Race, Poverty, and the Student Curriculum, 1975–1995: Implications for Public Policy

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Introduction

As a nation, we are concerned that the "rising tide of mediocrity" predicted by the National Commission on Excellence in Education (1983) has not ebbed. Not only are average scores low for the typical student, but minority and poor students are consistently scoring at the lower end of the performance spectrum. Many policymakers are especially troubled by the notion that school outputs are linked with the student characteristics of race and income (Bowles and Gintis 1976; Cookson and Persell 1985; Kershaw 1992). For instance, substantial gaps in the academic performance of black and white students appear as early as age 9 and persist through age 17 (National Center for Education Statistics 1995b, 3). In addition, among students who graduate from high school, a lower percentage of graduates from low income families were enrolled in college the October following graduation — 40 percent versus 78 percent in 1991 (NCES 1993, 3).

There are a variety of policies that have been used to reduce this apparent association between educational outputs and student characteristics.[1] One currently popular strategy is the adoption of curriculum standards, where states play an active role in regulating the courses taken by students (CCSSO 1995). This approach assumes that there is a link between student attainment and course-taking patterns (Alexander and Pallas 1984). If this assumption is true, differential access to the curriculum becomes very important, particularly on equity grounds.

Consequently, it is important to track the course selection that students have made over time. This study is a descriptive analysis whose principal focus is the association between course-taking patterns and the student characteristics of race and poverty. To

[1] These "equalizing" programs include Head Start, busing, equalizing aid, etc.

uncover the trends in course-taking patterns and to explore the potential role of curriculum policy, this paper addresses three questions:

- How has student usage of the curriculum changed over time? Is there a change in emphasis on "traditional" core courses or the class time spent by students in advanced courses (e.g., college credit, Advanced Placement)?

- What is the association between socioeconomic factors and student course-taking patterns?

- What are the implications of this trend for curriculum policy?

The Relevance of Curriculum

What do we mean by curriculum?

Page and Valli (1990, 2) note that the curriculum is a fundamental part of schooling and that high schools have the difficult task of "differentiating without discriminating." They continue:

> ...the curriculum is commonly posited as the school knowledge that an individual teacher transmits to students with the success of all measured by students' achievement test scores. However, the curriculum that occurs in classrooms is much more inclusive than this definition suggests, and school knowledge is shaped in significant ways by the responses, reactions, and on occasion, the counterdefinitions offered by students (p.5).

...the quality of the curriculum to which a student is exposed has an impact on the quality of learning that takes place...

Thus, curriculum in this paper refers to more than the required courses; it refers to *all* the courses taken by students. This is in contrast to curriculum standards, which do refer to the courses required by the state. As noted, one reason why states impose curriculum standards is to reduce the variation in the course selection of students because of the assumed link between curriculum standards and course selection.

Differential course-taking: implications for curriculum quality

Much of the research on tracking has found that the quality of the curriculum to which a student is exposed has an impact on the quality of learning that takes place (Oakes 1982, 1985; Vanfossen et al. 1987). This influence is often mediated through the impact that curriculum tracks have on the choice of courses selected by students (Lee and Bryk 1988). This influence is above and beyond and even greater than the impact of prior academic performance and interests (Vanfossen et al. 1987). Course-taking patterns in turn influence how much students learn of subjects such as mathematics, science, or business, and also how much practice they obtain in reading and vocabulary (Vanfossen et al. 1987). Consequently, many authors contend that students in non-academic tracks are not given an environment that encourages them to increase their performance and their educational and occupational aspirations (Oakes 1985; Vanfossen et al. 1987). They also note that too often poor, minority students are over-represented in these low, special, or vocational tracks (Page and Valli 1990, 2).

This line of argument implies that the more knowledge to which a student is exposed, the more that student will remember in absolute terms. An example will illustrate this point. Let us assume that

an academic curriculum provides three times the "knowledge" of a low-track curriculum. Thus, remembering 50 percent of the academic coursework produces absolutely more "knowledge" than remembering 100 percent of the less-challenging material, all else being equal. This assumption is supported by the work of Alexander and Pallas (1984). These authors find that the test scores of students who complete the "New Basics"[2] are considerably higher, on the average, than of those who do not. However, these findings may overstate the influence of taking a challenging curriculum. That is, while Alexander and Pallas note that "better" students are likely to take more challenging courses, they only control for different innate abilities by including a predictor variable for prior performance. The authors do not adequately address the issue of selection bias.

Differential course-taking: implications for curriculum policy

Fuhrman et al. (1993) note that changes in curriculum policy and testing often are not translated into instruction in the classroom. Though stricter graduation requirements have increased the proportion of academic courses offered in high schools, they may not have increased the number of students who actually take them (p. 5). This is where the signals emitted by higher education and businesses become very important in the enhancement of school quality (Bishop 1993, 1994, 1996).

Fuhrman et al. (1993) note that changes in curriculum policy and testing often are not translated into instruction in the classroom.

Bishop argues that policymakers can greatly influence the quality of schooling for all students if they make use of the appropriate signals and incentives. According to the author, increased reliance on sound high school education by employers and institutions of higher learning will act as a signal to those involved in the educational process (parents, teachers, students). Moreover, external curriculum-based assessments in specific high school subjects will increase the students' rewards for learning. Bishop contends that this combination of signals and rewards will persuade the student to choose more demanding courses and to work harder in them (Bishop 1994, 2). The model advocated by Bishop is supported by anecdotal evidence from Fort Edwards and North Babylon, two school districts in New York State (NY Teacher 1996). In addition, preliminary findings by Alexander (1996) regarding high school students in New York State suggest that there is a statistically significant association between curriculum standards and four-year college attendance.

