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The Kalamazoo Promise, and Enrollment and Achievement Trends in Kalamazoo Public Schools

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This paper looks at some of the Kalamazoo Promise's "effects". The Kalamazoo Promise, announced in November of 2005, provides graduates of Kalamazoo Public Schools with up to 100 percent of tuition for attendance at a Michigan community college or public university.

Why should there be broad interest in the Promise's effects? The Kalamazoo Promise was funded by anonymous private donors, a model which is difficult to emulate. However, many American communities are interested in providing guarantees of post-secondary tuition that would be similar to the Promise in broadly benefitting many students. Such guarantees may require significant involvement by state and local governments, particularly in providing part of the funding. An important issue is whether these public costs will be justified by sufficient social benefits. This requires some estimate of Promise-style programs' effects. As the Kalamazoo Promise is one of the "oldest" of such programs, at a little less than five years of age, the post-Promise trends in Kalamazoo Public Schools may provide some indication of the social benefits of Promise-style programs.

"Effects" is appropriately in quotation marks because of the difficulty in determining causation. We observe Kalamazoo Public Schools before and after the Promise. We observe trends in enrollment, student achievement, and other variables before and after the Promise. We do not have a good control group or comparison group for Kalamazoo Public Schools. It is difficult to tell whether changes in trends in KPS are due to the Promise or other changes. In some cases, as we will discuss, the pattern and timing of KPS trends is suggestive of Promise effects.

This paper examines three types of KPS trends that may represent Promise effects. The first is trends in overall enrollment. The second is trends in relative enrollment by ethnic group.

The third is trends in KPS achievement on the standardized test used by the state of Michigan for No Child Left Behind Accountability, the MEAP test. (MEAP is an acronym for Michigan Educational Assessment Program.)

As we will show, the evidence strongly suggests that the Kalamazoo Promise has significantly boosted KPS enrollment, due to boosting both student entry into KPS and reducing student exits. In addition, the evidence strongly suggests that the Kalamazoo Promise has helped stabilize ethnic percentages in Kalamazoo Public Schools. Finally, the Kalamazoo Promise has been accompanied by considerable increases in student achievement, although it is difficult to determine how much of this can be attributed to the Promise versus other changes.

ENROLLMENT TRENDS

As is well-known, KPS enrollment has increased considerably post-Promise. Figure 1 shows overall enrollment trends in KPS over the last 23 years. The pronounced increase after the Promise was announced, interrupting a long-term downward enrollment trend, is suggestive of a Promise effect in increasing enrollment.

An enrollment increase must occur through increased entry of new students and/or reduced exit of current students. We used micro data on individual KPS students to examine patterns in KPS entry numbers and exit rates of students before and after the announcement of the Kalamazoo Promise in November 2005.

Before presenting data, it is worth considering how these entry numbers and exit numbers should be calculated. We decided that exits of students should be calculated as exit rates, that is as the proportion of current students exiting. Exits reflect the behavior of students currently in KPS. The exit rate is a description of the average behavior of the relevant population that

potentially could exit. We calculated exit rates by grade level. Specifically, we calculated exit rates as the percentage of students leaving KPS by the fall of a given year, as a percentage of the students in a particular grade the previous fall.

For student entry, it is not clear what population should be described as potential entrants. In theory any student of the right age in the U.S. (or perhaps the world) could enter KPS. But the probability of entry will be much higher for those families already living in the school district, followed by families living nearby, etc. However, some entrants will be from much further away. Therefore, there is no easy way to describe an entry rate for a well-defined population with a similar probability of entering.

Therefore, for student entry, we calculated entry numbers by grade level. The number of students entering in a particular grade level is the number of new students at that grade level in the fall of a particular year.

We first look at student entry numbers by year and grade level, grades 1 through 12. (Kindergarten is considered separately, as kindergarten entry numbers are much higher.) Figure 2 shows these new entrants. As is apparent in the study, after the Promise was announced in November of 2005, there was a one-time surge in new entrants by the following fall, fall of 2006.[1] This surge only occurred in grades 1 through 9. Grades 10 to 12 did not see a large uptick in new entrants.[2]

This pattern of new entrants is consistent with an effect of the Promise, as students entering KPS after 9th grade are normally ineligible for Promise support for college tuition.

[1] Averaged over grades 1 to 9, new entrants in fall of 2006, compared to new entrants in the fall of 2005 and the fall of 2004, are 53.8 percent higher.

[2] New entrants in grades 10 to 12 in the fall of 2006, compared to the previous two falls, do increase by 15.2%. Some of this increase could be for students who hope to appeal their eligibility for the Promise. (Although Promise eligibility is normally based on date of last entry to KPS, exceptions are sometimes allowed under appeal.) Other new entrants at these grade levels could be from families that also have younger Promise-eligible students.

Students entering KPS in 9th grade are eligible for Promise support for 65 percent of college tuition, with the percentage tuition subsidy increasing for earlier entry, up to 100 percent for students entering KPS in kindergarten.

After the fall of 2006, the number of new entrants in grades 1 to 12 returns to close to the previous level.[3] This is also consistent with a Promise effect. The Promise significantly increases the college tuition rewards for attending KPS. But for families that this incentive most attracts, it makes sense to respond to this incentive immediately, in the fall of 2006, rather than waiting, assuming one's child is in grades 1 to 9. The Promise tuition subsidy increases for earlier entry.

Figure 3 shows trends in new kindergarten student entries to KPS by year. As the figure shows, after the Promise, KPS kindergarten entries went up by over 100 students in the fall of 2006. Entrants then declined slightly for the fall of 2007, before increasing in each of the following two years.

These trends may in part be affected by the expansion of full-day kindergarten in KPS in the fall of 2008. KPS expanded full-day kindergarten to 14 of the 17 elementary schools, increasing the number of students in full-day kindergarten by over 700 students.

However, these kindergarten trends also may be related to the Promise. Families attracted to KPS by the Promise can not enroll their child until they are old enough for kindergarten. Therefore, we would expect the response of kindergarten entrants to the Promise offer to be protracted rather than a one-time surge.

[3] The number of new entrants is slightly higher. The average number of new entrants grades 1 to 9, from the fall of 2007 to the fall of 2009, compared to the average number of new entrants in those grades in the fall of 2004 and the fall of 2005, is 6.8 percent higher.

What about exit rates? Figure 4 presents data on trends in exit rates in KPS, by grade and year, from the fall of 2003 to the fall of 2008.[4] We calculate exit rates as the percentage of students in a given grade as of a particular fall count day who exit KPS by the next fall. Exits occur both by voluntary family decisions, and decisions to some extent forced by academic and behavioral difficulties at school. Presumably the former dominates in K-8, and both factors may play a role in high school.

What this chart shows is that prior to the Promise (fall of 2003 and fall of 2004), grades K-8 and 10-12 exit rates in KPS were quite high at 15 to 20 percent annually. Exit rates were even higher for 9th grade at 25 percent.

In the year of the Promise, exit rates dropped significantly: far fewer students left from the fall of 2005 base year to the next year compared to the previous two years. This exit rate has since stayed consistently down from K-8. This presumably reflects less voluntary family exit activity. This persistent trend seems consistent with a Promise effect. If the Promise is attractive to families, they are less likely to choose to exit KPS over time, whether in response to problems at school or personal factors.

The high school pattern is more complicated. For the fall of 2006 and fall of 2007 base years, the exit rate shot up back to pre-Promise patterns. This may reflect more "involuntary" exits as some of the students who had stuck around to try and use the Promise realized that they were not going to make it, and dropped out or switched to some other school.

[4] Exit rates at 12th grade include high school graduates as well as those leaving KPS. We might expect these to go up if more 12th graders graduate on time, and to go down if more 12th graders with academic problems choose to stay in KPS another year. These exit rates show no large trend over time. Year by year exit rates are: 2003, 94.4 percent; 2004, 94.9 percent; 2005, 93.7 percent; 2006, 94.0 percent; 2007, 92.7 percent; 2008, 90.6 percent.

But the fall of 2008 base year shows a more positive pattern. The exit rate in high school dropped again. This may reflect a higher percentage of high school students doing better in school, either because of better K-8 preparation, or better performance by the high schools.

These changes in entry numbers and exit rates can be used to give one estimate of the "effects" of the Promise. We calculate what KPS enrollment numbers would have been, in the fall of 2006 to the fall of 2009, if the entry numbers and exit numbers that KPS experienced on average from the fall of 2003 to the fall of 2005 had persisted unchanged. As outlined above, the pattern of the post 2005 changes in entry numbers and exit rates seems consistent with an effect of the Kalamazoo Promise. As part of this analysis, we also calculate what would have happened to KPS enrollment if only entry numbers had changed, or if only exit rates had changed.

Figure 5 presents the results. What the figure shows is that without the Promise (or, if one wants to be more skeptical, without whatever change affected the district's entry numbers and exit rates after the fall of 2005), if the district had followed previous trends in exit rates and number of entrants for each grade level, KPS enrollment would have declined by almost 500 students by the fall of 2009. The Promise's net effects were to increase enrollment by the fall of 2009 from 9,701 to 12,106, an increase of around 2,400 students, a little less than a 25 percent boost to enrollment.

Under Michigan's system of school finance, all operating cost financing is essentially fixed by state law and provided by the state government at a fixed payment per student. For complicated historical reasons, this amount varies slightly by school district. For KPS, the 2009-2010 effective funding per student was $7,765. Therefore, the Promise-related boost to enrollment increased KPS revenue by $7,765 times 2,405 additional students equals $18.7 million. Based on past conversations with KPS staff, it seems reasonable to assume that the

average additional marginal costs of serving this increased enrollment are probably not more than two thirds of this revenue increase. Marginal service costs are below average service costs in part because the additional teachers hired will tend to be new teachers who will be paid less than the average teacher. In addition, increased enrollment allows some of the district's fixed administrative costs to be spread over more students. The result is that each additional student brings in $7,765 in additional per-pupil revenue, but probably costs the district around $5,000, leaving a net surplus of around $2,500. As a result, the Promise on net allowed the District to have an extra $6 million for services compared to what would have otherwise occurred.

The initial increase in enrollment in the fall of 2006 was due about equally to an increase in both numbers of entrants and a reduction in exit rates. But the enrollment increase since the fall of 2006 is due almost entirely to the lower exit rates. By the fall of 2009, about two-thirds of the total increase since the fall of 2005 in KPS enrollment is due to lower exit rates.

Table 1 presents the calculations of how KPS enrollment was affected from 2006 to 2009 by changes in entry numbers versus exit rates. Note that the percentages don't add up to precisely 100 percent because the two trends interact with each other. Each of these percentages simply takes the difference between the scenario in which only one factor changes, minus the pre-Promise baseline, as a percentage of the total difference between the actual trend and the pre-Promise baseline prediction of the post-Promise enrollment trend.

The importance of exit rates to the post-Promise trend is good news for KPS or other districts considering a Promise, for several reasons. First, there might be some reason to think that these lower exit rates will be more persistent than any changes in number of new entrants. Such lower rates might vary more with KPS's attractiveness to its current students than to external factors. Second, there might be some reason to think that it is easier to predict or

forecast exit rates rather than number of new entrants, given that the number of new entrants depends a great deal on trends external to KPS. Third, given the dynamics of how enrollment proceeds, persistently lower exit rates will yield increases in enrollment for a long time before KPS reaches a new, higher "equilibrium" level. In fact, in a simple model, permanently lower exit rates will cause KPS enrollment to increase, by decreasing amounts, for 12 years, until all the increase has been worked through the entire K-12 span. Fourth, if exit rates are lower, this increases the benefits to KPS of getting new entrants. For example, all-day kindergarten or increased preschool enrollment in KPS, or indeed any attempt to recruit entrants, will pay off more in higher district enrollment with lower exit rates.

We also used the post-Promise trends to predict future KPS enrollment. The KPS district does enrollment projections all the time, on the whole quite successfully. However, this analysis differs in that we look up to five years ahead. Also, we provide some sensitivity analysis for different assumptions.

We considered two scenarios for future enrollment:

1. Constant entry rates and exit rates. Both entry rates and exit rates, for each grade, were equal to their grade-by-grade average over the three year time period from the fall of 2006 to the fall of 2009. The initial period from the fall of 2005 to the fall of 2006 is ignored in this prediction because the initial burst of entrants appears to be a one-time event. The entry rate is defined as the ratio of new entrants in a given fall and grade to the number of students in the previous grade the previous fall. (The kindergarten entry rate uses kindergartners the previous fall in the denominator). Keeping the entry rate fixed increases the number of entrants over time as the district expands. As a result, this scenario tends to be bullish with its future enrollment predictions.

2. Constant entry numbers and exit rates. Exit rates were equal to their average from the fall of 2006 to the fall of 2009, but the number of entrants (rather than the entry rate) was equal to its average over this same three year period. Again, the initial 2005-2006 period is ignored, as the entry numbers for this period appear to be a one-time event for most grades. With constant entry numbers, entry rates drop over time as KPS enrollment increases. Therefore, this scenario tends to predict future enrollment more conservatively.

Which of these assumptions is more likely to be accurate? Obviously, we don't know. We argued before that it is not clear whether entrants will tend to expand with current KPS enrollment and therefore we previously looked at entrant numbers rather than entry rates. However, the entrant number forecasts may be conservative to the extent to which they totally omit any factors causing increases in KPS enrollment to be associated with factors that may increase the number of potential entrants to KPS. For example, if the Kalamazoo economy also expands as KPS enrollment increases, increasing area employment and population, then entrant numbers may tend to expand over time. However, it seems an extreme assumption that the number of potential KPS entrants will expand proportionately with KPS enrollment. Therefore, a reasonable assumption is that future KPS enrollment is likely to be somewhere in-between these two scenarios, and perhaps closer to the "constant entry number" assumption versus the "constant entry rate" assumption.

Table 2 shows these alternative predictions. As this table shows, even under the conservative assumption that entry numbers in KPS stay fixed at current averages, the lower exit rates are sufficient to significantly boost KPS enrollment for each of the next five years. The average increase is an additional 140 students per year. The actual enrollment increase does gradually slow down, as the lower exit rates work their way through the entire K-12 system.

