	54.8	-6.9	-0.6	3.7	6.5	-7.1	*
Pittsfield	51.4	4.7	8.8	12.5	9.9	-1.1	
Quincy	49.6	-1.5	4.5	8.3	11.7	-7.3	*
Randolph	45.3	-10.1	3.8	9.6	16.0	-12.3	*
Revere	50.4	11.5	17.1	20.4	10.9	6.2	*
Somerville	49.6	2.5	6.8	10.3	11.7	-4.9	*
Springfield	40.9	18.9	20.6	23.2	20.4	0.2	
Stoughton	62.5	3.8	10.8	15.0	-1.2	12.0	*
Taunton	54.8	10.7	14.4	16.9	6.5	7.9	*
Waltham	60.0	0.2	5.8	9.7	1.3	4.4	
Westfield	49.1	3.3	8.3	12.8	12.2	-3.8	
Worcester	46.6	12.6	14.5	16.7	14.7	-0.1	

**Appendix C: Individual District Performance Charts (CPI)**

**Boston**

		Boston (#D12) 2009 MCAS Proficiency - All Subjects and Grades (District) District Less State (Achievement Gap vs. White Students)																					
		Boston																					
		Percent Advanced+Proficient - 2009																					
		Average English	Average Math	English										Math									
				2	3	4	5	6	7	8	9	10	11	12	2	3	4	5	6	7	8	9	10
<b>All Students</b>																							
Dis. Less St. White		-29.5	-27.5	-35	-31	-33	-31	-29	-26														
District				31	30	38	43	48	59														
State White				66	61	71	74	77	85														
District - # Students Taking Test				3962	3938	3799	3273	3777	3916														
<b>African American</b>																							
Dis. Less St. White		-36.2	-37.4	-41	-36	-39	-37	-37	-34														
District				25	25	32	37	40	51														
State White				66	61	71	74	77	85														
District - # Students Taking Test				1401	1567	1519	1274	1514	1603														
<b>Asian</b>																							
Dis. Less St. White		-8.3	9.4	-21	-10	-11	-8	-2	-5														
District				45	51	60	66	75	80														
State White				66	61	71	74	77	85														
District - # Students Taking Test				283	274	317	305	348	374														
<b>Hispanic</b>																							
Dis. Less St. White		-35.8	-34.3	-41	-35	-40	-38	-38	-30														
District				25	26	31	36	39	55														
State White				66	61	71	74	77	85														
District - # Students Taking Test				1643	1444	1410	1218	1307	1320														
<b>Limited English Proficient</b>																							
Dis. Less St. White		-57.9	-41.8	-45	-46	-60	-63	-69	-71														
District				21	15	11	11	8	14														
State White				66	61	71	74	77	85														
District - # Students Taking Test				1020	743	711	604	548	410														
<b>Low Income</b>																							
Dis. Less St. White		-34.9	-32.6	-40	-36	-38	-36	-36	-30														
District				26	25	33	38	41	55														
State White				66	61	71	74	77	85														
District - # Students Taking Test				3195	3151	3121	2675	2791	2901														
<b>SPED</b>																							
Dis. Less St. White		-60.6	-51.6	-56	-54	-60	-62	-66	-64														
District				10	7	11	12	11	21														
State White				66	61	71	74	77	85														
District - # Students Taking Test				835	892	937	828	882	900														
<b>White</b>																							
Dis. Less St. White		-7.9	-6.9	-11	-12	-12	-9	-9	-3														
District				55	49	59	65	68	82														
State White				66	61	71	74	77	85														
District - # Students Taking Test				525	548	473	405	529	541														