External examinations will induce teachers and administrators to provide rigorous courses and to place high academic demands on all their pupils. This logic implies that there are benefits to be gained from the taking of difficult courses separate and apart from the mere attendance of school. Gamoran (1987) finds, for example, that the difference in achievement between tracks exceeds the difference in achievement between students and dropouts. The author infers from this that cognitive development is affected more by where one is in school than by whether or not one is in school. The above analysis suggests that the provision of a high-quality curriculum[3] for all students will have a favorable impact on average student achievement.

[2] The "New Basics" include four units of English, three units of science, three units of social studies, three units of mathematics, and a half unit of computer science. College-bound students are advised to add two units of foreign language to the recommended list of requirements.

[3] A high-quality curriculum refers to those courses normally provided to those students in an academic, college preparatory track.

Data and Research Approach

Research population

New York State is the only state with a long-standing reliance on a curriculum-based examination system covering the majority of high school graduates. New York's high school student population is also relatively diverse. For instance, in Fall 1991, the student population of New York State was comprised of 4.4 percent Asians, 19.8 percent blacks, 15.1 percent Latinos, 0.3 percent Native Americans, and 59.9 percent whites (NYS 1993). This diversity makes New York a good place from which to explore how poverty and race are associated with course-taking patterns and what implications this association has for curriculum policy.

The following analysis focuses on the population of public school students in New York in grades 9 through 12 by using school level data weighted by enrollment. The analysis can, therefore, make meaningful comments on the trends in high school student usage of the curriculum in that state. I examine those grades because much of the discussion on performance and curriculum standards centers around high school students. To the extent that curriculum reform has some universal effects, the findings of this study may have important implications for the rest of the nation.

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Data sources

This study relies on data provided in the Basic Educational Data System (BEDS) of the New York State Department of Education, in particular, the information found in the Personnel Master File (PMF) and the Institutional Master File (IMF). The PMF contains classroom-level data on professional staff in each public and non-public school in New York State. The IMF contains information on race and socioeconomic status of each school in the state. The study covers 20 years, from 1974–75 through 1994–95, with data obtained at five-year intervals starting with the 1974–75 school year.

Curriculum standards defined

When policymakers consider curriculum standards, their discussion is often in terms of student participation in selected subjects, as well as, their participation in courses of a prescribed rigor. Thus, the higher the participation in core courses (English, foreign languages, mathematics, science, and social studies) the higher educational standards are thought to be. Further, the higher the participation in advanced versus remedial courses, the higher standards are thought to be. Following the lead of many states, this is the definition of curriculum standards used here.[4]

To measure student participation in courses, I rely on data contained in the PMF. It includes information on assignment codes (course title), number of students in each class, and the number of times the class is taught during the year. Note that class time is measured in periods.

Curriculum standards are operationalized using a variable which captures the average number of student class periods devoted to a specific curriculum

[4] Some policymakers, educators, and parents would argue that this is an overly narrow viewpoint which neglects two key issues. One, a knowledge of music and art can enhance the overall education of a child. Two, this definition undervalues the benefits of vocational education, which educators, such as John Dewey, applaud for the relevance it brings to the classic curriculum.

area in a school week. The numerator is the product of multiplying the number of students in a particular course by the length of the course. The denominator of this ratio is the total number of enrolled students. These weekly figures are based on the assumption that there are 36 weeks in the school year—180 days in a school year divided by 5 days in a school week.

There are several advantages to this measure: 1) by taking the average number of periods devoted to particular courses, consistent comparisons across schools, districts, and time are possible; 2) controlling for enrollment allows this measure not to be affected by spurious increases in the population having no direct connections with curriculum policy; 3) this ratio is not affected by the length of the school day; and 4) it mirrors the underlying notions of many state curriculum policies where actual, not proportionate, time assigned to specified curriculum areas is considered important to student achievement.

Course categorizations—subject

I focus on the courses traditionally associated with a core curriculum—language arts (English and reading), foreign languages, mathematics, science, and social studies. The categorization also includes courses in limited English proficiency (LEP) (including special education LEP) and special education classes (excluding LEP courses). This study focuses on the curriculum of grades 9 through 12. The grouping according to subject area relies primarily on the categorizations denoted by the New York State Department of Education in their course listings.

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Coding of courses

I created sub-categories of the courses based on both their rigor and subject area (see table 1). The first digit of the code is the subject area, the second is the rigor. Note that classes in (LEP) have no rigor specified. LEP classes include those that are so titled by the New York State Education Department, as well as, those classes offered in bilingual education. Classes in special education have a "learning disabled" sub-category.

I originally planned to have 23 sub-groupings: five core subjects at four levels of rigor plus the LEP and special education categories. However, given the nature of the available data, I am unable to do so. That is, the sequence of Regents courses is very detailed for mathematics and science, so it is possible to consistently categorize a course as Regents or not for those two areas by merely observing the course title. However, outside of those areas, the titles no longer give sufficient information regarding the Regents status of the course. Thus, it is difficult to create consistent Regents categorizations across time and school districts for these subject areas. For instance, French I could be a Regents level class in one school and a non-Regents one in another.[5]

I ultimately developed an exhaustive set of 20 course groupings. Not all 20 groups are present in each school. To the extent that Regents courses in English, foreign languages, and social studies are classified as regular, this study systematically underestimates the average number of student class periods per week devoted to a Regents curriculum.