The more bullish scenario postulates that the entry rate stays constant, which means that the number of entrants will continue to go up. For example, in this bullish scenario, the number of kindergarten entries for the fall of 2014 is 1,349, whereas the actual number for the fall of 2009 was 1,149. (Note that this is NOT the number of kindergartners, as many kindergartners are returning kindergartners.) The number of new 9th graders to the district in the fall of 2014 under this bullish scenario is projected to be 232, whereas the actual number for the fall of 2009 was

169. Under this more bullish scenario, which would seem to require some factors to continue making the district more popular (e.g., bigger preschool feeder programs, more PR for the Promise, a stronger Kalamazoo economy), enrollment grows at 400 to 500 students more per year, with no sign of slowing down. This occurs because in the constant entry rate model, a bigger district in turn leads to more entrants.

These forecasts suggest that even under conservative assumptions, Promise-style programs will have long-lasting effects on a district's enrollment growth. To the extent to which these Promise-style programs leverage larger changes in district attractiveness, these enrollment growth effects will be larger and even more persistent.

ETHNIC COMPOSITION OF ENROLLMENT

One of the more sensitive topics in discussing Kalamazoo Promise effects is the issue of enrollment for different ethnic groups. As we will discuss in this paper, the evidence is consistent with the notion that the Kalamazoo Promise led to increased enrollment by all ethnic groups. This increased enrollment was roughly in proportion to each group's initial enrollment. As a result, the Promise appears to have stabilized the various ethnic group percentages. This differs from pre-Promise trends.

This topic is sensitive because it would clearly be racist to imply that an all black and Hispanic school district could not have excellent student achievement. Therefore, we want to avoid any implication that stabilization of ethnic percentages is essential to a school district being of excellent quality.

However, stabilization of ethnic percentages may help promote two important goals. First, stabilization of ethnic percentages helps maintain racial integration in schools, which may

be an important social goal that is good in and of itself, independent of any impact on student achievement. Second, it would be naïve to deny that an integrated school district might be better able to maintain political support from a diverse community, and might be more attractive to at least some potential migrants to Kalamazoo. We might hope that an "all minority" school district could maintain strong political support from the Kalamazoo community, and could attract diverse in-migrants. But such hope might not represent what would be more likely to occur in the real world of how people actually behave, rather than how we hope they would behave.

The post-Promise stabilization of ethnic percentages is unusual. First, it is unusual in terms of the research literature. There is a research literature on "tipping" points in neighborhoods and schools. This literature suggests that for many year, both pre-Promise and post Promise, KPS has been well beyond the percentage minority that one would expect, based on behavior in other school districts around the U.S., to lead to continuous white flight (see, for example, the research by David Card et al., 2008.)

Second, the pre-Promise pattern of enrollment suggests that there was a pronounced pattern of white enrollment declines, as would be predicted based on the research on "tipping". These enrollment declines were accompanied by rough stability of black enrollment, and some increases in Hispanic enrollment, resulting in decreasing percentage shares of white students, and increasing percentage shares of black and Hispanic students. These pre-Promise trends were quite persistent, and showed little sign of slowing down.

Table 3 shows the ethnic percentages by year. As the table shows, from 1987 to 2005, prior to the Promise, the white percentage went down most years, averaging a drop of about 1 percent per year. The black percentage went up most years, as did the Hispanic percentage. Post

Promise, the black and white percentages have stabilized, and the Hispanic percentage has slightly increased.

A fuller picture is obtained by looking behind the percentages on the actual enrollment numbers by ethnic group and year. Figure 6 and Table 4 show these enrollment numbers.

As this figure and table show, the pre-Promise ethnic trends were not due to any persistent surge in black enrollment. Rather, black enrollment went up some years, and down some years, and especially in the latter part of the pre-Promise period, from the mid 1990s on, was roughly stable. Hispanic enrollment generally increased, although modestly in absolute terms, most years in the pre-Promise period. But the main driver of the percentage results was the almost continuous decline in white enrollment. White enrollment in KPS declined for every year after 1989 until 2005, usually by a couple hundred students per year.

Post Promise, enrollment for whites, blacks, and Hispanics has significantly increased. (Asian and Native American groups, with their small numbers, jump around a bit more.) Black enrollment in KPS is the highest it has ever been. The relative stability of the ethnic percentages post-Promise reflects a school district that appears to be attractive to a wide variety of ethnic groups.

The micro student data we are using from KPS shows roughly similar trends for the time period covered by that data, 2003-2009. We can use that data to explore how changes in entry numbers and exit rates by ethnic group help explain the stabilization of the various ethnic percentages post-Promise.

We first explore the entry numbers. The following figures show entry numbers for various grade levels. I only show entry numbers for whites, blacks, and Hispanics, as the entry numbers for other groups are so small.

Figure 7 shows entry numbers for kindergartners. The figure shows an increase in entry numbers for all groups in the fall of 2006, especially marked for whites. Entry numbers for blacks and Hispanics continue to increase, while white entry numbers have remained at a higher than pre-Promise level.

Figure 8 shows average entry numbers per grade for grades 1-8 for each of these three ethnic groups. For the grades 1-8 results, there is a more pronounced blip up for the immediate post-Promise year, followed by a return to previous entry levels. The one exception is black entry numbers for the fall of 2008. These entry numbers may be influenced by the closure as of the end of the previous school year of a predominantly black K-8 charter school.

Figure 9 shows entry numbers for grade 9. This is the highest grade at which new students entering KPS would be likely to qualify for any Promise assistance with college tuition.

The grade 9 results also show a blip up in the first post-Promise year. This is followed by a return to pre-Promise levels, with the possible exception that black entrant numbers seem to average a bit higher.

The grades 10-12 entry numbers should be unaffected by the Promise, since in theory none of these students would be eligible for the Promise. (There may be some exceptions for students who left KPS and returned, and then appealed to get an exception to the Promise rule that only the last entrance counts.) Figure 10 shows the trends in average grades 10-12 entry numbers by ethnic group. As one might expect, there is no obvious Promise related trend in these numbers.

We also looked at exit rates of the different ethnic groups. As a reminder, these exit rates are calculated for each grade and school year as the percentage of students in that grade in a given fall who exited KPS by the next fall. We consider grades K-8 and grades 9-11 separately,

as the determinants of exit rates will be quite different in these grade levels. Grade 12 is excluded because here most exits are due to graduation, rather than leaving KPS for another school or to drop out.

Figure 11 shows trends in average exit rates by ethnic group and school year for grades K-8. This figure shows that there has been an abrupt drop in the exit rate starting with the fall 2005 to fall 2006 period. This drop occurs for all three ethnic groups. The drop appears to be quite persistent for the remaining three post-Promise year to year transitions. Interestingly, this drop is most pronounced for Hispanics, followed by whites, and followed by blacks.

Figure 12 shows trends in average exit rates for grades 9-11 by school year and ethnic group. This figure does not show as pronounced and obvious a Promise-related pattern. The exit rates for Hispanics is trending downwards, but this trend preceded the Promise. Exit rates for blacks go down post Promise, but they were going down before the Promise, and also go back up again after the first post-Promise year before going back down.

We use entry numbers and exit rates to calculate what would have happened to enrollment in KPS by ethnic group if pre-Promise entry numbers and exit rates had remained unchanged. We use the average of the trends from the fall of 2003 to the fall of 2005 to make this projection.

Figure 13 shows these projections for whites, blacks, and Hispanics, and overlays these projections with what actually occurred. As this figure shows, absent the Promise, we would have projected that white enrollment would have continued to decline in KPS, whereas enrollment of other ethnic groups would have been stagnant.

We use these projections to find out what percentage of the Promise boost to enrollment occurred for different ethnic groups. Figure 14 shows the percentage of the total Promise boost to

enrollment that occurred for each ethnic group as of fall 2009. These percentages show the increase in enrollment of each ethnic group with the Promise compared to what is projected to have occurred if each ethnic group had followed pre-Promise trends for that group in entry numbers and exit rates. The percentages are compared with the pre-Promise percentages of total enrollment for each ethnic group.

As Figure 14 shows, the Promise effect is relatively strong for whites and Hispanics, and slightly below average for blacks compared to their baseline percentage share. The Promise effect stabilizes the white percentage and black percentage, whereas pre-Promise trends would have decreased the white percentage and increased the black percentage. The Promise further increased the Hispanic percentage in KPS.

Finally, we also did some analysis of the causes of the post Promise trends in enrollment by ethnic group. By this we mean allocating the trends among what amount is due to changes in entry numbers, and what amount is due to changes in exit rates. In general, both are important, but changes in exit rates become more important over time.

Table 5 shows these results for blacks, whites, and Hispanics. The table shows actual enrollment numbers for these three ethnic groups, simulated enrollment if pre-Promise averages of entry numbers and exit rates had continued, and simulated enrollment if only entry numbers had changed, or only exit rates had changed. The percent figures use these simulations to estimate how much of the Promise effect is due to entry numbers versus exit rates.

As the table shows, both changes in entry numbers and changes in exit rates are important for all three of these ethnic groups. The reduced exit rates have become more important over time in explaining the enrollment effects of the Promise. This is particularly true for Hispanics, for whom lower exit rates are somewhat more important in increasing enrollment.

The fact that exit rates are important in explaining Promise effects on the various ethnic groups implies that future ethnic group trends are going to depend to a large extent on which current KPS families choose to stay in KPS. But entry numbers are also important in determining ethnic trends. Therefore, these ethnic trends will to some extent depend on trends in the community.

READING AND MATH TEST SCORES

We might hope that Promise-style programs would improve student achievement. The prospect of a free or low-cost college education may provide students and families with an incentive to work harder in school. It may also help school staff increase expectations for all students.

However, we would not expect any effects to be immediate. Students do not necessarily know how to improve student achievement. For example, recent experiments by Fryer (2010) suggest that financial incentives provided directly for increased student test scores are not particularly effective. In contrast, financial incentives for students to increase "inputs" to student learning—such as paying students to read more books or for better attendance—are more effective in improving test scores. Fryer suggests that "incentives for inputs may be more effective because students do not know the educational production function, and thus have little clue how to turn their excitement about rewards into achievement" (Fryer 2010, abstract).

Therefore, any Promise effects on achievement would be expected to take place gradually over time. The gradual nature of Promise effects on achievement makes it difficult to distinguish Promise effects from other trends affecting student achievement.

Using our individual student data on KPS students, we analyzed student performance trends on the "MEAPs," the tests used in Michigan for accountability purposes under No Child Left Behind. (MEAP is an acronym for Michigan Educational Assessment Program.) The MEAPs have only been given at a similar time of the year with a similar design and scoring system since the fall of 2005, which happens to be just before the Kalamazoo Promise was announced. So we do have one year of pre-Promise data, but no pre-Promise trends.

We analyzed data on the reading and math portions of the MEAP, for grades 3 through 8, from the fall of 2005 to the fall of 2009. We chose to focus on average test scores, rather than the percentage "passing" the MEAP, that is exceeding state-set expectations. The percentage passing the MEAP is quite sensitive to where the passing "cut score" happens to be set relative to the distribution of student test scores in a school district (or other student group). Trends in percentage passing the MEAP largely depend on test score trends for students near the cut score, and therefore downweight what happens to students who are either significantly above or below that cut score. In contrast, the average scaled score on the MEAP depends upon the performance of all students taking the MEAPs. We might expect the incentives provided by the Kalamazoo Promise to have effects on the achievement of all students, not just those near the MEAP cut score.

We chose to rescale trends in average MEAP scores so they are more meaningfully related to how much schools typically improve student achievement. First, we used the standard deviation of the MEAP to translate changes in "scaled score" into "effect size units". The MEAP is designed so that each grade and each test has a "standard deviation" of 25 "scaled score" points (Michigan Department of Education, 2005). Effect size units is educational jargon for dividing changes in test scores due to a program, or that take place over time, by the test's

standard deviation. Second, we then used data on typical grade to grade changes in test scores in "effect size units" to translate the "effect size trends" on the MEAP into changes in "grade level equivalents." Specifically, we divided any changes in test scores for grade *x* by the typical change in test scores from grade *x* to grade *x*+1 in national studies of a wide variety of tests. These typical changes in test scores for reading and math tests are provided by Hill et al. (2007).[5] The resulting calculations show how any improvements in test scores from 2005 to some later year compare to how much students typically gain in a year of learning at that grade level.

This calculation of the grade level improvement over time provides a rough measure of the percentage productivity improvement of the schools in increasing student learning. For example, if over a four year period, a school district has increased test scores at grade *x* by the amount that students typically gain in 1.2 school years, or 1 year and 2 months, then the school district's productivity over that four year period for those students is 30 percent higher than average. In order for students to be 1.2 grade levels higher in test score performance in grade *x*, they must have improved their learning above their normal learning by 0.3 grade levels per year, which exceeds typical improvement of 1.0 grade levels by 30 percent.

We also adjusted student achievement changes over time for changes in student mix. In the case of KPS, as mentioned above, the ethnic group percentages have stabilized since the Promise. However, the percentage of students eligible for a free and reduced price lunch (families below 185 percent of the poverty line) has continued to increase, from 61 percent in 2005-06 to 68 percent in 2009-10 (authors' calculations using individual student data file.). As free and reduced price lunch eligible students on average tend to score somewhat lower on

[5] According to Hill et al., the average effect-size for reading from grade to grade are: grade 3 to 4: 0.36; 4 to 5: 0.40; 5 to 6: 0.32; 6 to 7: 0.23; 7 to 8: 0.26; 8 to 9: 0.24. For math, these grade to grade gains are: 3 to 4: 0.52; 4 to 5: 0.56; 5 to 6: 0.41; 6 to 7: 0.30; 7 to 8: 0.32; 8 to 9: 0.22.

standardized tests, this increased FRL percentage would be expected to depress test scores somewhat.

To adjust for student mix, we first estimated, separately for each grade level, and for reading and math tests, how student performance varies with student characteristics, along with a dummy variable for which year the test was given in. We then adjusted for student mix by assuming that all grade levels and years had the same student mix as the average over all grade levels and years. This is equivalent to using the year dummies in the regression to estimate the year by year improvements in performance for each grade level and test.

Table 6 presents data on changes in KPS performance on reading and math MEAPs, compared to the fall of 2005, before the Kalamazoo Promise. Changes are presented for each grade level and each year from the fall of 2006 to the fall of 2009. Changes are presented both as raw changes in mean test scores, and as changes holding constant the ethnic mix, gender mix, and free and reduced price lunch percentage in the school district. All changes are presented in grade level gains, so for example, a gain of 2.11 for 8th grade in the fall of 2009 for reading, after adjustment, means students are performing better than they did in the fall of 2005 by an amount equivalent to how much students ordinarily progress in 2 school years plus a little over one month. They are performing the equivalent of more than 2 grade levels higher in the fall of 2009 than they were in the fall of 2005.