# Cambridge

COMMUNITY PARTNERS INITIATIVE		Cambridge (#D12)														
		2009 MCAS Proficiency - All Subjects and Grades (District)														
		District Less State (Achievement Gap vs. White Students)														
Cambridge		Percent Advanced+Proficient - 2009														
	Average English	Average Math	English										Math			
			2	3	4	5	6	7	8	9	10	11	12	2	3	
<b>All Students</b>																
Dis. Less St. White	-12.5	-13.2	.9	-11	-20	-12	-13	.7								
District			57	50	51	62	64	78	70							
State White			66	61	71	74	77	85	86							
District - # Students Taking Test			421	399	407	397	377	399	375							
<b>African American</b>																
Dis. Less St. White	-29.5	-31.6	-29	-31	-41	-26	-33	-18								
District			37	30	30	48	44	67	56							
State White			66	61	71	74	77	85	86							
District - # Students Taking Test			145	124	155	148	144	169	148							
<b>Asian</b>																
Dis. Less St. White	0.9	9.2	1	1	6	1	2	4								
District			67	62	77	75	79	89	73							
State White			66	61	71	74	77	85	86							
District - # Students Taking Test			60	47	38	39	43	34	26							
<b>Hispanic</b>																
Dis. Less St. White	-21.0	-28.5	-25	-25	-39	-19	-10	-14								
District			41	36	32	55	67	71	71							
State White			66	61	71	74	77	85	86							
District - # Students Taking Test			53	56	55	57	58	49	52							
<b>Limited English Proficient</b>																
Dis. Less St. White	-53.3	-39.7	-34	-55		-65	-70									
District			32	6		9	7	20								
State White			66	61		74	77	86								
District - # Students Taking Test			31	17		11	15	15								
<b>Low Income</b>																
Dis. Less St. White	-28.7	-30.8	-27	-37	-40	-26	-30	-15								
District			39	24	31	48	47	70	60							
State White			66	61	71	74	77	85	86							
District - # Students Taking Test			203	171	197	184	172	194	127							
<b>SPED</b>																
Dis. Less St. White	-47.9	-44.9	-41	-45	-52	-49	-50	-39								
District			25	16	19	25	27	46	23							
State White			66	61	71	74	77	85	86							
District - # Students Taking Test			91	110	130	114	110	128	81							
<b>White</b>																
Dis. Less St. White	4.7	5.1	11	9	3	3	2	5								
District			77	70	74	77	79	90	85							
State White			66	61	71	74	77	85	86							
District - # Students Taking Test			148	156	143	146	125	138	138							

# Chelsea

COMMUNITY PARTNERS INITIATIVE		Chelsea (#D12)														
		2009 MCAS Proficiency - All Subjects and Grades (District)														
		District Less State (Achievement Gap vs. White Students)														
Chelsea		Percent Advanced+Proficient - 2009														
	Average English	Average Math	English										Math			
			2	3	4	5	6	7	8	9	10	11	12	2	3	
<b>All Students</b>																
Dis. Less St. White	-30.1	-25.3	-33	-21	-35	-30	-27	-28								
District			33	40	36	44	50	57	48							
State White			66	61	71	74	77	85	86							
District - # Students Taking Test			444	391	389	397	365	359	286							
<b>African American</b>																
Dis. Less St. White	-38.4	-33.1	-40	-35	-36	-37	-32	-32								
District			26	26	35	37	45	53	27							
State White			66	61	71	74	77	85	86							
District - # Students Taking Test			34	35	23	22	33	28	26							
<b>Asian</b>																
Dis. Less St. White	9.9	9.5	1	31				3								
District			67	92				82								
State White			66	61				85								
District - # Students Taking Test			15	13				11								
<b>Hispanic</b>																
Dis. Less St. White	-31.9	-26.2	-34	-25	-36	-32	-27	-30								
District			32	36	35	42	50	55	46							
State White			66	61	71	74	77	85	86							
District - # Students Taking Test			369	303	331	320	289	276	223							
<b>Limited English Proficient</b>																
Dis. Less St. White	-60.0	-51.7	-46	-50	-66	-66	-65	-77								
District			20	11	5	8	12	8	8							
State White			66	61	71	74	77	85	86							
District - # Students Taking Test			85	75	40	38	35	37	38							
<b>Low Income</b>																
Dis. Less St. White	-32.6	-26.3	-35	-24	-37	-33	-28	-32								
District			31	37	34	41	49	53	45							
State White			66	61	71	74	77	85	86							
District - # Students Taking Test			386	322	333	335	309	289	222							
<b>SPED</b>																
Dis. Less St. White	-67.8	-53.6	-61	-52	-66	-68	-73	-76								
District			5	9	5	6	4	9	6							
State White			66	61	71	74	77	85	86							
District - # Students Taking Test			59	68	64	65	70	67	54							
<b>White</b>																
Dis. Less St. White	-17.7	-18.6	-11	-1	-25	-18	-35	-23								
District			55	60	46	56	42	62	76							
State White			66	61	71	74	77	85	86							
District - # Students Taking Test			24	40	30	40	33	42	25							