Student characteristics

A primary objective of this paper is to explore the association between the student characteristics of

[5] My thanks to Ron Danforth, an expert in the contents of the New York State Basic Educational Data System, who was instrumental in the proper classification of courses.

Table 1.—Course codes and descriptions

Course	Description of course
11	Remedial English
12	Regular English
14	Advanced English
21	Remedial Foreign Language
22	Regular Foreign Language
24	Advanced Foreign Language
31	Remedial Mathematics
32	Regular Mathematics
33	Regents Mathematics
34	Advanced Mathematics
41	Remedial Science
42	Regular Science
43	Regents Science
44	Advanced Science
51	Remdial Social Studies
52	Regular Social Studies
54	Advanced Social Studies
60	Limited English Proficiency
70	Special Education
75	Learning Disabled—Special

SOURCE: Alexander, Nicola, unpublished tabulations from data received from the New York State Department of Education Basic Education Data System.

race and poverty and course-taking patterns. Because the data are aggregated at the school level, I will use the ethnic profile (i.e., percentage minority of schools as a proxy for race; the lunch participation rate as a proxy for poverty). For each characteristic, I classify schools into three mutually exclusive categories. That is, schools are high minority; mixed minority; or low minority on the ethnic index. Similarly, schools are high poverty; medium poverty; or low poverty on the poverty index. I expect that schools with high minority population and/or high lunch participation have relatively fewer student class periods devoted to a core or advanced curriculum than their "whiter" or more wealthy counterparts (Kershaw 1992; Oakes 1985).

This study classifies high minority schools as those that have student populations with at least 80 percent black and Latino students. Schools that have between 80 percent and 5 percent of its population comprised of black and Latino students are considered mixed. I consider schools with five percent or less of their student population comprised of black and Latino students as low minority schools. These thresholds are constant for all years of the study.

Schools that have at least 35 percent of their student population participating in a free or reduced-price lunch program are considered to be high on the poverty index. Schools that have between 35 percent and 1.5 percent of their student population participat-

ing in a free or reduced-price lunch program are considered to have medium poverty. I consider schools that have 1.5 percent or less of their students participating in the lunch program to be low on the poverty index. Note that lunch participation data are only available for 1995. The ethnic thresholds are chosen to reflect: 1) meaningful categories of what it means to be a high minority school; and 2) an appropriate balance of the distribution of students of color across schools and over time. In 1995, for example, in a weighted distribution of schools, 10 percent of schools had more than 90 percent of their student population comprised of blacks and Latinos. Similarly, the poverty thresholds reflect the distribution of lunch participation in schools. For instance, in 1995, 10 percent of schools had more than 36 percent of their students participating in a free or reduced-price lunch program; 25 percent of schools had about 1.5 percent of their students participating in this program.

Findings

Question 1: The curriculum over time

As table 2 shows, the average number of student class periods per week devoted to the core has increased substantially over the past 20 years (11.6 in 1975 versus 19.1 in 1995). The largest changes occurred between 1985 and 1990, where the average number of student class periods devoted to traditional academic subjects increased by 27.6 percent. This jump likely reflects the implementation of the Regents Action Plan in 1984.

...the average number of student class periods per week devoted to the core has increased substantially over the past 20 years (11.6 in 1975 versus 19.1 in 1995).

The most dramatic change in course-taking behavior is in the area of Special Education. From 1975 through 1985, two-hundredth or less of student class periods per week was devoted to special education; by 1995, this increased to one period per week. This enormous growth is likely a reflection of the gradual implementation of Public Law (P.L.) 94-142, the Education for All Handicapped Children Act, enacted in 1975.

Table 2 also shows the average number of student class periods devoted to the core curriculum by subject each week. The time allotted to English has remained relatively constant over the past two decades (4.4 in 1975, 4.7 in 1985, and 4.4 in 1995). The changes in the areas of foreign languages, mathematics, science, and social studies are more striking. Indeed, the average number of student class periods devoted to mathematics increased dramatically from a low of 1.1 student class periods per week in 1975 to a high of 4.0 student class periods in 1995. The increases in the other core subjects are less remarkable. Foreign languages accounted for 1.3 student class periods per week in 1975 and 2.1 student class periods in 1995. Science accounted for 3.2 student class periods in 1975 and 4.3 in 1995; average weekly student class periods devoted to social studies increased from 1.5 to 4.2 over the same time period.

Rigor

Figure 1 shows the general trend in the difficulty of the core courses taken by students. Over the past two decades, steadily increasing numbers of student class periods per week were devoted to advanced and Regents courses (1.2 in 1975 versus 5.4 in 1995).[6] By contrast, fewer student class periods are allotted to remedial coursework (1.6 versus 0.4). The time allotted to regular-level classes increased steadily over the past 20 years (8.8 in 1975 versus 13.3 in 1995).

[6] To the extent that this paper undercounts Regents class periods because it uses only mathematics and science Regents classes, this portion may be bigger. However, unless the portion of student class hours for Regents English, Regents foreign languages, and Regents social studies varies dramatically over time, the longitudinal analysis should still hold true.