As this table shows, there are surprisingly large improvements in student test score performance since the fall of 2005. Average student performance in many cases has gone up one or two grade levels. These improvements are greater in the higher grades. The improvements occurred both in the 2005-2007 period, right after the Promise, and from 2007-2009. The pace of improvement averaged a similar rate in math in 2005-2007 and 2007-09, but picked up in

reading in 2007-09. Adjusting for student mix has very slight average effects on measured student achievement gains.

It could be argued that these improvements represent "teaching to the test" rather than true student achievement gains, or at least that students and teachers are becoming more familiar with this version of the MEAP test, which was introduced in the fall of 2005. Therefore, we looked at another standardized test that KPS has given consistently to all students in grades 3 to 6. We have data on student performance on the "Ed Performance" test from the fall of 2005 to the fall of 2008, grades 3 to 6. (Data for the fall of 2009 will be incorporated later into this analysis). The Ed Performance test is a test taken on a computer that is adaptive, in that the difficulty of subsequent test questions is adjusted as students get questions right or wrong. Students are assigned a score on a scale that is comparable across grade levels, that is, students in 3rd grade who get a lot of questions right may eventually get 5th grade level questions, and a particular score for a student means the same level of achievement across grade levels.

We analyzed individual student performance on both the reading and math Ed Performance tests for the fall 2005, fall 2006, fall 2007, and fall 2008 tests. Changes in average test score performance since the fall of 2005 were translated into grade level equivalents by using the average gain from grade to grade in mean Ed Performance test score over these four test periods. That is, the grade level equivalence of a particular change from the fall of 2005 to the fall of 2008 in the average 3rd grade reading test score was measured by dividing the change in the average reading score for 3rd graders over this time period by the average improvement from 3rd to 4th grade in Ed Performance test scores for these four years. We measured both the unadjusted average change in a given grade level's test scores, without adjusting for changes in student mix, and the change adjusted for student mix. The change adjusted for student mix was

calculated based on a preliminary regression that for each grade and each type of test (reading or math) explained the individual student's test score as a function of ethnic group, gender, free and reduced price lunch status, and dummy variables for the year the test was taken in. The adjusted change in average test scores for a given grade was the change in student test scores from fall of 2005 that would be predicted if the student mix had been the same for all years and grades.

Table 7 shows the results. These results show some differences with the MEAP results, but still suggest some significant improvements in reading performance between fall of 2005 and fall of 2008. The adjustments for student mix make more difference to the results. Much of the math effects seem to disappear. (One exception is an improvement in adjusted math scores for 6th grade in the last year.) This may reflect differences between the implicit math expectations of the Ed Performance test and the Michigan math curriculum. But reading test score improvements remain, particularly for higher grades, and particularly for the last year of these data, 2008. For example, adjusted reading scores in sixth grade in the fall of 2008 are almost one grade level higher than adjusted reading scores in the fall of 2005, at a gain of 0.94 in grade level equivalents. This is about one-third less than the analogous MEAP estimate of a 1.40 gain from Table 6, but it is still a considerable student achievement gain when compared to what students typically learn in school.

Of course, whether these improvements in reading test performance are due to the Kalamazoo Promise and its associated changes is unclear. From these data, we don't even know whether these improvements in test performance are especially large compared to other districts in Michigan, which would at least be suggestive of something special occurring in KPS. Therefore, we went on to analyze test score trends on the MEAP in KPS compared to the state as a whole, and compared to districts "similar" to KPS.

To find similar districts, we referred to the website of the Middle Cities Education Association. MCEA is an association that represents urban school districts in Michigan outside Detroit, including KPS. We chose "Middle Cities" districts that were similar to KPS in being "mid-sized," having roughly similar percentages of free and reduced price eligible students, and having roughly similar non-White enrollment percentages. These roughly similar districts ended up including: Battle Creek; Jackson; Lansing; Romulus; Ypsilanti. Table 8 presents some summary data for these districts and for KPS, as well as comparable statewide data.

For each of these school districts, and for the state as a whole, we calculated average changes in MEAP reading and math scores by grade level from the fall of 2005 to the fall of 2009. As was done above, we re-expressed these changes in MEAP scores by dividing by MEAP standard deviations to get effect sizes, and then using Hill et al. (2007) to convert effect sizes into a change in "grade level equivalents."

At the state level, and for these other "similar" school districts, we do not have access to individual student data to adjust the average test scores simultaneously for all student characteristics. We did do some adjustment for increases in free and reduced price lunch percentage. For each school district, in addition to looking at changes in overall MEAP scores, we calculated the weighted change in test scores for students eligible for free and reduced price, and students not so eligible, with the weights held constant at the percentage KPS had for that grade level and test in the fall of 2009. This calculation essentially simulates what the test score gain would be if each school district always had the KPS fall 2009 percentage free and reduced price eligible.

Table 9 shows the results. As before, these test score results show considerable improvements in KPS.[6] But there are also large improvements in test scores statewide and in these "similar districts." We focus on the results adjusted for student mix, which makes more difference for math test score improvements. Overall, KPS reading test scores, averaged over all grade levels, improved by about two and a half months more than the average of these similar school districts (an improvement of 1.34 grade level equivalents vs. an average improvement over these five school districts of 1.08 grade level equivalents, or a KPS advantage of 0.26 grade levels). KPS math test scores, averaged over all grade levels, improved by about three months more than the average of these five similar school districts (an improvement of 1.54 grade level equivalents vs. an average improvement in these five similar school districts of 1.23 grade equivalents, or a KPS advantage of 0.31 grade levels). An improvement of three months over a period of four years is an improvement of three-quarters of a month per year. Although this improvement may sound small, this implies considerably greater productivity growth. In order to achieve such an improvement, the implication is that during an average school year of nine months, KPS would need to achieve three-quarters of a month greater learning growth per school year, which is an increase in learning of about 8 percent more per school year.

KPS improvements are not as obvious relative to the state. Adjusted for student mix, KPS has average improvements relative to the state of 1.5 months for reading (1.34 vs. 1.19) and 0.6 months for math (1.54 vs. 1.48). However, given that the state student mix is quite different from KPS's—which we only partially control for with our procedure—it is unclear whether this is comparing apples and oranges.

[6] The unadjusted test score changes are quite similar, as one would expect. It is unclear why they are not identical, but this could be due to minor data glitches either in the state data or in the individual student data file we have.

Are KPS's greater MEAP test score gains from 2005 to 2009 than similar school districts attributable in part to the Promise? This is hard to say. All we can really say is that KPS has had greater than average test score improvements in the post-Promise era. There is no obvious pattern in these test score data that screams "Promise effect." On the other hand, it is not clear that we would expect to see an immediate Promise effect in test score data. Promise-style programs are likely to have gradual effects over time on student achievement that will be difficult to separate from other initiatives being taken to boost student achievement.

CONCLUSION

The Kalamazoo Promise has clearly had large effects in increasing Kalamazoo Public Schools' enrollment. This was already obvious in publicly available data prior to this paper. What this paper adds is that much of this effect is due to declines in exit rates, not just the one-time surge in entrant numbers. Furthermore, the dynamics of the entrant numbers and exit rates suggest that the district will continue to experience Promise-related increases in enrollment for the next several years.

This paper also highlights the Promise's contribution to stabilizing white and black percentages in KPS. This is because the Promise has boosted both white and black enrollment, relative to a trend in which black enrollment would have been expected to be stagnant and white enrollment would have continued to decline. The Promise has probably boosted the Hispanic percentage in KPS, which was already increasing.

The post-Promise era has been accompanied by large increases in KPS reading and math test scores. These increases are very large in terms of normal school year learning, and are

greater than those of similar Michigan school districts. However, it is unclear the extent to which these student achievement gains are due to the Promise or to other KPS programs or trends.

These findings suggest that Promise style programs can dramatically change the attractiveness of districts and lead to immediate, large, and sustained changes in behavior affecting enrollment. Effects on student achievement are likely to be more subtle and more difficult to untangle from other causes.

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Table 1. Post-Promise Enrollment Trends, and Their Relationship to Changed Entry Numbers and Exit Rates

	Actual enrollment	Increase compared to continuation of pre-Promise entry numbers and exit trends	Increase from pre-Promise trends if only entry numbers had changed	Increase from pre-Promise numbers if only exit rates had changed	% of Promise increase due to increased entry numbers	% of Promise increase due to decreased exit rates
Fall 2006	11,220	1,243	663	581	53.3%	46.7%
Fall 2007	11,315	1,473	648	833	44.0%	56.6%
Fall 2008	11,647	1,895	769	1,122	40.6%	59.2%
Fall 2009	12,106	2,405	831	1,546	34.6%	64.3%

NOTE: Actual enrollment numbers for KPS are calculated by authors as of fall count day, based on micro student records. Change in enrollment numbers in next column compares actual enrollment to enrollment if pre-Promise averages from 2003–2005 for both entry numbers and exit rates by grade had continued unchanged. Other columns consider only changing entry numbers but not exit rates, and exit rates but not entry numbers. The percentage due to entry numbers versus exit rates is calculated from preceding columns. The percentage due to entry numbers (exit rates) is the change due to only entry numbers (exit rates) changing, as a percentage of the total change in enrollment comparing actual enrollment with enrollment without any changes in entry numbers or exit rates. Note that these percentage changes do not exactly sum to 100 percent, as entry number changes and exit rate changes interact in determining enrollment.

Table 2. Forecasts of Future KPS Enrollment, Under Various Scenarios

	Alternative enrollment forecasts for KPS:	
	Assuming continuation of entry rates and exit rates averaged over 2006–2009	Assuming continuation of exit rates and entry numbers averaged over 2006–2009
Fall 2009	12,106	12,106
Fall 2010	12,524	12,318
Fall 2011	12,957	12,483
Fall 2012	13,386	12,601
Fall 2013	13,902	12,732
Fall 2014	14,438	12,835

NOTE: Forecasts of KPS enrollment are based on various assumptions about persistence of previous trends in entry and exits. Both scenarios assume continuation of each grade's average exit rate over 2006 to 2008 period. Exit rate for year *x* is percentage of students in a grade as of the fall count for year *x* who are not there by the fall count of the next school year. First scenario assumes each grade's entry rates over 2007 to 2009 period (omitting first Promise entry rate in 2006) will continue. Entry rate is percentage of new students in a grade as of the fall count day, as a percentage of the number of students in the previous grade the previous fall count day. Second scenario assumes continuation of each grade's average entry numbers over the 2007 to 2009 period.

Table 3. Percentages of KPS Students in Various Ethnic Groups, 1987 to 2009

	Native American	Black	Asian	Hispanic	White
1987	1.4%	34.9%	1.2%	3.2%	59.2%
1988	1.0%	35.2%	1.2%	3.7%	58.9%
1989	1.0%	35.0%	1.0%	4.0%	59.0%
1990	1.0%	36.0%	1.0%	4.0%	58.0%
1991	0.9%	36.1%	0.9%	4.0%	58.0%
1992	0.9%	37.0%	1.1%	4.0%	57.0%
1993	1.0%	37.5%	1.2%	4.1%	56.2%
1994	1.1%	38.7%	1.2%	4.2%	54.8%
1995	1.0%	40.2%	1.1%	4.5%	53.1%
1996	1.0%	41.5%	1.1%	4.8%	51.6%
1997	1.1%	42.3%	1.2%	5.0%	50.3%
1998	1.0%	43.9%	1.3%	5.5%	48.3%
1999	1.1%	43.7%	1.4%	6.2%	47.6%
2000	1.0%	44.3%	1.5%	6.6%	46.5%
2001	0.9%	45.5%	1.8%	7.3%	44.5%
2002	1.1%	45.6%	1.8%	7.5%	44.0%
2003	1.2%	46.6%	1.8%	8.1%	42.2%
2004	1.1%	47.4%	1.5%	8.4%	41.5%
2005	1.1%	48.2%	2.0%	8.5%	40.2%
2006	1.1%	48.2%	2.1%	8.9%	39.6%
2007	1.1%	47.6%	2.2%	9.5%	39.8%
2008	1.0%	47.7%	2.0%	9.7%	39.6%
2009	1.0%	47.5%	2.1%	10.1%	39.3%

NOTE: These data were provided by KPS. They reflect raw counts of students, not FTE counts. These numbers include special ed., alternative ed., and students at the Kalamazoo Area Math and Science Center, a selective half-day program for high school students that serves a countywide student population, but is administered by KPS. These KAMSC numbers include students whose "home school" is not a KPS school. The numbers exclude out-of-district Education for Employment (Kalamazoo County's vocational education program) students attending KPS, adult ed., preschool students, and Head Start students. The inclusion of all KAMSC students increases the percentage white and Asian American a bit, but is roughly a constant factor over time. KPS classifies ethnic groups in mutually exclusive categories, so that Hispanic is used as a separate ethnic category. Therefore, in terms of official government definitions, the categories for all the other groups are implicitly "black non-Hispanic," "white non-Hispanic," etc.

Table 4. Numbers of KPS Students in Various Ethnic Groups, 1987 to 2009

	Native American	Black	Asian	Hispanic	White
1987	187	4,503	160	411	7,645
1988	126	4,396	149	459	7,345
1989	130	4,399	126	498	7,416
1990	126	4,530	129	500	7,299
1991	115	4,542	119	508	7,298
1992	119	4,653	133	502	7,168
1993	131	4,692	144	515	7,023
1994	132	4,808	153	521	6,807
1995	123	4,963	140	561	6,556
1996	123	5,069	130	586	6,310
1997	139	5,140	151	609	6,101
1998	120	5,093	152	639	5,600
1999	120	4,979	161	708	5,420
2000	118	4,986	173	738	5,230
2001	101	5,134	203	825	5,021
2002	123	5,111	200	843	4,925
2003	132	5,075	199	881	4,599
2004	119	4,925	159	869	4,310
2005	111	5,008	205	881	4,177
2006	126	5,478	244	1,016	4,503
2007	122	5,511	251	1,095	4,608
2008	117	5,665	237	1,153	4,696
2009	123	5,820	261	1,232	4,815

NOTE: These data were provided by KPS. They reflect raw counts of students, not FTE counts. These numbers include special ed., alternative ed., and students at the Kalamazoo Area Math and Science Center, a selective half-day program for high school students that serves a countywide student population, but is administered by KPS. These KAMSC numbers include students whose "home school" is not a KPS school. The numbers exclude out-of-district Education for Employment (Kalamazoo County's vocational education program) students attending KPS, adult ed., preschool students, and Head Start students. The inclusion of all KAMSC students probably increases the percentage white and Asian American a bit, but is probably roughly a constant factor over time. KPS classifies ethnic groups in mutually exclusive categories, so that Hispanic is used as a separate ethnic category. Therefore, in terms of official government definitions, the categories for all the other groups are implicitly "black non-Hispanic," "white non-Hispanic," etc. These numbers are depicted in Figure 6.