## Leominster

COMMUNITY PARTNERS INITIATIVE		2009 MCAS Proficiency - All Subjects and Grades (District) District Less State (Achievement Gap vs. White Students)												Leominster (#D12)											
Leominster														Percent Advanced+Proficient - 2009											
		Average English	Average Math	English									Math												
				2	3	4	5	6	7	8	9	10	11	12	2	3	4	5	6	7	8	9	10	11	12
<b>All Students</b>																									
Dis. Less St. White		-16.1	-11.0	-17	-21	-14	-18	-21	-9		-12				-12	-16	-7	-5	-5	-18		-14			
District				49	40	57	56	56	76	74					55	38	53	58	51	38		67			
State White				66	61	71	74	77	85	86					67	54	60	63	56	56		81			
District - # Students Taking Test				502	471	486	476	471	488		397				500	473	487	471	477	489		402			
<b>African American</b>																									
Dis. Less St. White		-29.8	-27.7	-22	-46	-33	-29	-29	-8		-39				-25	-34	-23	-18	-20	-34		-38			
District				44	15	38	45	48	77	47					42	20	37	45	36	22		43			
State White				66	61	71	74	77	85	86					67	54	60	63	56	56		81			
District - # Students Taking Test				29	40	29	29	25	31		23				29	40	30	29	25	31		23			
<b>Asian</b>																									
Dis. Less St. White		-17.1	-7.6	-19	-11	-4	-39	-19	-21		5				-15	7	6	-28	2	-35		10			
District				47	50	67	35	58	64	91					52	61	66	35	58	21		91			
State White				66	61	71	74	77	85	86					67	54	60	63	56	56		81			
District - # Students Taking Test				19	18	12	17	26	14		11				19	18	12	17	26	14		11			
<b>Hispanic</b>																									
Dis. Less St. White		-35.5	-29.5	-41	-38	-30	-35	-38	-29		-37				-33	-31	-25	-28	-25	-34		-31			
District				25	23	41	39	39	56	49					34	23	35	35	31	22		50			
State White				66	61	71	74	77	85	86					67	54	60	63	56	56		81			
District - # Students Taking Test				114	120	114	108	114	105		92				112	120	113	105	115	107		92			
<b>Limited English Proficient</b>																									
Dis. Less St. White		-55.9	-46.4	-47	-54	-46	-61	-65	-61		-80				-44	-40	-47	-52	-36	-53		-75			
District				19	7	25	13	12	24	6					23	14	13	11	20	3		6			
State White				66	61	71	74	77	85	86					67	54	60	63	56	56		81			
District - # Students Taking Test				80	58	40	47	43	37		17				80	58	39	46	44	38		17			
<b>Low Income</b>																									
Dis. Less St. White		-32.3	-25.9	-37	-37	-31	-33	-39	-19		-29				-28	-29	-21	-23	-19	-33		-28			
District				29	24	40	41	38	66	57					39	25	39	40	37	23		53			
State White				66	61	71	74	77	85	86					67	54	60	63	56	56		81			
District - # Students Taking Test				216	215	204	192	174	194		141				214	217	205	188	176	195		145			
<b>SPED</b>																									
Dis. Less St. White		-58.6	-48.6	-54	-53	-57	-61	-70	-51		-67				-50	-45	-48	-46	-47	-51		-59			
District				12	8	14	13	7	34	19					17	9	12	17	9	5		22			
State White				66	61	71	74	77	85	86					67	54	60	63	56	56		81			
District - # Students Taking Test				98	89	107	100	77	56		52				97	89	108	98	78	57		50			
<b>White</b>																									
Dis. Less St. White		-7.7	-2.5	-9	-11	-5	-11	-14	-2		-2				-3	-9	1	6	3	-10		-6			
District				57	50	66	63	63	83	84					64	45	61	69	59	46		75			
State White				66	61	71	74	77	85	86					67	54	60	63	56	56		81			
District - # Students Taking Test				333	284	317	311	292	330		264				333	285	318	311	297	329		268			