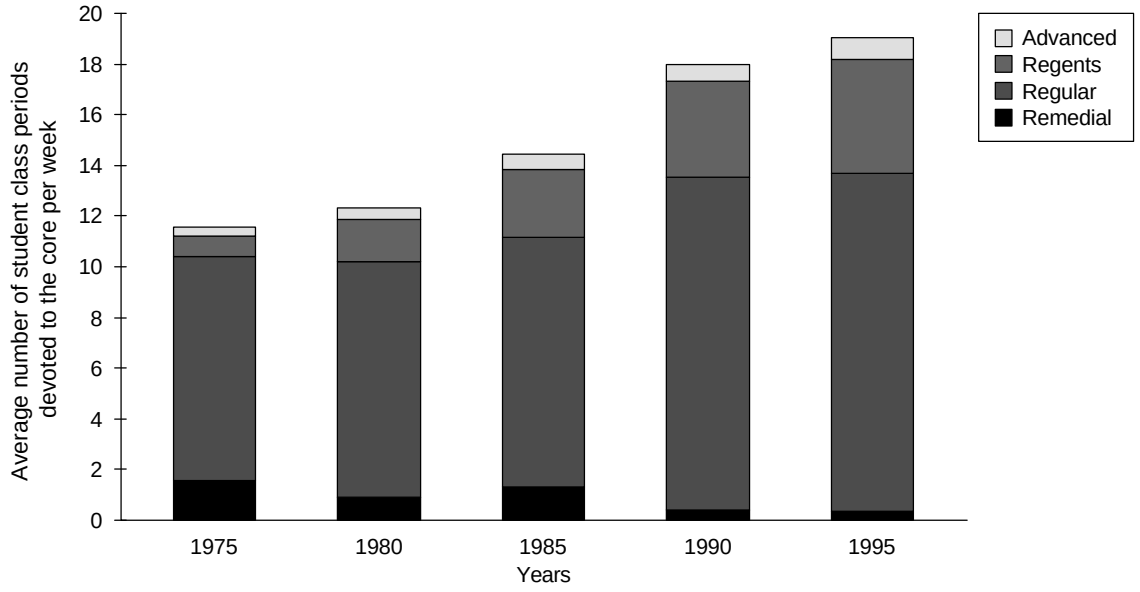
Table 2.—Statewide trends in course taking: School years 1974–75 through 1984–85

Subjects	Average number of student class periods per week				
	1975	1980	1985	1990	1995
Core					
English	4.4	4.5	4.7	4.3	4.4
Foreign languages	1.3	1.2	1.5	2.2	2.1
Mathematics	1.1	1.9	2.8	3.6	4.0
Science	3.2	3.2	3.6	4.0	4.3
Social studies	1.5	1.6	1.8	3.9	4.2
Total core*	11.6	12.3	14.4	18.0	19.1
Non-core	14.3	13.7	14.1	11.3	10.5
LEP	0.07	0.12	0.18	0.06	0.09
Special education					
All fields without learning disabled	0.01	0.02	0.01	0.60	0.70
Learning disabled	—	—	—	0.30	0.30
Total special	0.01	0.02	0.01	0.90	1.00
Total*	25.9	26.2	28.8	30.2	30.7

* May not sum due to rounding.

SOURCE: Alexander, Nicola, unpublished tabulations. Results of conducting univariate analysis on relevant data from the New York State Basic Education Data System using SAS.

Figure 1.—Course-taking patterns—the rigor of the courses: School years 1974–75 through 1994–95



SOURCE: Diagrammatic representation using Excel based on univariate analysis conducted on relevant data from the New York State Basic Education Data System and those compiled by author.

The changing face of mathematics and science

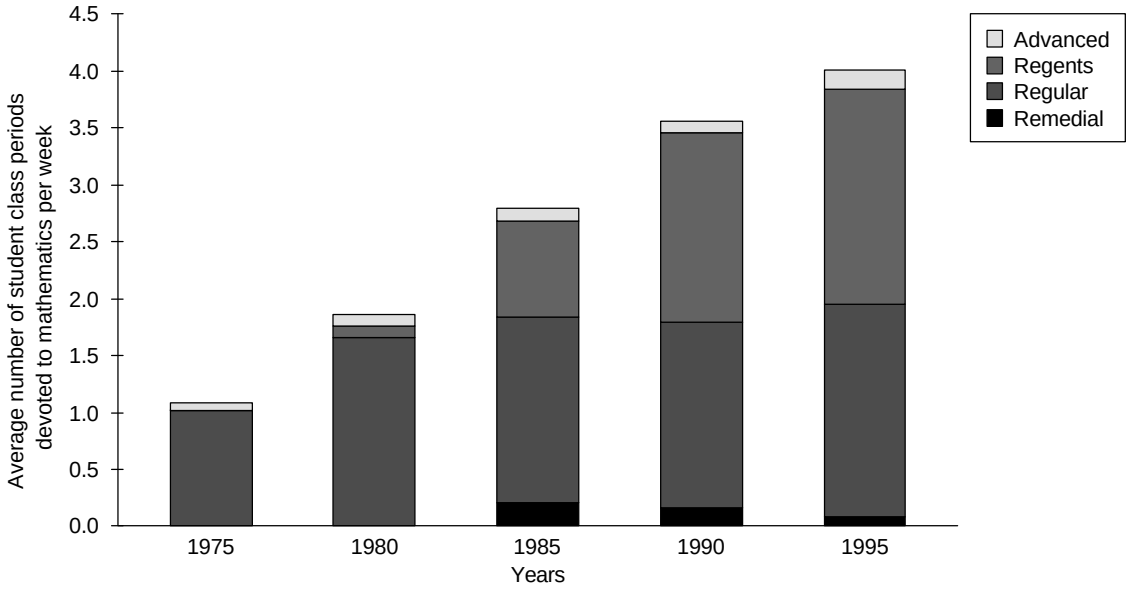
A closer look at the rigor of mathematics and science courses will give better insight on the changing nature of high school curriculum standards in New York State. Figures 2 and 3 show the average number of student class periods devoted to mathematics and science over the past 20 years, respectively. The average time students devote to these traditionally difficult subjects, as well as advanced classes in these areas, increased over the period.