Table 5. Decomposition of Promise Effects on Enrollment for Selected Ethnic Groups into Effects Via Changes in Entry Numbers and Effects Via Changes in Exit Rates

		Actual enrollment	No change in entry numbers or exit rates	Change in entry numbers only	Change in exit rates only	Percent of Promise effect due to changes in entry numbers	Percent of Promise effect due to changes in exit rates
Black	Fall 2003	5,092	5,092	5,092	5,092		
	Fall 2004	4,931	4,931	4,931	4,931		
	Fall 2005	5,024	5,024	5,024	5,024		
	Fall 2006	5,517	5,001	5,254	5,264	49.0%	51.0%
	Fall 2007	5,493	4,977	5,182	5,283	39.8%	59.3%
	Fall 2008	5,674	4,957	5,301	5,324	47.9%	51.2%
	Fall 2009	5,877	4,943	5,321	5,475	40.5%	57.0%
White	Fall 2003	4,380	4,380	4,380	4,380		
	Fall 2004	4,108	4,108	4,108	4,108		
	Fall 2005	3,987	3,987	3,987	3,987		
	Fall 2006	4,352	3,817	4,107	4,062	54.3%	45.7%
	Fall 2007	4,397	3,702	4,014	4,069	44.9%	52.8%
	Fall 2008	4,493	3,623	3,980	4,104	41.0%	55.3%
	Fall 2009	4,649	3,570	3,994	4,177	39.4%	56.3%
Hispanic	Fall 2003	893	893	893	893		
	Fall 2004	877	877	877	877		
	Fall 2005	889	889	889	889		
	Fall 2006	1,030	884	963	951	54.4%	45.6%
	Fall 2007	1,095	887	970	1,007	39.7%	57.7%
	Fall 2008	1,152	887	960	1,070	27.5%	69.0%
	Fall 2009	1,236	886	992	1,117	30.3%	66.0%

NOTE: Simulated enrollment effects maintain pre-Promise average levels of entry numbers and/or exit rates. Percentage due to entry numbers and/or exit rates takes enrollment increase of changes in only entry numbers or exit rates, compared to no change, as a percent of the change comparing the actual enrollment numbers to the simulation assuming no change in entry numbers or exit rates.

Table 6. KPS Test Score Changes, Compared to Fall 2005, on MEAP Reading and Math Test, in Grade Level Equivalents, Unadjusted and Adjusted for Student Mix

	3rd grade	4th grade	5th grade	6th grade	7th grade	8th grade	Average 3rd–8th grades
READING							
	Unadjusted for changes in student composition						
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2006	−0.10	0.41	0.31	0.62	0.45	0.56	0.38
2007	0.09	0.40	1.49	0.47	−0.07	0.52	0.48
2008	0.20	0.31	0.60	1.20	0.99	1.25	0.76
2009	0.69	0.98	1.48	1.25	2.06	1.99	1.41
average, 2006–2009	0.22	0.52	0.97	0.88	0.86	1.08	0.76
	Adjusted for changes in student composition						
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2006	−0.02	0.26	0.34	0.78	0.10	0.67	0.35
2007	0.16	0.35	1.45	0.61	−0.36	0.49	0.45
2008	0.33	0.24	0.77	1.40	0.79	1.27	0.80
2009	0.72	0.96	1.54	1.59	1.79	2.11	1.45
average, 2006–2009	0.29	0.45	1.03	1.09	0.58	1.13	0.76
MATH							
	Unadjusted for changes in student composition						
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2006	−0.32	0.33	0.31	0.35	0.81	0.49	0.33
2007	−0.03	0.20	0.87	1.13	1.14	0.73	0.67
2008	0.22	0.44	0.44	1.96	1.97	1.77	1.14
2009	0.48	0.90	0.88	1.77	2.48	1.70	1.37
average, 2006–2009	0.09	0.47	0.62	1.30	1.60	1.18	0.88
	Adjusted for changes in student composition						
2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2006	−0.26	0.25	0.35	0.48	0.53	0.60	0.32
2007	0.02	0.19	0.85	1.24	0.90	0.66	0.64
2008	0.30	0.42	0.59	2.13	1.81	1.75	1.17
2009	0.48	0.90	0.94	2.07	2.28	1.80	1.41
average, 2006–2009	0.14	0.44	0.68	1.48	1.38	1.21	0.89

NOTE: These data were calculated using individual student records obtained from KPS. As explained in text, the changes in mean scaled score on each MEAP were divided by MEAP standard deviations to re-express in effect sizes, and then divided by typical year-to-year gains in effect sizes, according to Hill et al. (2007), to yield changes in test scores in grade level equivalents. This represents how much student performance has changed in terms of what grade level of student the average performance represents on that grade's MEAP test. Adjusted numbers recalculate means at overall sample averages for ethnic percentages, gender, and free and reduced lunch eligibility.

Table 7. KPS Test Score Changes, Compared to Fall 2005, on Ed Performance Reading and Math Tests, in Grade Level Equivalents, Unadjusted and Adjusted for Student Mix

	3rd grade	4th grade	5th grade	6th grade	Average 3rd–6th grades
READING					
	Unadjusted for changes in student composition				
2005	0.00	0.00	0.00	0.00	0.00
2006	−0.26	0.32	0.28	−0.12	0.05
2007	−0.06	0.09	0.71	−0.28	0.12
2008	0.08	0.40	0.42	0.52	0.35
Average, 2006–2008	−0.08	0.27	0.47	0.04	0.17
	Adjusted for changes in student composition				
2005	0.00	0.00	0.00	0.00	0.00
2006	−0.15	0.21	0.31	0.04	0.10
2007	0.07	0.11	0.71	−0.05	0.21
2008	0.25	0.38	0.60	0.94	0.54
Average, 2006–2008	0.06	0.23	0.54	0.31	0.28
MATH					
	Unadjusted for changes in student composition				
2005	0.00	0.00	0.00	0.00	0.00
2006	−0.30	0.14	0.03	−0.28	−0.10
2007	−0.19	−0.23	0.36	−0.39	−0.11
2008	−0.12	−0.16	−0.03	−0.03	−0.08
Average, 2006–2008	−0.20	−0.09	0.12	−0.23	−0.10
	Adjusted for changes in student composition				
2005	0.00	0.00	0.00	0.00	0.00
2006	−0.20	0.07	0.09	−0.03	−0.02
2007	−0.10	−0.22	0.38	−0.20	−0.04
2008	−0.01	−0.17	0.14	0.33	0.07
Average, 2006–2008	−0.10	−0.11	0.20	0.03	0.01

NOTE: These data were calculated using individual student records obtained from KPS. As explained in text, the changes in mean score on each Ed Performance test were divided by average grade-to-grade gains in scores for these four years, to yield changes in test scores in grade level equivalents. This represents how much student performance has changed in terms of what grade level of student the average performance represents on that grade's Ed Performance test. Adjusted numbers recalculate means at overall sample averages for ethnic percentages, gender, and free and reduced price lunch eligibility.

Table 8. Kalamazoo Public Schools' Characteristics, Compared to Those of Similar School Districts

District	Enrollment	Free and reduced price lunch percentage	Non-White Percentage
KPS	10,143	61%	59%
Battle Creek	7,134	65%	49%
Jackson	6,696	65%	45%
Lansing	16,007	67%	64%
Romulus	4,315	52%	57%
Ypsilanti	4,163	58%	66%
Statewide	1,697,600	36%	28%

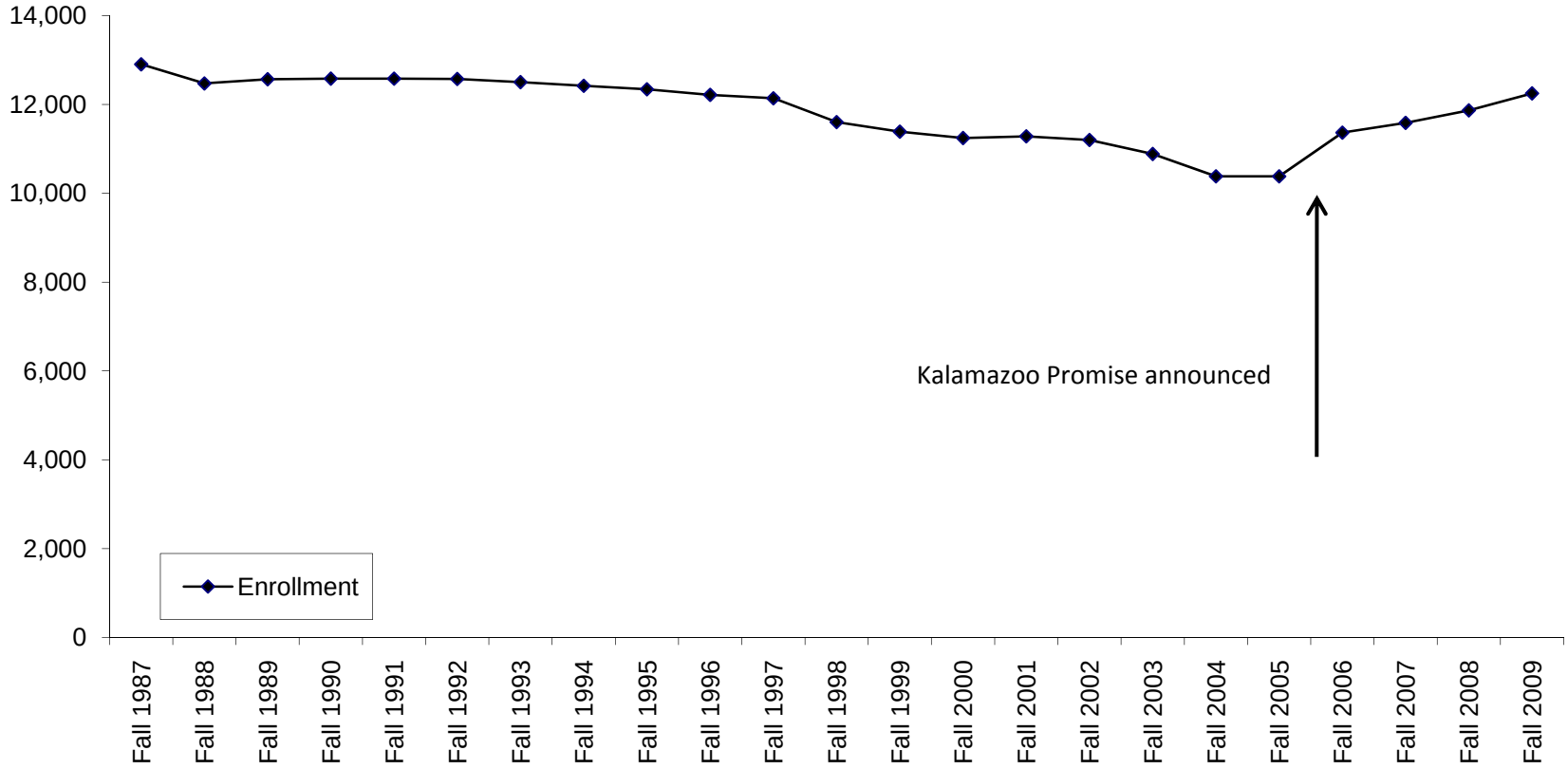
NOTE: Statistics for school districts come from Middle Cities Education Association (2006). Statistics come from 2005–06 school year. State numbers were downloaded from the Center for Education Performance and Improvement, and are total student counts for 2005, % non-white for 2005, and % free and reduced price lunch for 2006.