## Lowell

COMMUNITY PARTNERS INITIATIVE		2009 MCAS Proficiency - All Subjects and Grades (District) District Less State (Achievement Gap vs. White Students)												Lowell (#D12)											
Lowell														Percent Advanced+Proficient - 2009											
		Average English	Average Math	English									Math												
				2	3	4	5	6	7	8	9	10	11	12	2	3	4	5	6	7	8	9	10	11	12
<b>All Students</b>																									
Dis. Less St. White		-29.1	-24.5	-33	-33	-33	-28	-33	-22		-19				-33	-25	-25	-17	-26	-25		-18			
District				33	28	38	46	44	63	67					34	29	35	46	30	31		63			
State White				66	61	71	74	77	85	86					67	54	60	63	56	56		81			
District - # Students Taking Test				1092	992	984	988	1107	1096		772				1098	1000	986	993	1104	1081		794			
<b>African American</b>																									
Dis. Less St. White		-29.6	-34.2	-40	-37	-38	-29	-27	-14		-26				-47	-34	-40	-31	-27	-32		-30			
District				26	24	33	45	50	71	60					20	20	20	32	29	24		51			
State White				66	61	71	74	77	85	86					67	54	60	63	56	56		81			
District - # Students Taking Test				65	56	63	70	64	71		79				65	57	63	70	65	71		83			
<b>Asian</b>																									
Dis. Less St. White		-27.9	-18.1	-36	-30	-31	-25	-26	-21		-25				-31	-20	-19	-6	-15	-21		-10			
District				30	31	40	49	51	64	61					36	34	41	57	41	35		71			
State White				66	61	71	74	77	85	86					67	54	60	63	56	56		81			
District - # Students Taking Test				325	278	274	260	275	306		236				326	282	275	258	277	301		233			
<b>Hispanic</b>																									
Dis. Less St. White		-42.4	-40.1	-47	-44	-49	-41	-48	-31		-33				-50	-38	-43	-31	-39	-36		-44			
District				19	17	22	33	29	54	53					17	15	17	32	17	20		37			
State White				66	61	71	74	77	85	86					67	54	60	63	56	56		81			
District - # Students Taking Test				270	249	254	244	300	259		172				274	251	254	243	298	260		177			
<b>Limited English Proficient</b>																									
Dis. Less St. White		-46.5	-36.7	-45	-40	-45	-47	-60	-48		-46				-42	-33	-33	-26	-46	-42		-35			
District				21	21	26	27	17	37	40					25	21	27	37	10	14		46			
State White				66	61	71	74	77	85	86					67	54	60	63	56	56		81			
District - # Students Taking Test				471	424	363	283	257	261		209				473	428	361	279	256	258		212			
<b>Low Income</b>																									
Dis. Less St. White		-36.6	-31.7	-41	-38	-39	-35	-42	-29		-29				-41	-32	-30	-24	-34	-32		-26			
District				25	23	32	39	35	56	57					26	22	30	39	22	24		55			
State White				66	61	71	74	77	85	86					67	54	60	63	56	56		81			
District - # Students Taking Test				760	702	711	705	783	769		422				762	707	712	700	779	765		438			
<b>SPED</b>																									
Dis. Less St. White		-64.3	-52.7	-57	-57	-62	-65	-71	-70		-67				-55	-48	-51	-53	-52	-52		-64			
District				9	4	9	9	6	15	19					12	6	9	10	4	4		17			