While the trend in course level (rigor) is similar in many ways for mathematics and science, some key differences are worth noting. For instance, the largest percentage increase in the number of student periods allotted to Regents and advanced mathematics courses occured between 1980 and 1985 (0.20 versus 0.95). After 1985, substantial increases in time were still made, but at a declining rate. In 1990 and 1995, Regents and advanced mathematics classes accounted for 1.8 and 2.1, respectively, of student class periods per week.

Further, as time allotted to mathematics increased, the use of remedial mathematics classes expanded. In 1975, no class period was devoted to remedial mathematics in high school; by 1985, one-fifth of a student class period was devoted weekly to math at the remedial level. By 1995, however, there is a downward shift in mathematics time devoted to remedial courses (0.15 in 1990 versus 0.08 in 1995).

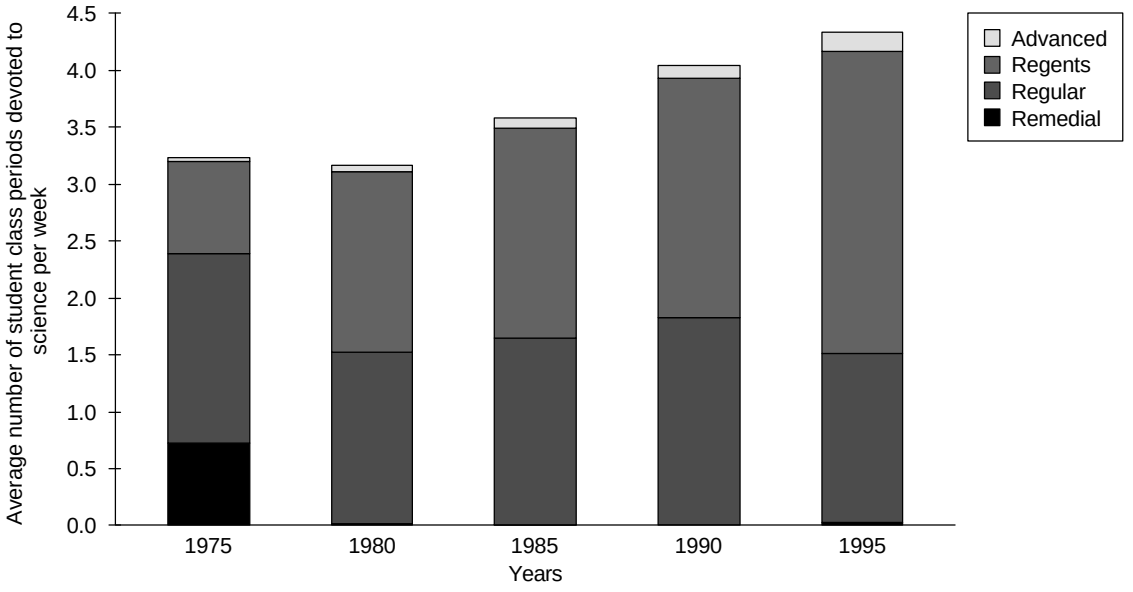
By contrast, increased time devoted to science is accompanied by a drastic reduction in the time allotted to remedial science courses. In 1975, on

Figure 2.—Average number of student class periods devoted to mathematics, by rigor: School years 1974–75 through 1994–95



SOURCE: Diagrammatic representation using Excel based on univariate analysis conducted on relevant data from the New York State Basic Education Data System and those compiled by author.

Figure 3.—Average number of student class periods devoted to science, by rigor: School years 1974–75 through 1994–95



SOURCE: Diagrammatic representation using Excel based on univariate analysis conducted on relevant data from the New York State Basic Education Data System and those compiled by author.

average 0.73 of a student class period was devoted to science at the remedial level each week. In the subsequent five years, this number fell sharply and continued to decline until it "bottomed out" in 1990 with no time devoted to remedial science classes. By 1995, this average number increased slightly to less than one-hundredth of a student period per week.

The biggest increase in Regents and advanced science classes occurred between 1975 and 1980 (0.85 versus 1.65). The average number of student class periods allotted to Regents and advanced science increases steadily over the next 15 years (1.94 in 1985, 2.22 in 1990, and 2.83 in 1995).

Question 2: Race, poverty, and course-taking behavior

As figures 4, 5, and 6 illustrate, there is not much variation in the average number of student class periods devoted weekly to the core subjects when we consider the ethnic and poverty profile of the student population. In no year of the study were there statistically significant differences in the course-taking patterns of high minority schools and their "whiter" counterparts.[7] Similarly, high poverty schools do not devote significantly less time to the core than their more wealthy counterparts. More substantial percentage differences exist when we look at the association between the average number of student class periods devoted to advanced classes. However, these differences are also not statistically significant.