Table 9. Changes from Fall 2005 to Fall 2009 In Reading and Math MEAP Scores, by Grade Level, for KPS, Similar Districts, and Statewide, Unadjusted and Adjusted for Student Mix

	3rd grade	4th grade	5th grade	6th grade	7th grade	8th grade	Average 3rd–8th grades
READING							
	Unadjusted for student mix						
KPS	0.63	0.94	1.46	1.20	1.98	1.92	1.36
Battle Creek	0.67	0.40	0.67	1.15	1.17	1.38	0.91
Jackson	0.57	0.69	0.72	1.25	1.17	1.57	0.99
Lansing	0.54	0.62	0.94	1.29	0.26	1.53	0.86
Romulus	0.70	0.29	1.26	1.53	2.03	2.52	1.39
Ypsilanti	0.00	0.59	1.16	1.69	1.20	2.17	1.13
Average of "similar" districts	0.50	0.52	0.95	1.38	1.17	1.83	1.06
Statewide	0.46	1.00	1.33	1.23	1.37	1.72	1.18
	Adjusted for student mix						
KPS	0.58	0.77	1.33	1.26	1.68	2.45	1.34
Battle Creek	0.55	0.39	0.61	1.04	1.22	1.83	0.94
Jackson	0.51	0.62	0.77	1.19	1.04	1.86	1.00
Lansing	0.48	0.59	0.91	1.18	0.53	1.89	0.93
Romulus	0.56	0.34	1.18	1.40	1.95	2.97	1.40
Ypsilanti	0.09	0.64	1.12	1.46	1.03	2.50	1.14
Average of "similar" districts	0.44	0.51	0.92	1.25	1.16	2.21	1.08
Statewide	0.45	0.74	1.14	1.28	1.29	2.24	1.19
MATH							
	Unadjusted for student mix						
KPS	0.46	0.88	0.87	1.72	2.44	1.69	1.34
Battle Creek	0.58	0.21	1.05	1.32	2.08	1.45	1.11
Jackson	0.42	0.73	0.81	2.04	2.18	1.45	1.27
Lansing	0.32	0.53	0.78	1.33	1.29	0.35	0.77
Romulus	0.40	0.11	−0.25	1.56	2.65	1.93	1.07
Ypsilanti	−0.42	0.19	0.42	1.87	2.51	2.38	1.16
Average of "similar" districts	0.26	0.35	0.56	1.62	2.14	1.51	1.08
Statewide	0.30	0.55	1.06	1.97	2.35	1.71	1.32
	Adjusted for student mix						
KPS	0.60	0.96	1.07	2.04	2.51	2.05	1.54
Battle Creek	0.65	0.26	1.17	1.50	2.29	1.68	1.26
Jackson	0.52	0.86	1.03	2.33	2.27	1.66	1.44
Lansing	0.38	0.62	0.95	1.52	1.49	0.53	0.91
Romulus	0.49	0.20	−0.08	1.75	2.86	2.12	1.22
Ypsilanti	−0.32	0.41	0.62	2.00	2.59	2.53	1.30
Average of "similar" districts	0.34	0.47	0.74	1.82	2.30	1.70	1.23
Statewide	0.47	0.70	1.14	2.14	2.52	1.92	1.48

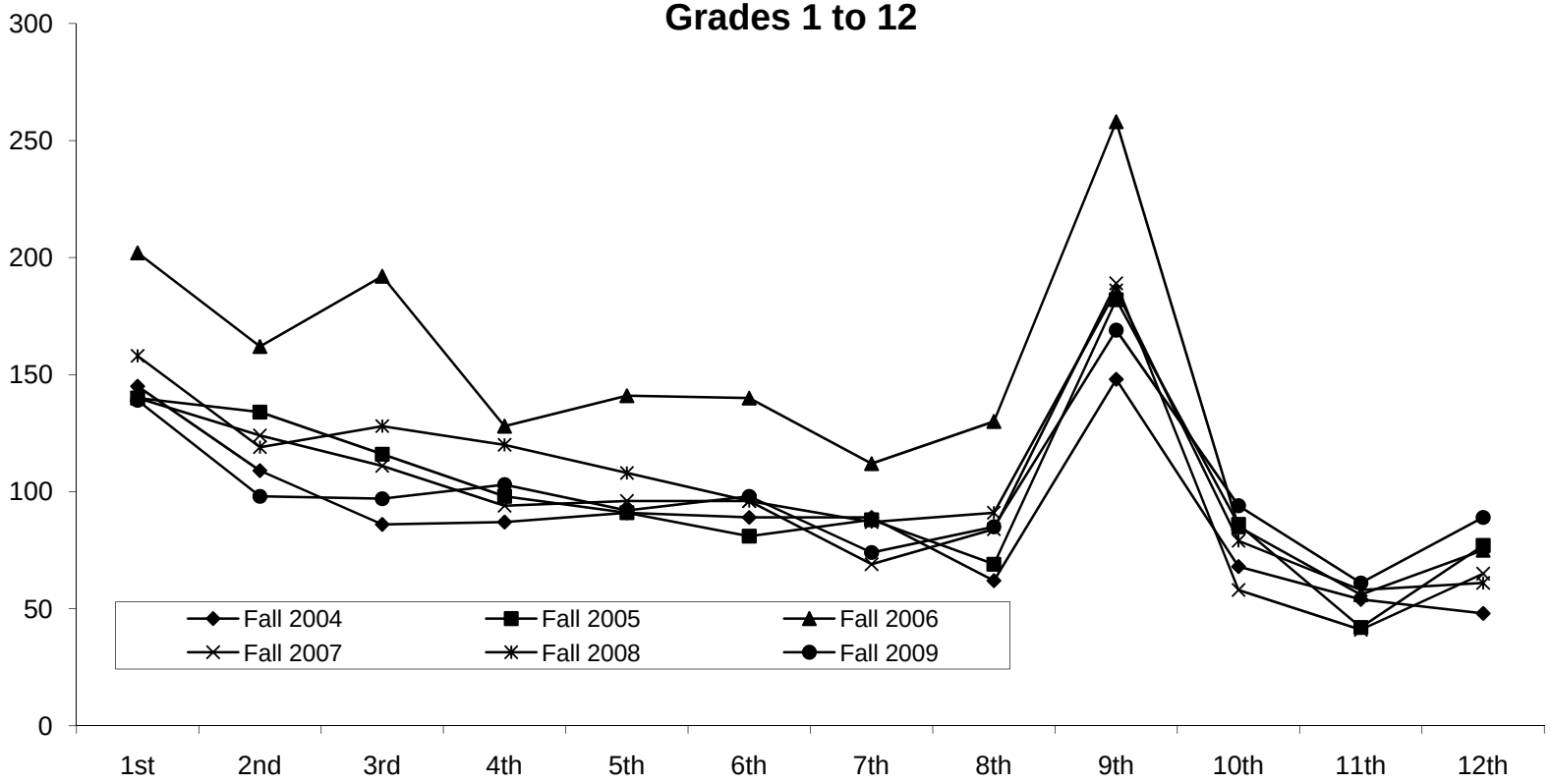
NOTE: These calculations are based on data downloaded from the Michigan Department of Education. Average MEAP scaled score for the fall of 2009 by grade level and test is compared with the average MEAP scaled score for the fall of 2005. These changes in scaled scores are converted to grade level equivalents by using MEAP standard deviation of 25, and using data from Hill et al. (2007) on average grade-to-grade test score gain in effect sizes at these various grade levels. The adjustment for student mix used here only adjusts for free and reduced price lunch percentage. The average MEAP score change is calculated by reweighing the gains for free and reduced price lunch students, and paid lunch students, by the percentages that actually prevailed for KPS in the fall of 2009. Therefore, it answers the question of how test scores would have changed if all districts for both 2005 and 2009 had the KPS free and reduced price lunch percentage.

Figure 1. KPS Enrollment, by Year



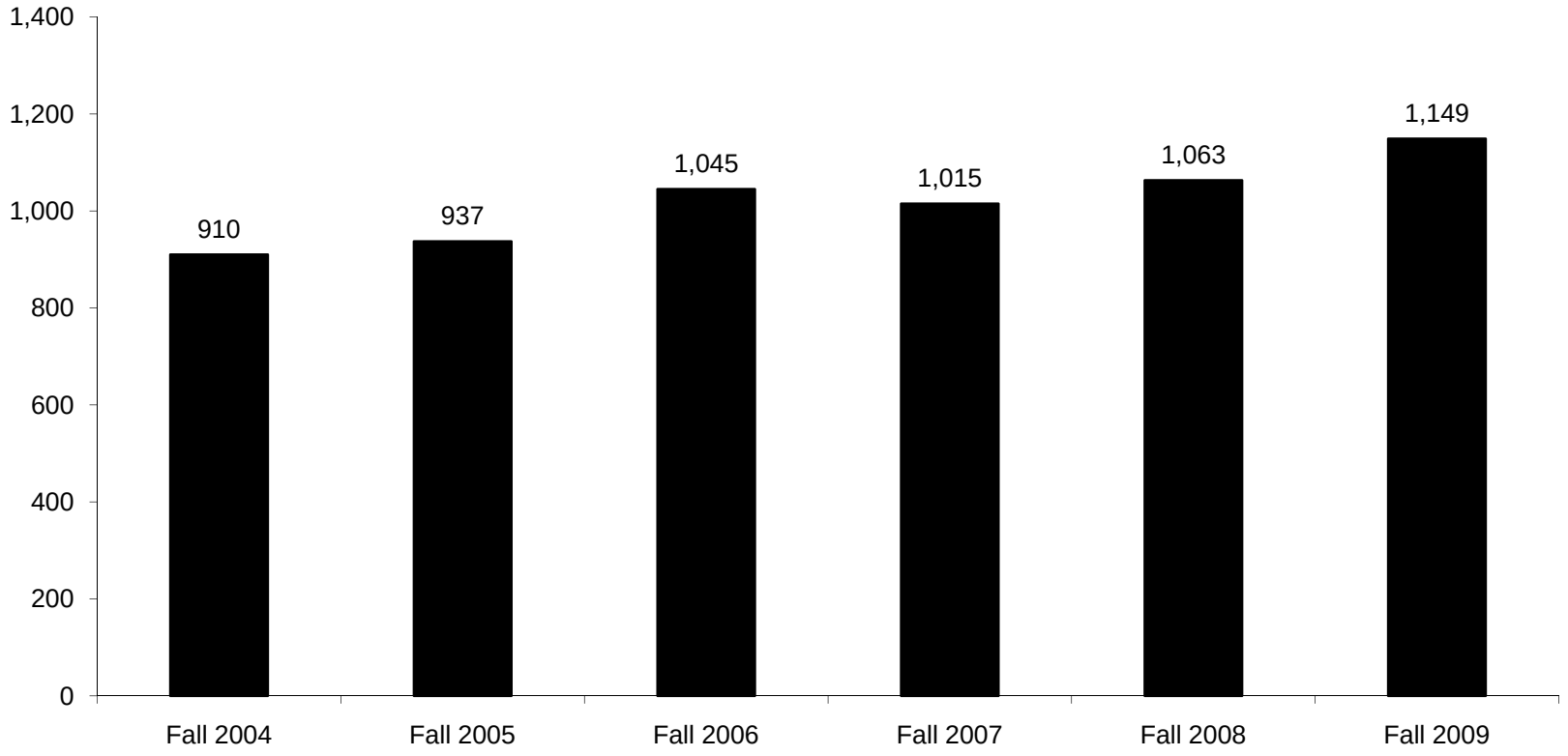
Note: Data come from KPS, and are based on state count. Numbers include special ed, alternative ed, and students at Kalamazoo Area Math and Science Center. These are total student counts, not full time equivalent counts. Numbers exclude out-of-district Education for Employment (vocational education) students, adult ed, PEEP (pre-school) and Head Start.

Figure 2. New Student Entrants to KPS in Fall of Recent School Years, Grades 1 to 12



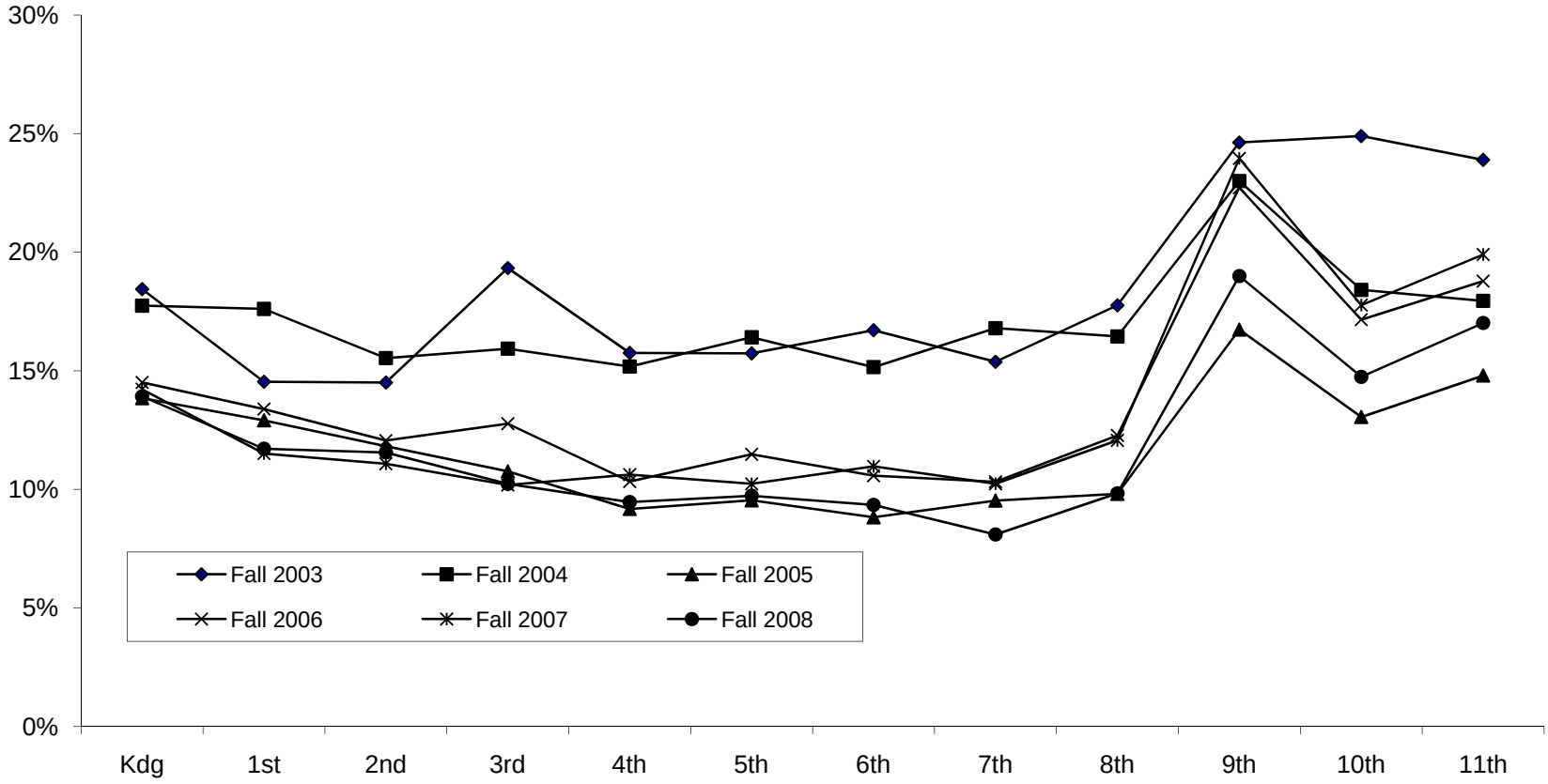
Note: Data come from micro student data from KPS. A new entrant is a student enrolled in KPS as of the fall count day of a particular school year who was not enrolled as of the fall count day the previous school year.