## Lynn

COMMUNITY PARTNERS INITIATIVE		Lynn (#D12)																					
		2009 MCAS Proficiency - All Subjects and Grades (District)																					
		District Less State (Achievement Gap vs. White Students)																					
Lynn		Percent Advanced+Proficient - 2009																					
	Average English	Average Math	English										Math										
			2	3	4	5	6	7	8	9	10	11	12	2	3	4	5	6	7	8	9	10	11
<b>All Students</b>																							
Dis. Less St. White	-27.3	-25.3	-29	-29	-29	-27	-30	-24	-23														
District			37	32	42	47	47	61	63														
State White			66	61	71	74	77	85	86														
District - # Students Taking Test			1048	968	953	845	898	904	945														
<b>African American</b>																							
Dis. Less St. White	-32.6	-34.8	-33	-32	-38	-30	-32	-29	-33														
District			33	29	33	44	45	56	53														
State White			66	61	71	74	77	85	86														
District - # Students Taking Test			132	129	148	121	116	133	132														
<b>Asian</b>																							
Dis. Less St. White	-22.1	-13.4	-25	-32	-24	-25	-25	-11	-17														
District			41	29	47	49	52	74	69														
State White			66	61	71	74	77	85	86														
District - # Students Taking Test			88	74	85	87	105	112	89														
<b>Hispanic</b>																							
Dis. Less St. White	-35.4	-33.1	-39	-38	-40	-35	-37	-29	-28														
District			27	23	31	39	40	56	58														
State White			66	61	71	74	77	85	86														
District - # Students Taking Test			543	470	419	361	390	393	411														
<b>Limited English Proficient</b>																							
Dis. Less St. White	-50.1	-39.6	-42	-42	-53	-56	-62	-60	-62														
District			24	19	18	18	15	25	24														
State White			66	61	71	74	77	85	86														
District - # Students Taking Test			401	353	255	173	124	124	142														
<b>Low Income</b>																							
Dis. Less St. White	-33.1	-30.6	-35	-36	-37	-34	-35	-28	-26														
District			31	25	34	40	42	57	60														
State White			66	61	71	74	77	85	86														
District - # Students Taking Test			820	743	716	621	690	678	694														
<b>SPED</b>																							
Dis. Less St. White	-62.3	-51.4	-51	-57	-60	-66	-65	-68	-71														
District			15	4	11	8	12	17	15														
State White			66	61	71	74	77	85	86														
District - # Students Taking Test			173	189	221	168	188	191	146														
<b>White</b>																							
Dis. Less St. White	-13.2	-12.2	-7	-10	-11	-16	-22	-15	-12														
District			59	51	60	58	55	70	74														
State White			66	61	71	74	77	85	86														
District - # Students Taking Test			240	267	271	242	256	234	284														

## Malden

COMMUNITY PARTNERS INITIATIVE		Malden (#D12)																					
		2009 MCAS Proficiency - All Subjects and Grades (District)																					
		District Less State (Achievement Gap vs. White Students)																					
Malden		Percent Advanced+Proficient - 2009																					
	Average English	Average Math	English										Math										
			2	3	4	5	6	7	8	9	10	11	12	2	3	4	5	6	7	8	9	10	11
<b>All Students</b>																							
Dis. Less St. White	-18.3	-18.6	-26	-32	-23	-14	-12	-7	-13														
District			40	29	46	60	65	78	73														
State White			66	61	71	74	77	85	86														
District - # Students Taking Test			491	461	469	465	477	467	392														
<b>African American</b>																							
Dis. Less St. White	-29.5	-35.4	-41	-40	-41	-29	-21	-13	-20														
District			25	21	30	45	56	72	66														
State White			66	61	71	74	77	85	86														
District - # Students Taking Test			94	85	110	86	101	91	89														
<b>Asian</b>																							
Dis. Less St. White	-7.3	6.1	-11	-20	-5	-2	-10	4	-6														
District			55	41	66	72	67	89	80														
State White			66	61	71	74	77	85	86														
District - # Students Taking Test			102	86	93	96	98	79	91														
<b>Hispanic</b>																							
Dis. Less St. White	-29.4	-28.8	-35	-48	-40	-18	-22	-14	-23														
District			31	13	31	56	55	71	63														
State White			66	61	71	74	77	85	86														
District - # Students Taking Test			117	95	73	93	80	76	86														
<b>Limited English Proficient</b>																							
Dis. Less St. White	-54.3	-37.9	-42	-50	-50	-49	-62	-71	-70														
District			24	11	21	25	15	14	16														
State White			66	61	71	74	77	85	86														
District - # Students Taking Test			41	38	33	28	26	22	25														
<b>Low Income</b>																							
Dis. Less St. White	-26.1	-24.3	-32	-42	-36	-22	-20	-11	-18														
District			34	19	35	52	57	74	68														
State White			66	61	71	74	77	85	86														
District - # Students Taking Test			283	270	252	266	280	253	218														
<b>SPED</b>																							
Dis. Less St. White	-61.7	-55.0	-58	-59	-68	-62	-61	-56	-68														
District			8	2	3	12	16	29	18														
State White			66	61	71	74	77	85	86														
District - # Students Taking Test			77	66	94	81	87	78	56														
<b>White</b>																							
Dis. Less St. White	-14.0	-16.8	-20	-27	-12	-12	8	9	-11														
District			46	34	59	62	69	76	75														
State White			66	61	71	74	77	85	86														
District - # Students Taking Test			157	170	178	186	169	199	141														