...schools with mixed or low-minority student populations have consistently increased the average number of student class periods devoted to advanced classes...

Although the differences between cohorts are not statistically significant, policymakers may gain some useful insight by examining the course-taking patterns of each group. As figure 6 shows, the trend in advanced course-taking has not been the same for high minority schools and schools with low or mixed portions of students of color.

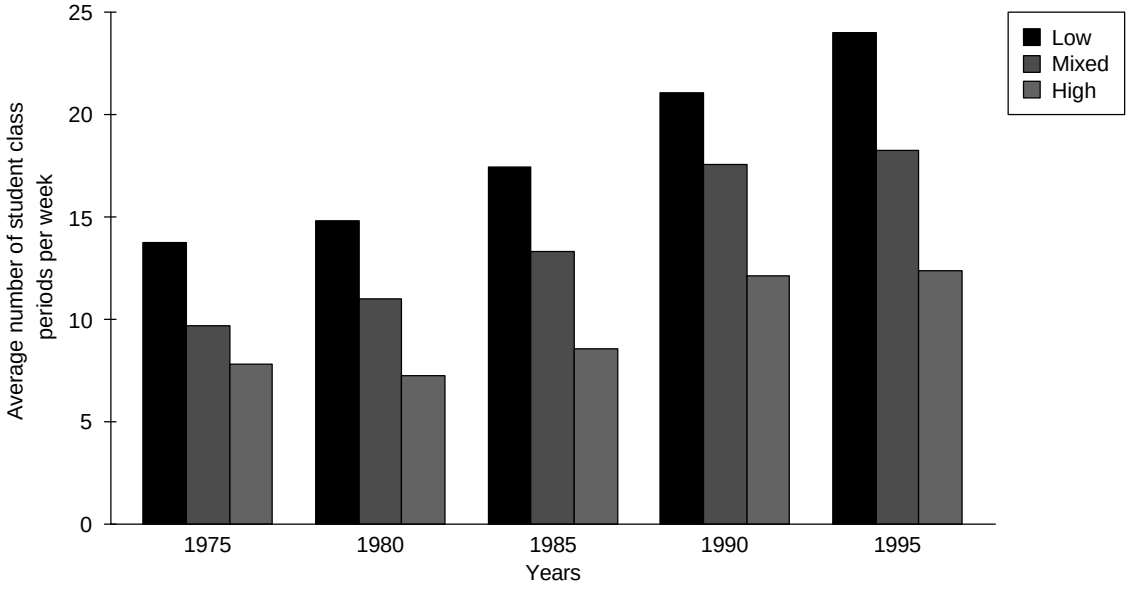
Prior to 1985, there seems to be a rising trend in the average number of student class periods devoted weekly to advanced classes for all ethnic categories of schools. By 1985, a dramatic "turnaround" takes place in schools with high portions of high minority students. The average number of student class periods devoted weekly to advanced courses falls from a high of 0.43 in 1985 to a low of 0.16 student class period in 1990. This number has increased slightly to 0.18 of a student class period in 1995. By sharp contrast, schools with mixed or low-minority student populations have consistently increased the average number of student class periods devoted to advanced classes over the 20 years of the study. On average, the time devoted to advanced classes in low-minority schools increased from 0.35 in 1975 to almost 1.2 in 1995. Similarly, the average number of student class periods devoted weekly to advanced courses in schools with mixed populations rose from 0.38 in 1975 to 0.92 in 1995.

Question 3: Potential role of public policy in shaping course-taking behavior

Even after looking at the descriptive relationship between the ethnic and poverty profiles of schools, some questions remain regarding the role of public policy in course-taking behavior. For instance, does the ethnic profile of schools have a less substantial association with curriculum standards in the periods following reform than in periods prior to reform? If reform policies are effective, we would expect this to be the case. Using weighted regression, this paper looks more closely at the association between measures of student charac-

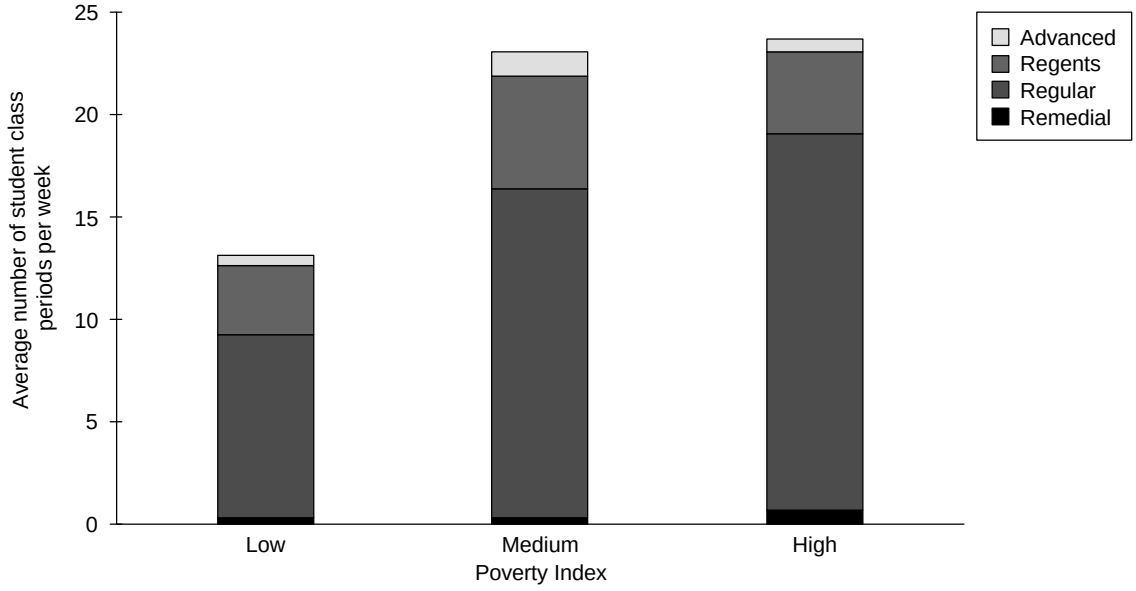
[7] The discussion is based on a two-tailed t-test with a cut-off level of $\alpha = 0.05$.