Figure 3. New Kindergartners in KPS, Recent School Years



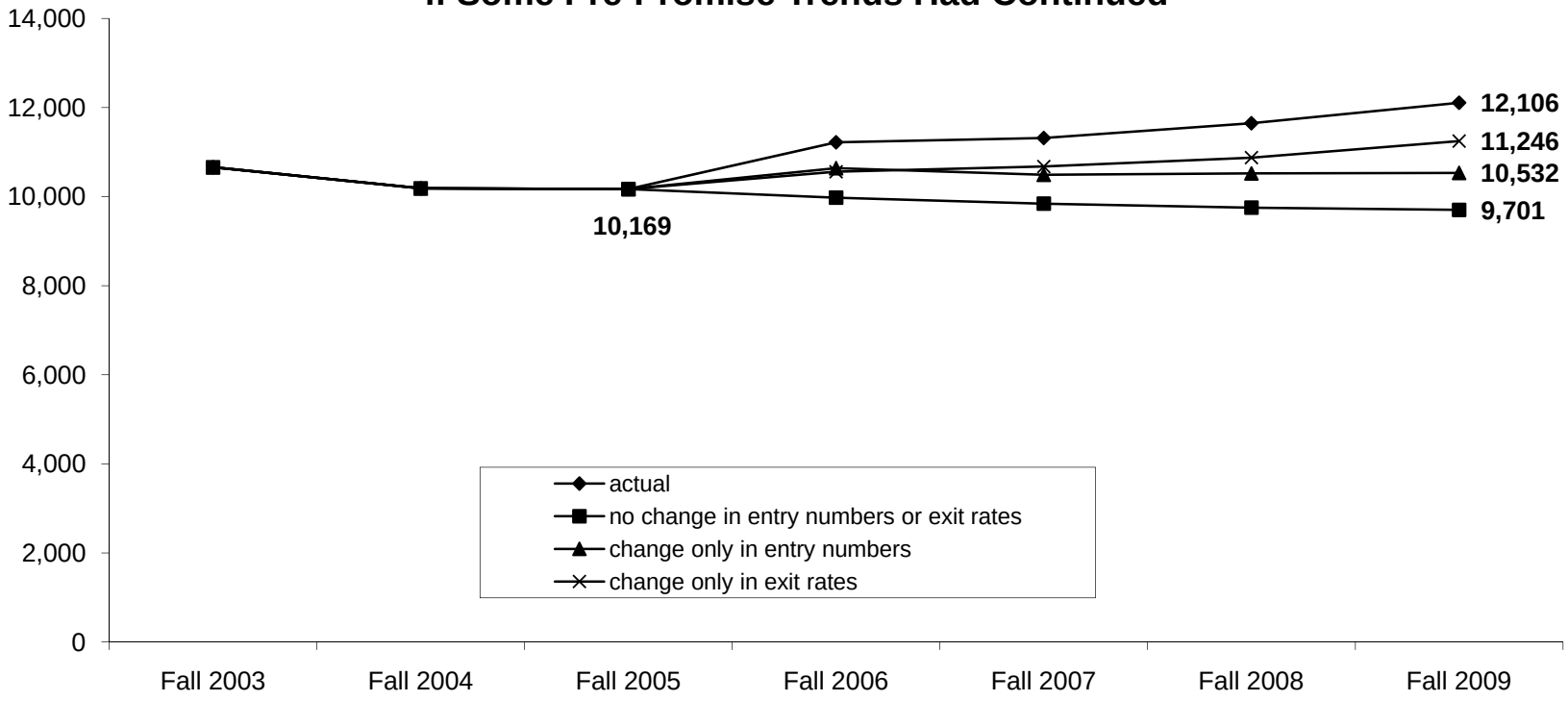
Note: Data come from micro student data from KPS. New kindergartners are those present on fall count day who were not enrolled in kindergarten the previous year.

Figure 4. Student Exit Rates in KPS, by Grade and Year



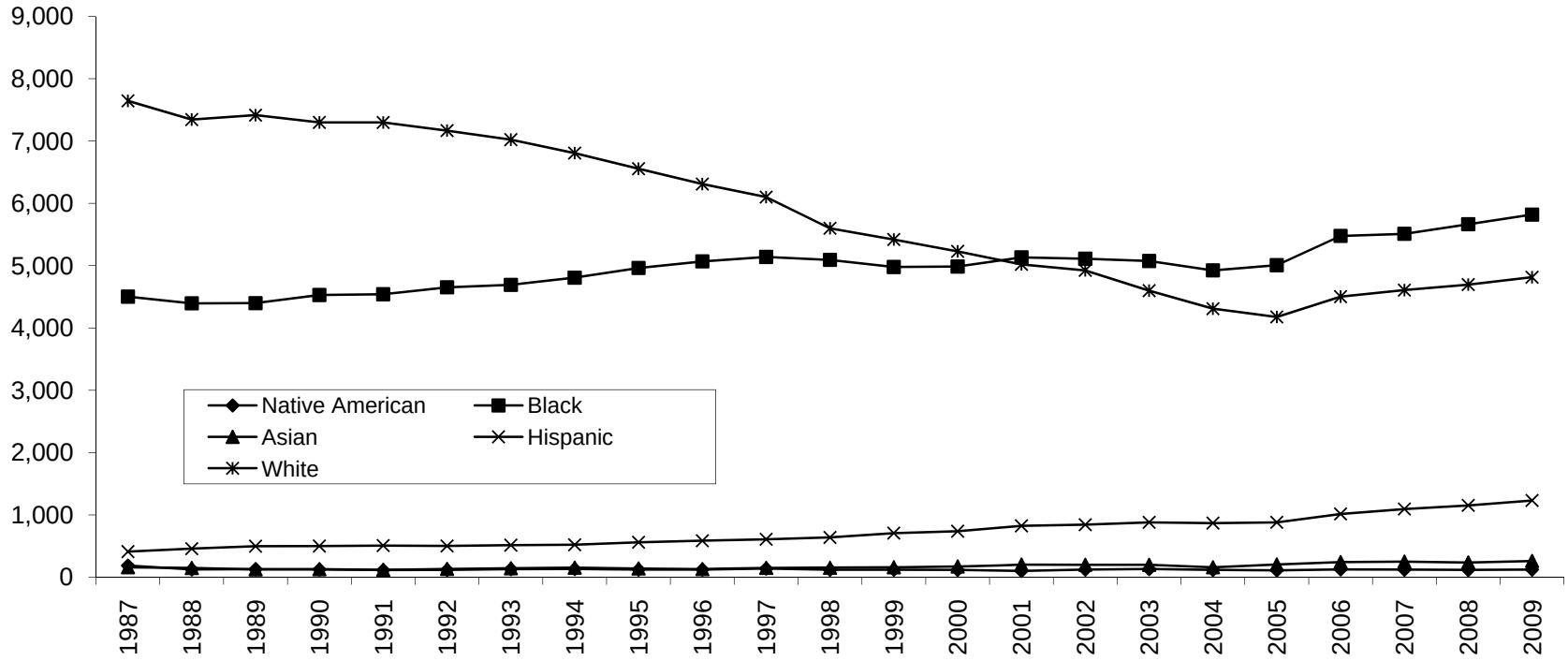
Note: Data come from micro student data from KPS. Exit rate is percentage of students enrolled in a given grade in KPS as of the fall count day for a given year, who exit KPS by the fall count day of the following year. Thus, for example, the line labeled "Fall 2005" shows the exit rate between the fall of 2005 and the fall of 2006.

Figure 5. Actual KPS Enrollment Trends, 2003 to 2009, Compared to Simulations of Enrollment if Some Pre-Promise Trends Had Continued



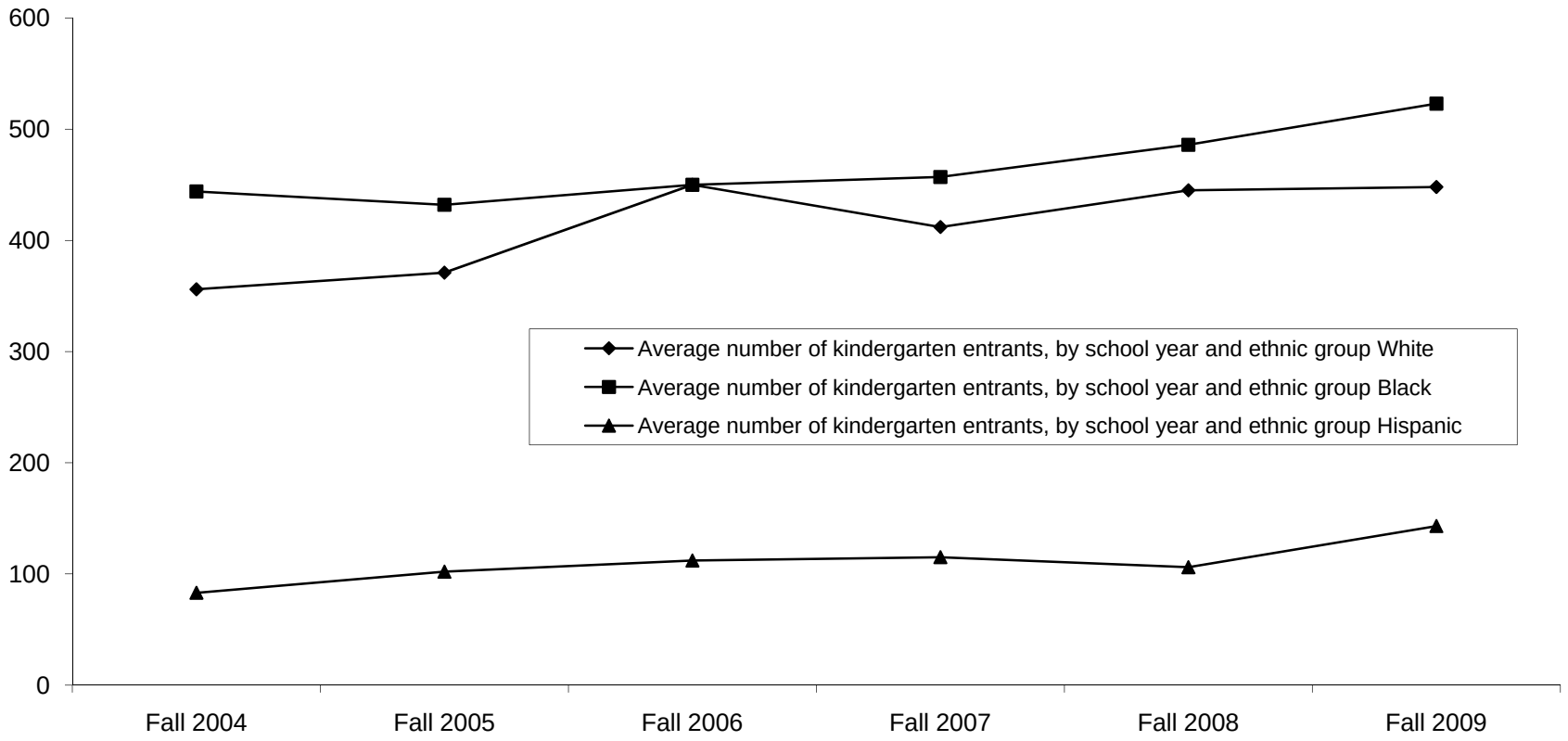
Note: Simulations rely on continuing average new student entry numbers and/or exit rates, by grade level, that occurred from fall of 2003 to fall of 2005, prior to the Promise. The lowest line shows trend if both entry numbers and exit rates for each and every grade level had stayed at their pre-Promise average. The other lines change just one of these factors. The top line shows actual enrollment. Calculations are based on micro student data on students present as of fall count day. KAMSC students from outside the district are excluded. All students are counted as one, without adjusting for FTE enrollment. Count numbers are therefore similar to but not identical to official state fall count data.

Figure 6. Number of KPS Students in Various Ethnic Groups, 1987 to 2009



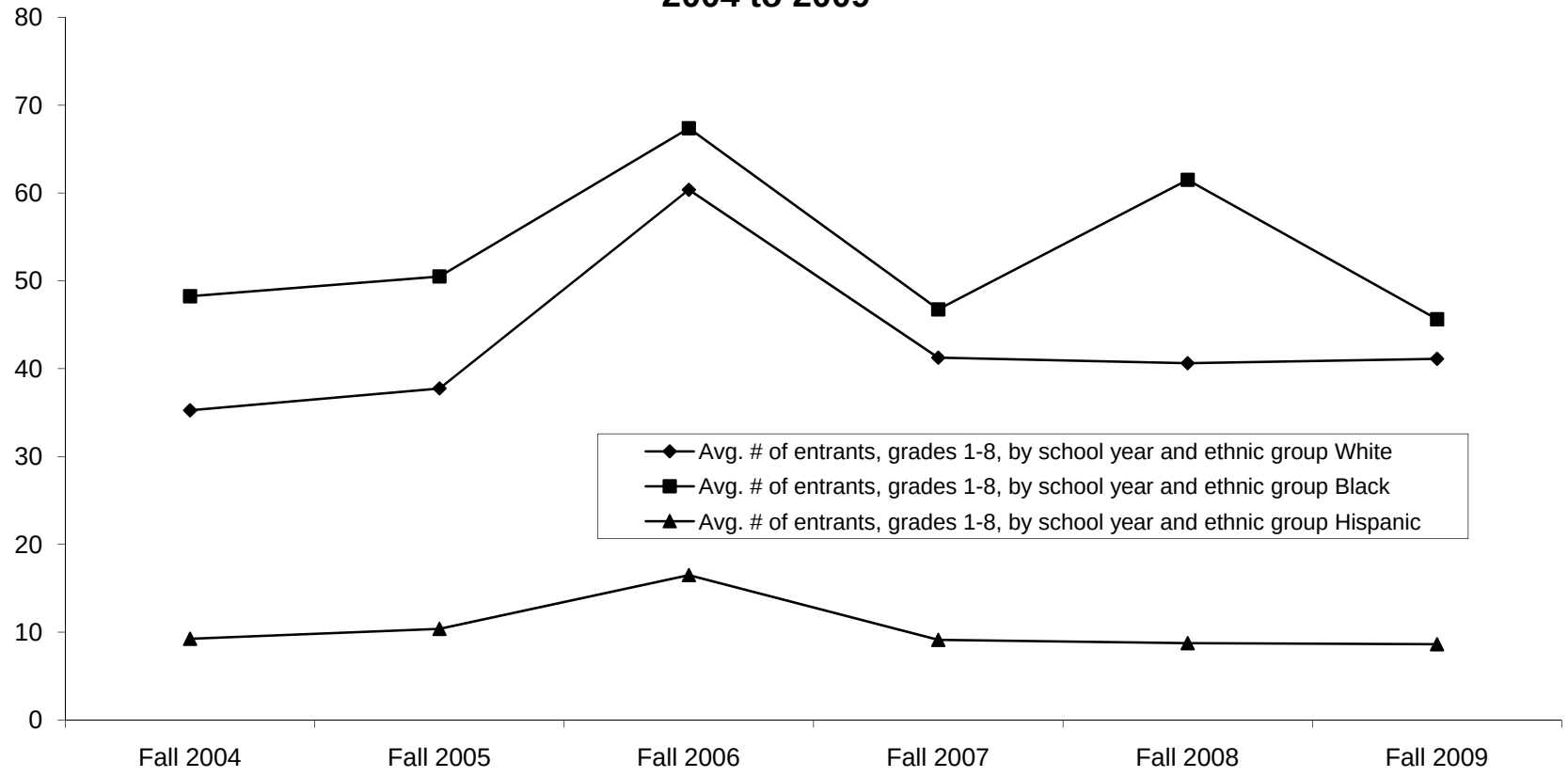
Note: These data were provided by KPS. The reflect raw counts of students, not FTE counts. These numbers include special ed, alternative ed, and students at the Kalamazoo Area Math and Science Center, a selective half-day program for high school sttudents that serves a countywide student population, but is administered by KPS. These KAMSC numbers include students whose "home school" is not a KPS school. The numbers exclude out-of-district Education for Employment (Kalamazoo County's vocational education program) students attending KPS, adult, ed, preschool students, and Head Start students. The inclusion of all KAMSC students probably increases the percentage white and Asian American a bit, but is probably roughly a constant factor over time. KPS classifies ethnic groups in mutually exclusive categories, sot hat Hispanic is used as a separate ethnic category. Therefore, in terms of official government definitions, the categories for all the other groups are explicitly "black non-Hispanic," "white non-Hispanic," etc. Numb ers behind this figure are in Table 4.

