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The Cost-Effectiveness of Socioeconomic School Integration

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Introduction

The benefits that primary and secondary education convey to students and to society as a whole can never be exactly quantified. But this inability to put a firm price tag on the benefits of education does not diminish the usefulness for education policymakers of assessing the extent of a proposed education reform's economic impact relative to its costs.[1] Such an approach is more valuable than ever given that, according to a recent major study by the consulting firm McKinsey and Company, "school spending in the United States is amongst the least cost-effective in the world."[2] Determining the cost-effectiveness of a given education reform can

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provide vital insights into maximizing the economic return from each taxpayer dollar spent on education.

Indeed, a careful review of the costs and benefits of breaking up concentrations of school poverty through socioeconomic integration suggests that this particular education reform intervention might be highly cost-effective. Previous research suggests that schools with socioeconomic segregation that is half the national average level experience high school graduation rates that are ten percentage points higher.[3] Other research indicates that higher graduation rates deliver economic gains to the new graduates and their communities.[4] Combining these two research topics together in the present study allows us to explore the benefits of improving socioeconomic balance in schools and the costs of such an intervention.

In this chapter, I estimate the cost-effectiveness of socioeconomic school integration based on research regarding segregation's effect on graduation rates, the economic payoff of increased graduation, and the costs of programs that encourage families to choose to cross neighborhood borders for their children's schooling. On the benefits side, I trace how reducing socioeconomic segregation by half would increase the graduation rate by ten percentage points and result in a public gain—that is, the gain from increased tax revenues plus the savings from reduced spending associated with health care, crime, and welfare—of over $20,000 per student. The total gain—which includes both the public gain as well as increased private earning—is estimated at around $33,000 per student. On the cost side, I draw on studies suggesting that mechanisms to achieve voluntary integration would raise total public school expenditure about ten percent and estimate the cost of an intervention that halved socioeconomic segregation at just under $6,500 per student. Accordingly, the expected public return of socioeconomically integrating a particular set of schools is estimated at more than three times the cost, and the total return on this investment is estimated to exceed the costs by a factor of greater than five. These estimates exclude less tangible benefits to our democracy from gains in educational attainment generally and from socioeconomic integration specifically, such as increased civic participation.

The potential for such results lies in the fact that the critical factors for successful education and increased graduation are more likely to be found in socioeconomically mixed schools than in high-poverty schools. Consider the three key groups of actors in education: teachers, parents, and students. At a school that is significantly middle-class, one can expect

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to find stronger teachers with higher standards of and expectations for their students. Schools that are predominantly middle-class also are more likely than high-poverty schools to have an active parent population, which holds the school more accountable for its results, as well as a more stable student culture focused on finishing school and getting into college.[5] In contrast, high-poverty schools suffer from higher teacher attrition and a higher proportion of teachers instructing classes outside their respective fields;[6] less parent participation in PTA, school committees, and as volunteers in the classroom;[7] and a student body that is more mobile and disruptive while holding lower aspirations for college.[8] As a result, high-poverty schools have trailed significantly behind middle-class schools in terms of performance: it has been found that middle-class schools are twenty-two times more likely to be consistently high performing than high-poverty schools.[9]

Striving for socioeconomic integration is not a novel concept. More than seventy-five school districts, educating over four million students, already take socioeconomic status into account when considering student transfers, in drawing school boundaries, and/or in their assignment of students to schools of choice such as magnet schools.[10] The first districts to do so were La Crosse, Wisconsin, in the 1970s and Wake County, North Carolina, at the turn of the century.

Recent U.S. Supreme Court decisions, most notably *Parents Involved in Community Schools v. Seattle School District No. 1,* have been unreceptive to the use of race in the assignment of students to schools.[11] This has resulted in an increased interest in the use of socioeconomic status in student assignment, a legally promising strategy that has demonstrated greater success in improving education outcomes than integration by race alone has.[12] Many large, prominent school districts have adopted successful socioeconomic integration plans, including Cambridge, Massachusetts; Omaha, Nebraska; and St. Louis, Missouri,[13] and, most recently, at the end of 2009, the school district of Chicago, Illinois.[14]

Unfortunately, from a cost-effectiveness perspective, school districts that have implemented this intervention have not collected and amalgamated the necessary longitudinal cost and benefit data before and after actual implementation of this intervention—perhaps because of a lack of sufficient resources. In the absence of these data, cost-effectiveness can be measured by drawing upon various studies that inform both the expected costs and benefits of socioeconomic integration and applying these results to a hypothetical scenario of the intervention.