Figure 4.—Association between portion minority and average number of student class periods allotted to a core curriculum: School years 1974–75 through 1994–95



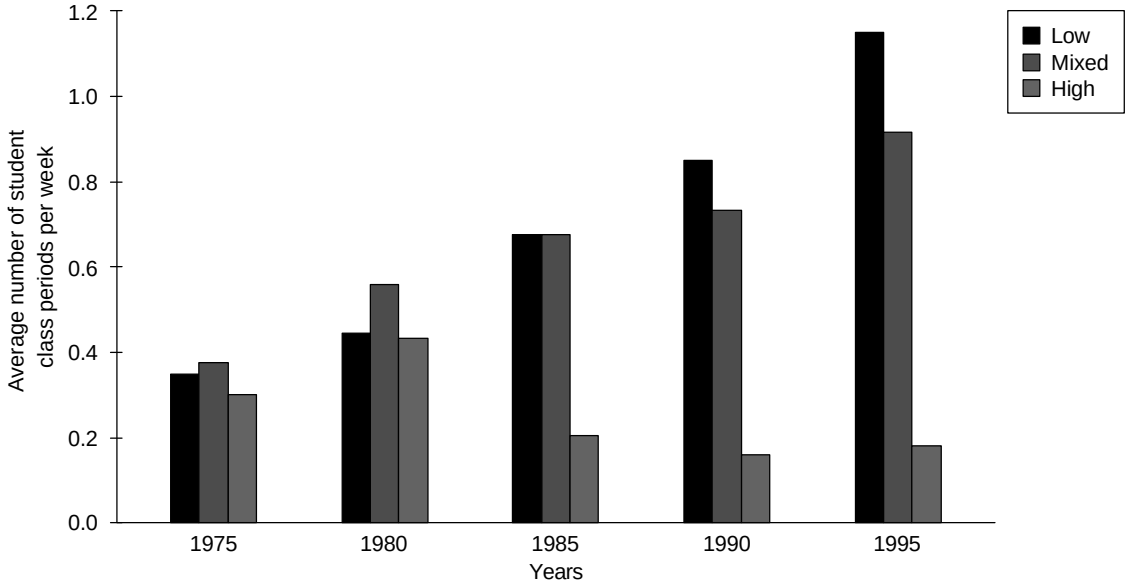
SOURCE: Diagrammatic representation using Excel based on univariate analysis conducted on relevant data from the New York State Basic Education Data System and those compiled by author.

Figure 5.—Association between lunch participation rate and average number of student class periods allotted to a core curriculum: School years 1974–75 through 1994–95



SOURCE: Diagrammatic representation using Excel based on univariate analysis conducted on relevant data from the New York State Basic Education Data System and those compiled by author.

Figure 6.—Association between portion minority and average number of student class periods allotted to advanced courses: School years 1974–75 through 1994–95



SOURCE: Diagrammatic representation using Excel based on univariate analysis conducted on relevant data from the New York State Basic Education Data System and those compiled by author.

teristics and curriculum standards, holding other things constant.

To explore the role of state policy in course-taking, the long-term association between curriculum standards, the ethnic profile and size of schools, and curriculum policy initiatives in New York State are examined. Curriculum standards and ethnic profile (PMIN) are as described above; note that PMIN is a continuous variable. Size (HIGHT) is represented by the number of students enrolled in grades 9 through 12. Policy initiatives are captured by dummy variables and reflect the period before imposition of the Regents Action Plan in 1984, the period between reforms, and the period after the New Compact for Learning (NCL) in 1991. Thus, PRERAP is coded 1 for 1975 and 1980, and coded 0 otherwise. PRENCL is coded 1 for 1985 and 1990, and coded 0 otherwise. The period after imposition of both policy initiatives is the base year; that is, 1995. To explore the changes in the association between the ethnic profile of schools in different policy periods, interaction variables between PMIN and PRERAP (PRAPMIN), as well as between PMIN and PRENCL (PNCLMIN), were created. The coefficients of these interaction variables indicate the association between curriculum standards and the percentage of black and Latino students in schools during the specified period. The models of curriculum standards are:[8]

[8] These models determine the partial correlation between selected variables and the two measures of curriculum standards; they are not behavioral models.