Figure 7. Entry Numbers for Kindergartners by Ethnic Group, 2004 to 2009



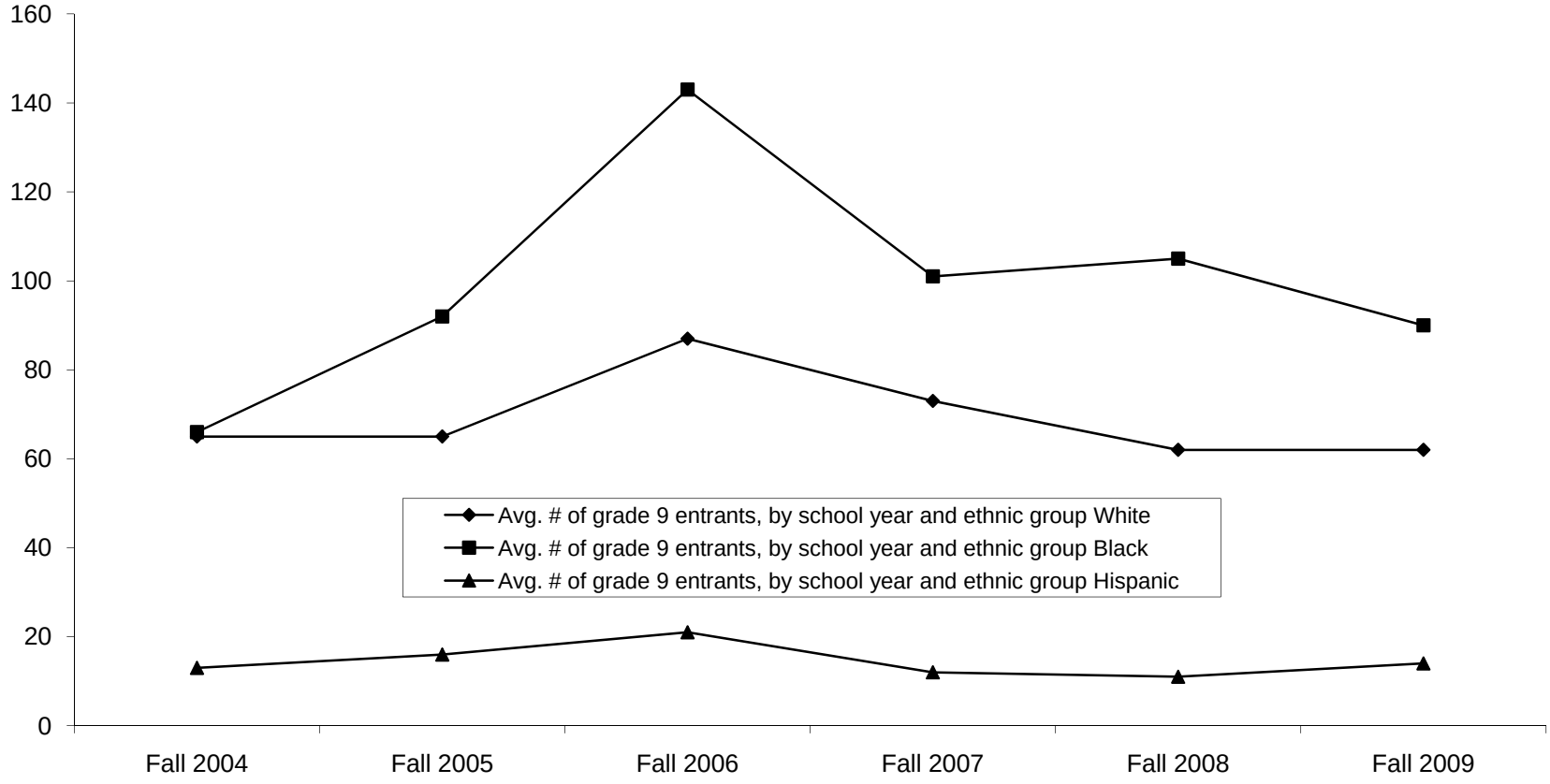
Note: These come from micro student data from KPS. The ethnic definitions are mutually exclusive, so blacks and whites correspond to what the U.S. Census Bureau would call "black non-Hispanic" and "white non-Hispanic." An entrant is a KPS student in kindergarten as of the fall count date who was not in KPS kindergarten the previous fall. (They may have been in KPS's pre-school program.)

Figure 8. Average Entry Numbers for Grades 1-8, by Ethnic Group, 2004 to 2009



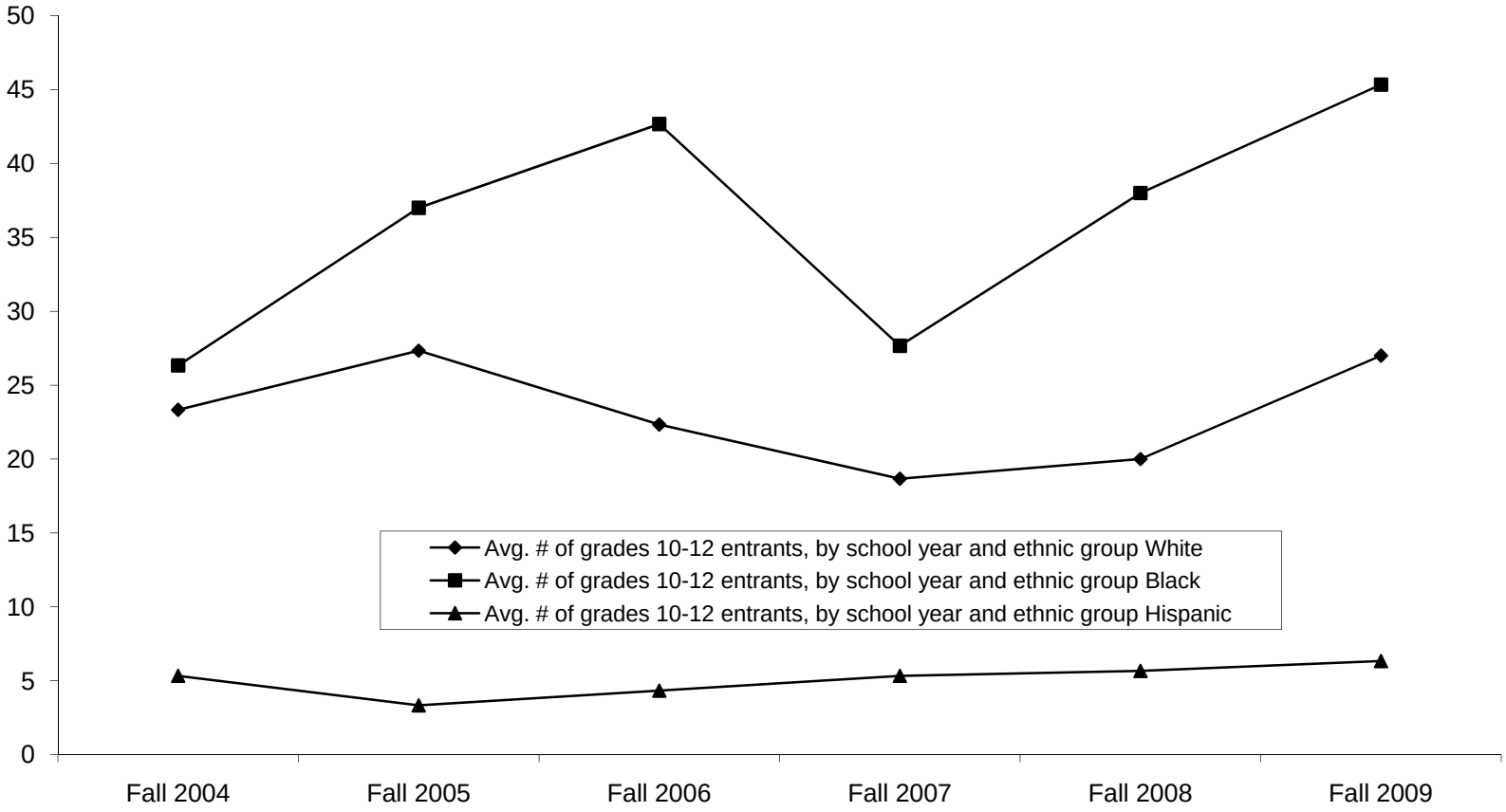
Note: These come from micro student data from KPS. The ethnic definitions are mutually exclusive, so blacks and whites correspond to what the U.S. Census Bureau would call "black non-Hispanic" and "white non-Hispanic." Entrants are students in one of these grades as of the fall count date who was not in KPS as of the previous fall count date. The average calculated is the number of entrants in grades 1-8 divided by 8.

Figure 9. Average Entry Numbers for Grade 9, by Ethnic Group, 2004 to 2009



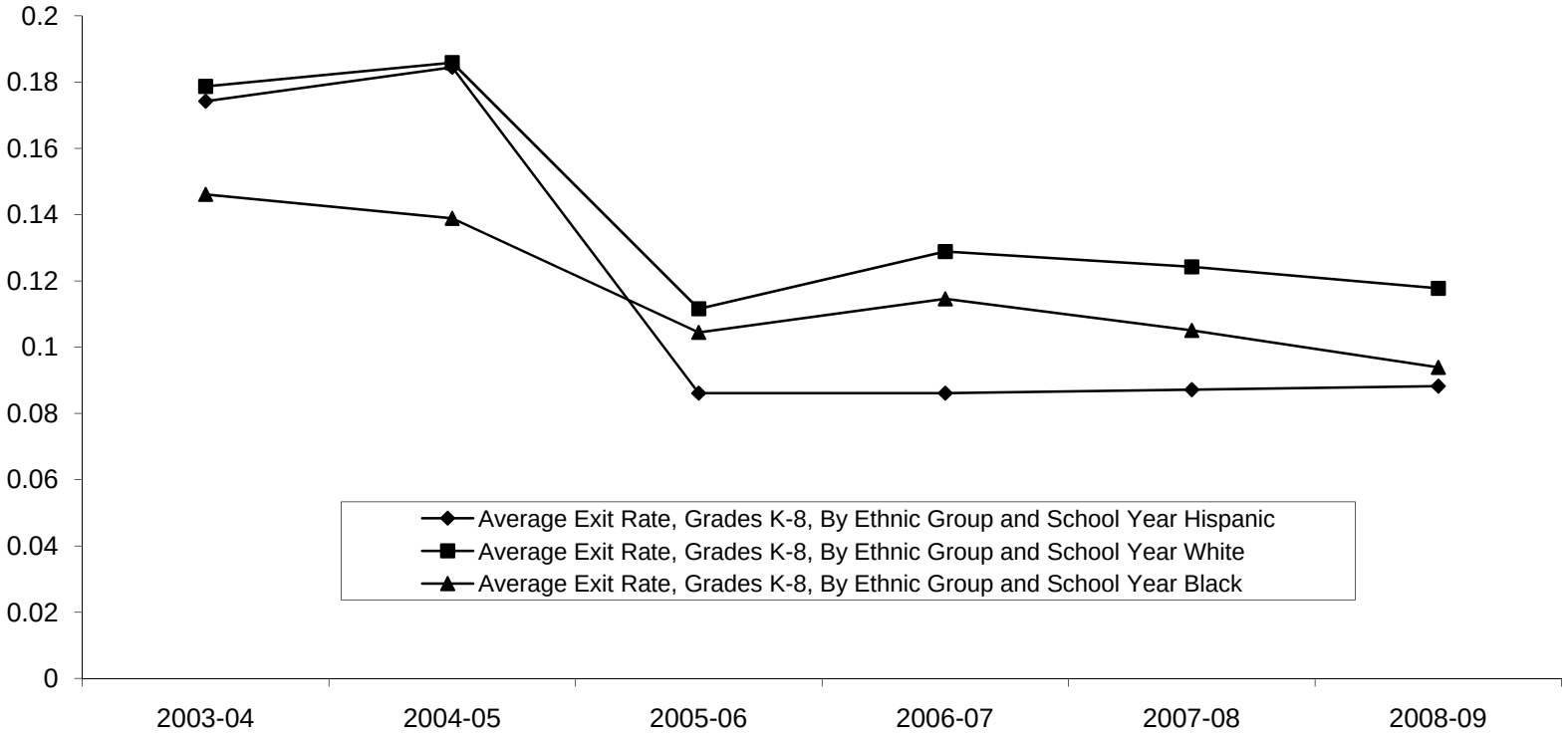
Note: These come from micro student data from KPS. The ethnic definitions are mutually exclusive, so blacks and whites correspond to what the U.S. Census Bureau would call "black non-Hispanic" and "white non-Hispanic." An entrant is a KPS student in grade 9 as of the fall count date who was not in KPS grade 9 the previous fall.