Taunton

COMMUNITY PARTNERS INITIATIVE		Taunton (#D12)																							
		2009 MCAS Proficiency - All Subjects and Grades (District)																							
		District Less State (Achievement Gap vs. White Students)																							
Taunton																									
Percent Advanced+Proficient - 2009																									
		Average English	Average Math	English									Math												
				2	3	4	5	6	7	8	9	10	11	12	2	3	4	5	6	7	8	9	10	11	12
<b>All Students</b>																									
Dis. Less St. White		-8.5	-10.6	.6	.5	-14	-8	-9	-10																
District				60	56	57	66	68	75	79					63	54	49	50	40	38	70				
State White				66	61	71	74	77	85	86					67	54	60	63	56	56	81				
District - # Students	Taking Test			605	638	630	661	660	666	453					604	641	631	660	667	670	444				
<b>African American</b>																									
Dis. Less St. White		-26.8	-29.9	-31	-23	-25	-37	-18	-27	-25					-23	-17	-21	-36	-39	-42	-29				
District				35	38	46	37	59	58	61					44	37	39	27	17	14	52				
State White				66	61	71	74	77	85	86					67	54	60	63	56	56	81				
District - # Students	Taking Test			48	45	53	54	46	54	46					48	46	53	53	46	57	45				
<b>Asian</b>																									
Dis. Less St. White																									
District																									
State White																									
District - # Students	Taking Test																								
<b>Hispanic</b>																									
Dis. Less St. White		-24.5	-28.0	-24	-16	-36	-20	-26	-24	-25					-21	-19	-26	-30	-34	-34	-38				
District				42	45	35	54	51	61	61					46	35	34	33	22	22	43				
State White				66	61	71	74	77	85	86					67	54	60	63	56	56	81				
District - # Students	Taking Test			63	83	81	57	64	68	44					63	83	81	57	67	67	44				
<b>Limited English Proficient</b>																									
Dis. Less St. White		-34.8	-19.9	-25	-24	-35				-50					-12	-4	-26			-48					
District				41	37	36				36					55	50	34			8					
State White				66	61	71				77					67	54	60			56					
District - # Students	Taking Test			22	16	14				11					22	16	15			12					
<b>Low Income</b>																									
Dis. Less St. White		-21.6	-24.7	-18	-18	-29	-20	-22	-24	-19					-17	-10	-26	-29	-30	-33	-30				
District				48	43	42	54	55	61	67					50	44	34	34	26	23	51				
State White				66	61	71	74	77	85	86					67	54	60	63	56	56	81				
District - # Students	Taking Test			271	273	263	263	278	271	150					269	273	263	264	281	274	146				
<b>SPED</b>																									
Dis. Less St. White		-56.3	-50.7	-44	-47	-61	-57	-60	-65	-62					-46	-42	-51	-57	-51	-51	-62				
District				22	14	10	17	17	20	24					21	12	9	6	5	5	19				
State White				66	61	71	74	77	85	86					67	54	60	63	56	56	81				
District - # Students	Taking Test			108	111	125	116	107	108	58					107	112	125	117	108	107	59				
<b>White</b>																									
Dis. Less St. White		-4.3	-5.7	-1	-2	-9	-3	-5	-7	-2					1	5	-7	-8	-11	-13	-5				
District				65	59	62	71	72	78	84					68	59	53	55	45	43	76				
State White				66	61	71	74	77	85	86					67	54	60	63	56	56	81				
District - # Students	Taking Test			468	467	467	513	529	509	338					467	469	468	512	532	512	330				