$NWCORE = \alpha + ß_1PMIN + ß_2HIGHT + ß_3PRERAP + ß_4PRENCL + ß_5PMINRAP + ß_6PMINNCL + e$

$NWADV = \alpha + ß_1PMIN + ß_2HIGHT + ß_3PRERAP + ß_4PRENCL + ß_5PMINRAP + ß_6PMINNCL + e$

Table 3 shows the estimates derived for the models of curriculum standards. Even when the ethnic profile and size of schools are controlled for, the reform periods are still significant for the average number of student class periods weekly allotted to the core. For instance, there are significantly smaller numbers of student class periods devoted to the core in the time before any of the specified curriculum reforms than in the time after the New Compact for Learning. Similarly, the pre-reform era has significantly less time devoted to advanced courses than the period after imposition of the NCL. The differences between the pre-reform period and PRENCL are not significant on either measure of curriculum standards.

Prior to the implementation of the Regents Action Plan, higher portions of minority students were significantly associated with larger numbers of student class periods devoted to the core. By contrast, in the period between reforms, the association between portions of minority students and the time allotted to the core was negative. However, this association was not statistically significant at $\alpha = 0.05$.

Prior to the implementation of the Regents Action Plan, higher portions of minority students were signifcantly associated with larger numbers of student class periods devoted to the core.

The association between the minority population of schools and the average number of student class periods allotted to advanced classes is less after the NCL than in prior years. However, this difference is significant only in the time preceding implementation of the Regents Action Plan. There are no significant differences between the pre-reform period and the period between policies.

Despite reform efforts, the size and ethnic profile of schools are significantly associated with both measures of curriculum standards. That is, the smaller the school size and the higher the portions of minority students, the fewer student class periods are devoted to the core. Similarly, the portion of minority students is also negatively associated with the average number of student class periods allotted to advanced courses. However, larger schools are associated with more classes devoted to an advanced curriculum than their smaller counterparts.

The model of curriculum standards explains more of the variation in the average number of student class periods weekly devoted to the core than it does the number of student class periods allotted to advanced learning (41.7 percent versus 15.7 percent). This suggests that there is a stronger link between the policy initiatives of New York State and the subjects in a curriculum than there is between these directives and the rigor of the courses taken.

Discussion

This 20 year analysis has documented a number of encouraging trends:

- more student class time is devoted to core courses
- more student class time is devoted to advanced courses
- less student class time is spent on remedial material
- mathematics and science classes are increasingly emphasized

These findings are positive, especially if we assume a link between course-taking behavior and student attainment. However, the analysis also reveals areas in which more work needs to be done.

Table 3.—Association between curriculum standards and ethnicity, school size, and reform initiatives: School years 1974–75 through 1994–95

	Average number of student class periods in core	Average number of student class periods in advanced
constant	21.7852*	0.7998*
	(0.1636)	(0.0159)
pmin	-5.1466*	-0.6293*
	(0.3162)	(0.0308)
size	-0.0024*	$2.984\ 10^{-5}$*
	$(7.563)10^{-5}$	$(7.37)10^{-6}$
prerap	-4.714*	-0.4782*
	(0.2420)	(0.0236)
prencl	1.7216*	-0.0863*
	(0.2658)	(0.0259)
prerap*pmin	3.2124*	0.4952*
	(0.5911)	(0.0576)
prencl*pmin	-0.1002	0.056
	(0.5829)	(0.0568)
n (DF)	4369 (6, 4363)	4369 (6, 4363)
adj R^2	0.4167	0.1572
F value	521.183	136.847
Prob>F	0.0001	0.0001

* These findings are significant at 0.05.

NOTE: Numbers are multiplied by 10 to the negative X, i.e., $7.563^{-5} = 7.563 \text{ X } 10^{-5} = 00007.563$.

SOURCE: Alexander, Nicola, unpublished tabulations. Results of conducting multivariate analysis on relevant data from the New York State Basic Education Data System using SAS.

The significant association between curriculum standards and the size and ethnic profile of a school suggests that where a child attends school may have an adverse effect on the quality of the curriculum he/she receives. Further, the decline in the average number of student class periods allotted to advanced courses in schools with high minority student populations is a cause for concern. The timing of this decline implies that the Regents Action Plan may have had some unforeseen impact on these type of schools. The result of this "backwash" may have caused the overall increase in advanced learning to come at the expense of schools with high minority populations.

In sum, in New York State where curriculum standards have had a long history, there is little variation in the time assigned to the core. This implies that state constraints in required subject areas constrain the emergence of large differences in subject area patterns between schools with different socioeconomic and ethnic profiles. However, state education policies do not seem to be as binding in the area of advanced learning, where more variation across schools is apparent.

This implies that existing curriculum standards are mainly reaching one variable in the "standards" equation—subject matter. Perhaps, this explains the

recent decision by the New York State Board of Regents to require a more challenging curriculum in English, mathematics, social studies, and science in order to graduate from high school. If the findings of Altonji (1994) that *additional* courses do not have a substantial effect on educational or labor outcomes are accurate, then requiring mastery of the core curricula rather than focusing only on additional courses is an appropriate policy.

Ultimately, these findings suggest that we need to design standards carefully so that we are not merely giving a new name to the *status quo*. Further studies are needed to determine whether the difference in course-taking patterns is meaningful; in other words, does differential course-taking make a real difference in outcomes? If these changes are not meaningful, then we are not truly addressing the concerns of at-risk communities. Finally, while the results of this study imply that there is a role for standards in the educational arena, more detailed analysis is needed to determine just what that role is.

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