Figure 10. Entry Numbers for Grade 10, by Ethnic Group, 2004 to 2009



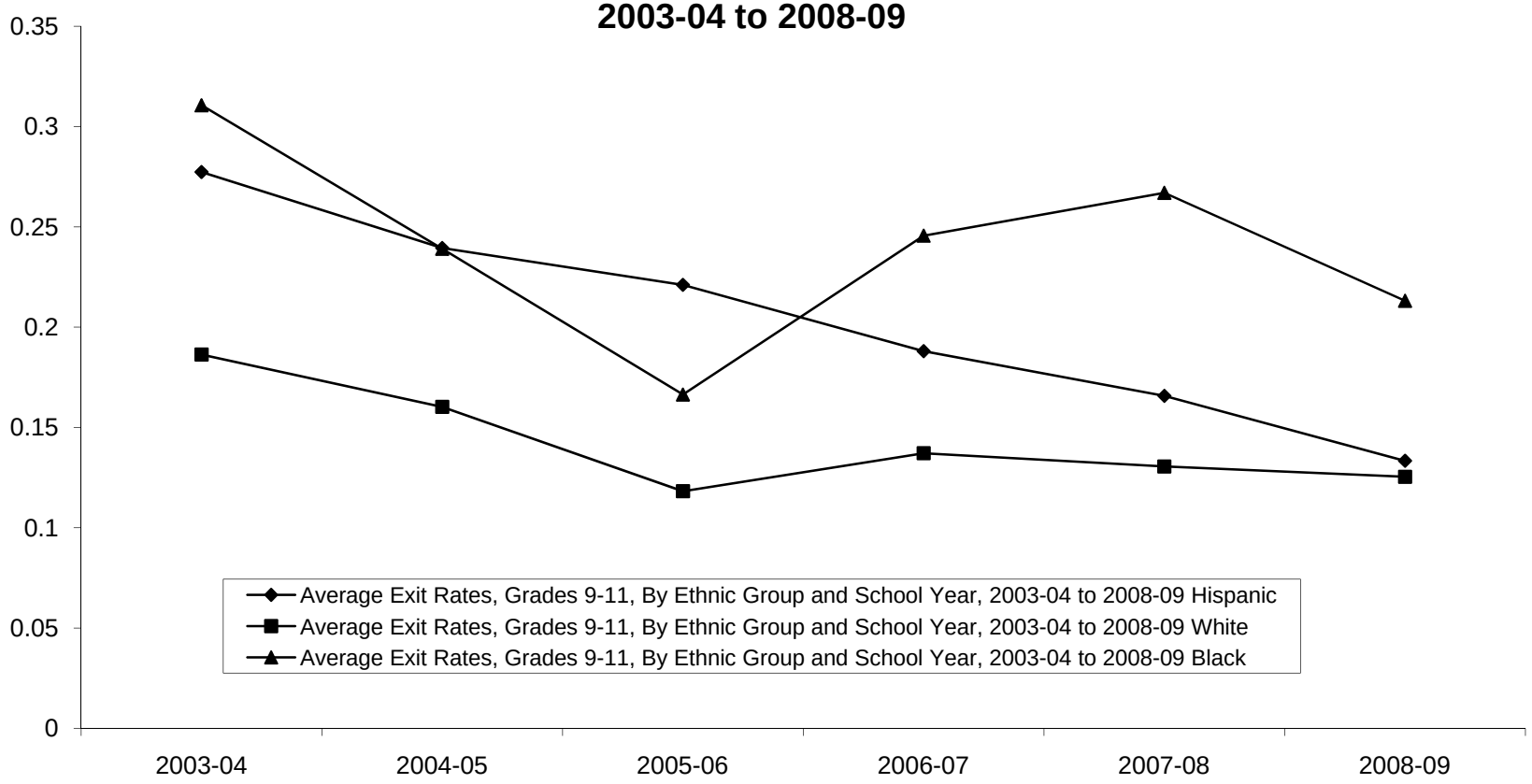
Note: These come from micro student data from KPS. The ethnic definitions are mutually exclusive, so blacks and whites correspond to what the U.S. Census Bureau would call "black non-Hispanic" and "white non-Hispanic." An entrant is a KPS student in grade 10 as of the fall count date who was not in KPS grade 10 the previous fall.

Figure 11. Average Exit Rates for Grades K-8, by Ethnic Group and Year, 2003-04 to 2008-09



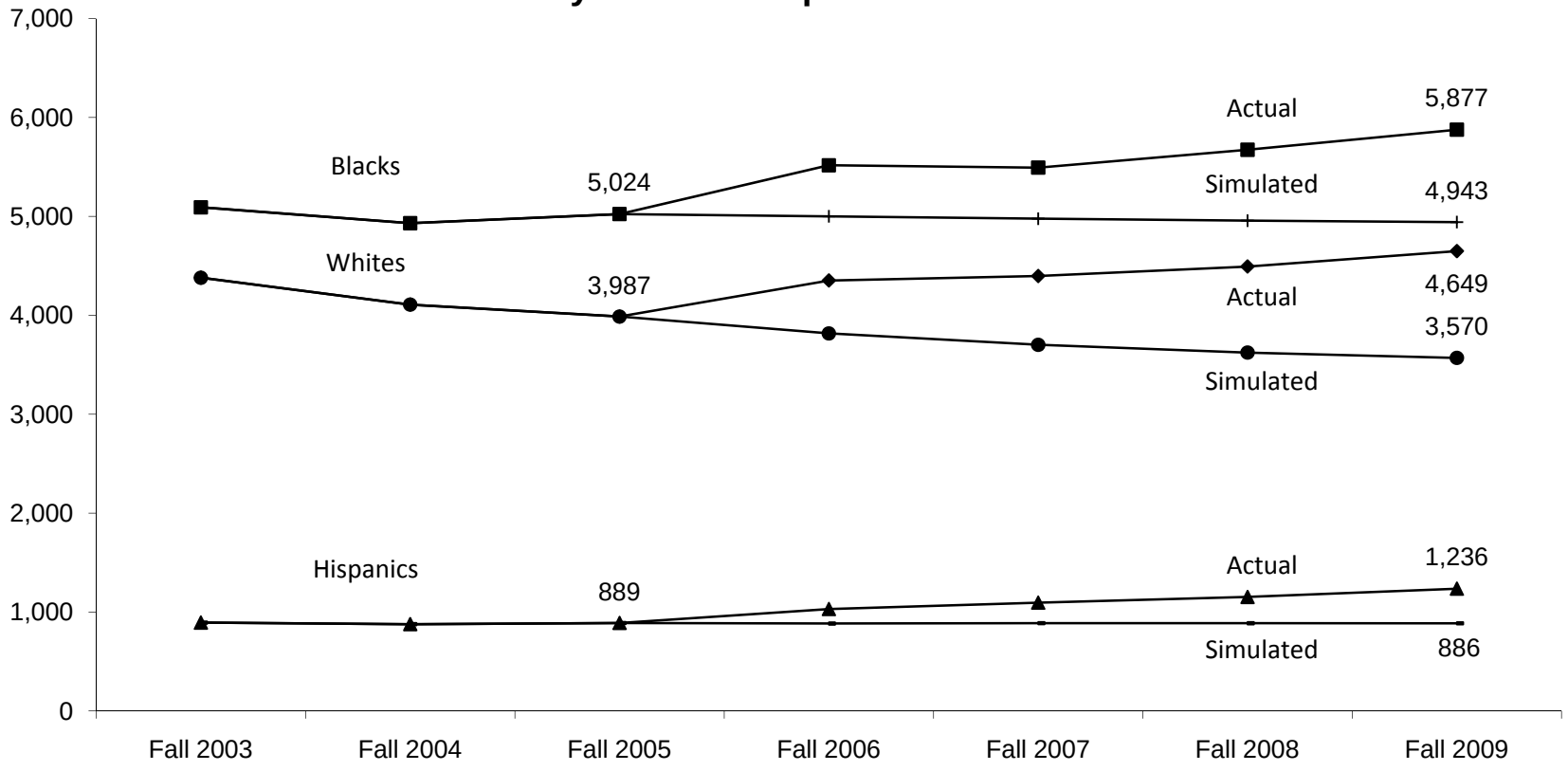
Note: An exit rate for year 200x to 200x+1 is defined as the proportion of students in that ethnic group who were enrolled in KPS as of the fall count day for year 200x and were not enrolled in KPS as of the fall count day for year 200x+1. A separate exit rate is calculated for each grade. Average exit rates for grades K-8 is the simple average over these 9 grades, and is NOT weighted by the number of students in each grade. These calculations are based on individual student data. As noted before, ethnic groups are defined exclusively by KPS, with "Hispanic" overriding other categories, "white" is white non-Hispanic, and "black" is black non-Hispanic.

Figure 12. Average Exit Rates for Grades 9-11, by Ethnic Group and Year, 2003-04 to 2008-09



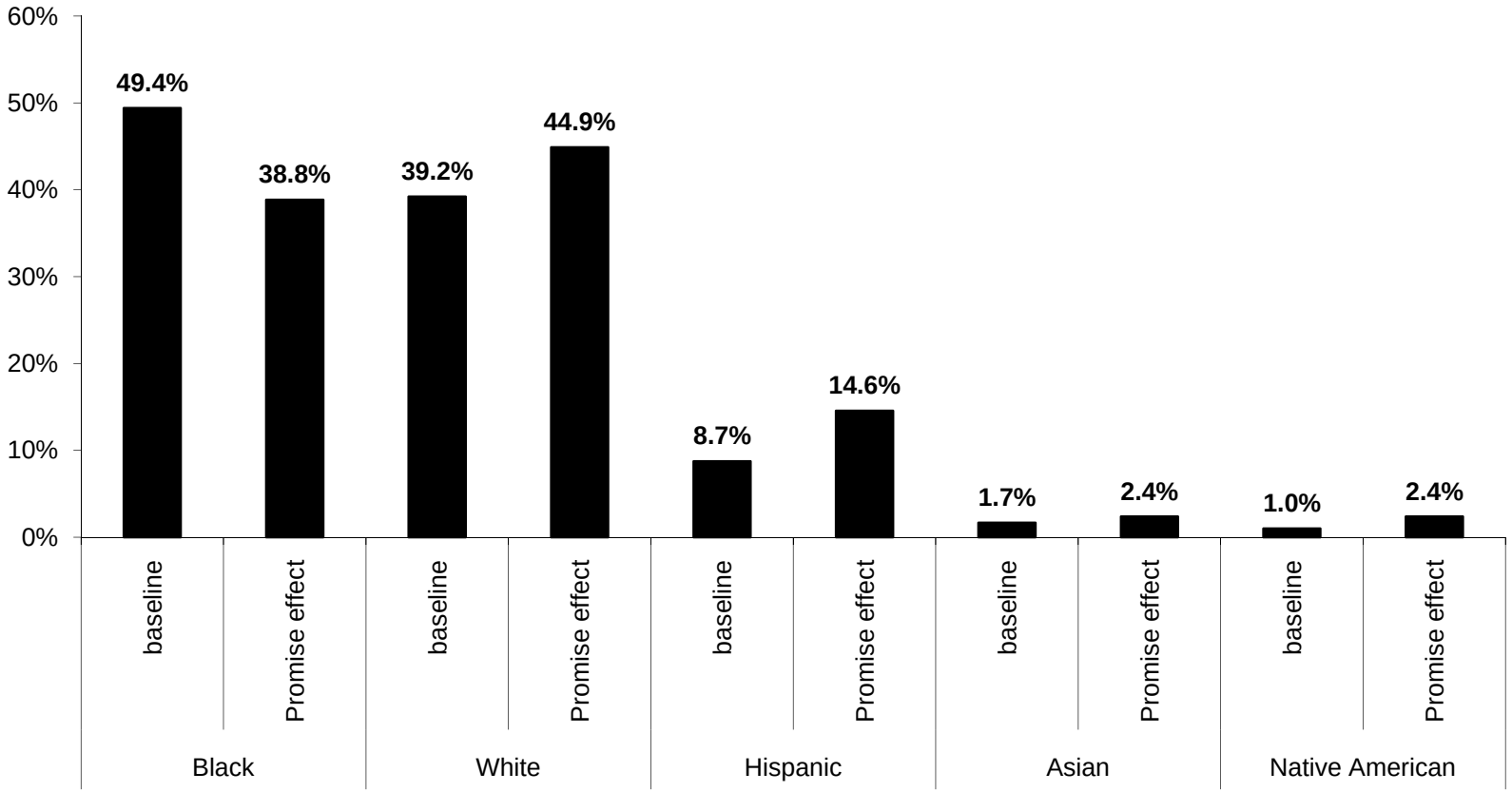
Note: An exit rate for year 200x to 200x+1 is defined as the proportion of students in that ethnic group who were enrolled in KPS as of the fall count day for year 200x and were not enrolled in KPS as of the fall count day for year 200x+1. A separate exit rate is calculated for each grade. Average exit rates for grades 9-11 is the simple average over these 3 grades, and is NOT weighted by the number of students in each grade. These calculations are based on individual student data. As noted before, ethnic groups are defined exclusively by KPS, with "Hispanic" overriding other categories, "white" is white non-Hispanic, and "black" is black non-Hispanic.

Figure 13. Actual vs. Simulated Non-Promise Enrollment, by Ethnic Group and Year



Note: Underlying data is individual student data from KPS. Actual ethnic group enrollment data is the number of students in each ethnic group enrolled as of the fall count day. Simulated enrollment is enrollment if average pre-Promise entry numbers and exit rates, estimated for each ethnic group and grade separately, had persisted for post-Promise period.

Figure 14. Baseline Ethnic Group Percentages Versus Percentage Each Ethnic Group is of Total Simulated Enrollment Effect of Promise



Note: Baseline is percentage each group is of total KPS enrollment as of fall 2005 count day. The Promise effect simulation calculates how much enrollment of each ethnic group increased by Fall 2009, compared to what was simulated to be that ethnic group's enrollment in Fall 2009 if pre-Promise entry numbers and exit rates by grade level had continued. This is not the same as the percentage each ethnic group is of increases in enrollment since 2005. For example, as pre-Promise trends predict that white enrollment would have decreased, the white enrollment effect includes the increase in white enrollment up to the fall 2005 level, and then additional enrollment effects beyond that pre-Promise level.