Worcester

COMMUNITY PARTNERS INITIATIVE		Worcester (#D12)																							
		2009 MCAS Proficiency - All Subjects and Grades (District)																							
		District Less State (Achievement Gap vs. White Students)																							
Worcester																									
Percent Advanced+Proficient - 2009																									
		Average English	Average Math	English									Math												
				2	3	4	5	6	7	8	9	10	11	12	2	3	4	5	6	7	8	9	10	11	12
<b>All Students</b>																									
Dis. Less St. White		-26.8	-24.5	-31	-30	-29	-26	-26	-26	-19					-27	-23	-24	-20	-25	-28	-24				
District				35	31	42	48	51	59	67					40	31	36	43	31	28	57				
State White				66	61	71	74	77	85	86					67	54	60	63	56	56	81				
District - # Students	Taking Test			1824	1663	1636	1589	1480	1599	1604					1820	1664	1645	1598	1507	1600	1597				
<b>African American</b>																									
Dis. Less St. White		-28.4	-33.1	-36	-36	-28	-27	-30	-27	-17					-36	-31	-31	-30	-37	-36	-31				
District				30	25	43	47	47	58	69					31	23	29	33	19	20	50				
State White				66	61	71	74	77	85	86					67	54	60	63	56	56	81				
District - # Students	Taking Test			215	215	219	218	196	229	248					214	218	221	220	205	229	245				
<b>Asian</b>																									
Dis. Less St. White		-14.8	-3.7	-19	-27	-22	-15	-6	-13	0					-11	-6	-3	4	2	-10	0				
District				47	34	49	59	71	72	86					56	48	57	67	58	46	81				
State White				66	61	71	74	77	85	86					67	54	60	63	56	56	81				
District - # Students	Taking Test			148	123	131	125	116	133	125					146	123	132	126	121	135	123				
<b>Hispanic</b>																									
Dis. Less St. White		-41.3	-38.0	-47	-43	-47	-40	-40	-38	-32					-40	-32	-36	-36	-41	-43	-38				
District				19	18	24	34	37	47	54					27	22	24	27	15	13	43				
State White				66	61	71	74	77	85	86					67	54	60	63	56	56	81				
District - # Students	Taking Test			690	611	579	557	572	593	539					688	609	583	561	574	595	541				
<b>Limited English Proficient</b>																									
Dis. Less St. White		-53.4	-42.7	-44	-48	-54	-55	-64	-67	-67					-37	-33	-42	-48	-48	-50	-66				
District				22	13	17	19	13	18	19					30	21	18	15	8	6	15				
State White				66	61	71	74	77	85	86					67	54	60	63	56	56	81				
District - # Students	Taking Test			624	459	387	305	238	221	155					625	456	392	310	243	221	155				

## Endnotes

1. See Caroline Hoxby's study for more complete discussion of the degree to which different demographic factors are correlated with student achievement in "If Families Matter Most, Where Do Schools Come In?" in Terry M. Moe (ed.) *A Primer on America's Schools* (Stanford University: Hoover Institute Press, 2001).

2. See also V.E. Lee and D.T. Burkam, "Inequality at the Starting Gate: Social Background Differences in Achievement as Children Begin School," *Economic Policy Institute* (2002), from <http://epicpolicy.org/files/Inequality%20at%20the%20Starting%20Gate.pdf> retrieved on November 20, 2009. Or see L. Woessmann, *How Equal are Educational Opportunities? Family Background and Student Achievement in Europe and the US*. CESifo Working Paper Series No. 1162 (March 2004), abstract available at: <http://ssrn.com/abstract=528209>.

3. See the recent American Institutes of Research study detailing which instructional models provide significant gains for disadvantaged students. American Institutes for Research review and evaluation of the top school reform models suggests that only two school reform models have sufficient evidence that using the model will promote significant gains in learning: Direct Instruction and Success for All. Although other models are discussed as having potential for effects, the size of the effect according to the report is not as substantial as the other two models. The report contains a good review of the literature and research studies for all models and can be found at: <http://www.csrq.org/documents/>

[CSRQCenterCombinedReport\\_Web11-03-06.pdf](#)

4. From Kevin Carey: November 7, 2002; *State Poverty-Based Education Funding: A survey of current programs and options for improvement*, at [www.cbpp.org](http://www.cbpp.org).

5. Christopher Jencks and Susan Mayer in their oft cited work "The Social Consequences of Growing up in a Poor Neighborhood," in L. Lynn and M. McGreary (eds.) *Inner-city Poverty in the United States* (Washington, D.C.: National Academy Press 1990). Jencks and Mayer propose that communities could influence student achievement, for example, by providing role models or enforcement of social norms, such as earning a high school diploma (or not). For an interesting discussion on the community variables impacting student achievement, see Gary Solon, M.E. Page, and Greg J. Duncan's paper, "Correlations Between Neighboring Children in their Subsequent Educational Attainment," in *The Review of Economic and Statistics*, August 2000, 82(3): 383-392.

6. For more information about the American Community Survey (ACS) see references at the end of this Appendix.

7. From Kevin Carey, *State Poverty-Based Education Funding: A survey of current programs and options for improvement*, November 7, 2002; at [www.cbpp.org](http://www.cbpp.org).

8. Research cited in Carey page 14: <http://www.cbpp.org/archiveSite/11-7-02sfp.pdf>.

9. A household's poverty level status is determined based on answers to the income questions of the ACS. If a family is below the appropriate poverty threshold, the household is classified as poor. (For more information, see ACS information in references.)

10. “x” denotes sub-tables A, B, and I for white, African-Americans, and Hispanics, respectively.

11. Information quoted from ACS webpage retrieved on November 11, 2009 from: [http://factfinder.census.gov/jsp/saff/SAFFInfo.jsp?\\_pageId=sp1\\_acs&\\_submenuId=](http://factfinder.census.gov/jsp/saff/SAFFInfo.jsp?_pageId=sp1_acs&_submenuId=)

12. A regression analysis was conducted using ACS poverty estimates across the PUMS poverty estimates; the resulting predicted scores were used as the adjusted ACS poverty score.

13. J. Hausman, “Mismeasured Variables in Econometric Analysis: Problems from the Right and Problems from the Left,” *Journal of Economic Perspectives* (2003): 57– 67.

14. See the ACS manual “Accuracy of the Data” p. 11-13

15. From Michael Beaghen and Lynn Weidman, *Statistical Issues of the Interpretation of the American Community Survey’s One-, Three- and Five-Year Estimates*. US Census Bureau, (October, 2008).

16. For more information on PUMS see: <http://www.census.gov/acs/www/Products/PUMS/> (accessed on November 19, 2009)

17. A – 5 Geographic Terms and Concepts, ACS Fact Finder, [www.uscensus.org](http://www.uscensus.org)

18. From ACS Design Methods: Survey Rules, Concepts, and Definitions, see references for more information.

19. For more information about similar tests of significance used in gap studies see, A. Vanneman, L. Hamilton, J. Anderson Baldwin, and T. Rahman, *Achievement Gaps: How Black and White Students in Public Schools Perform in Mathematics and Reading on the National Assessment of Educational*

*Progress* (NCES 2009-455) (National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC 2009).

20. Tested N: Number of completed MCAS tests 2007-2009.

21. %Prof+: Percent proficient and above 2007-2009.

22. Gap Upper-Bound 95%: The upper boundary (95% confidence interval) of the performance gap with state whites. Actual gaps that are smaller than this boundary are significantly different from the Predicted Gap.

23. Gap Lower-Bound 95%: The lower boundary (95% confidence interval) of the performance gap with state whites. Actual gaps that exceed this boundary are significantly different from the Predicted Gap.

24. Actual Gap%: Actual gap % between the state white performance and district performance.

25. Predicted Gap%: Predicted gap % between the state white performance and district performance based upon the predictions using district poverty and adult educational attainment.

26. Gap Difference%: Equals the difference between the Actual Gap % and the Predicted Gap %. A positive value, if significant, indicates the district exceeded expectations of the predictors. A negative value, if significant, indicates district did not meet expectations of the predictors.