In this chapter, I construct such an estimate of the costs and benefits of socioeconomic school integration by modeling a hypothetical interdistrict transfer plan in which:

- Schools in poorer areas are magnetized to attract students from more affluent school districts;
- And these more affluent districts are encouraged through incentive payments to receive low-income transfer students.

I envision the plan's execution through a system of "controlled choice," in which parental choice of schools is honored with an eye to maximizing socioeconomic integration.[15] In our country's many metropolitan areas, this scenario might play out by urban students commuting to middle-class schools in the suburbs and by magnetizing urban schools to attract suburban students. I often will refer to this particular example for explanatory reasons; however, I recognize that the suburbanization of poverty makes this dichotomy less clear than it once was.[16] In the 2008 election cycle, one major presidential candidate proposed a plan along these lines that would provide $100 million to suburban districts accepting low-income transfer students and granting an additional $100 million in federal funding for urban magnet schools to attract suburban students.[17]

My scenario's interdistrict approach might overestimate the costs of socioeconomic integration in many cases, particularly in the South, where urban and suburban communities often fall into a single jurisdiction, in which case costs such as incentive payments to suburban schools outside the urban district would be unnecessary. But I base my model on an interdistrict approach because research finds that there is more socioeconomic segregation between districts than within them.[18] Further, my estimate of the intervention's benefits might be biased downward because, firstly, I use moderate to conservative estimates of the economic consequences of high school graduation and, secondly, I look only at the benefits that the creation of magnet schools delivers via socioeconomic integration. It may well be that magnet schools confer other benefits associated with the close fit between student interests and the school curriculum and/or with the feeling of ownership engendered by school choice.[19] However, because of this chapter's focus on measuring the cost-effectiveness of socioeconomic integration alone, I do not attempt to estimate the additional benefits of magnet schools.

In order to assess the costs and benefits of my scenario, certain assumptions must be made about the scenario's parameters. First,

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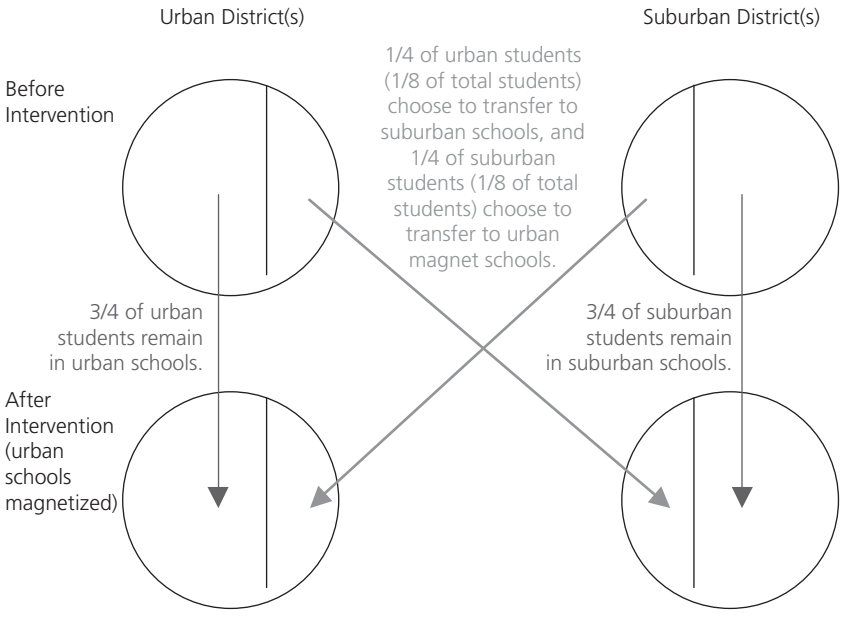
complete integration is probably unachievable. Therefore, I model the economic consequences of reducing socioeconomic segregation by half of its national level, or from a high school socioeconomic segregation index level of about 0.47, to approximately 0.24.[20] These index numbers, which refer to intradistrict segregation rather than interdistrict segregation, are provided by an Editorial Projects in Education research effort led by Christopher Swanson that analyzed the effect of segregation on high school graduation across the country. The segregation index, also known as an isolation index or a P* index, is a form of an exposure metric that measures the extent to which students eligible for free or reduced-price lunches (FRL), a proxy for low socioeconomic status, are isolated from non-FRL students within the district. The index represents how likely an FRL student will interact with another FRL student in school relative to how likely that student will interact with a non-FRL student. In a school district in which all of the FRL students are concentrated in one school that is fully FRL, the segregation index is 1.0; in other words, each FRL student is 100 percent more likely to interact with another FRL student than with a non-FRL student. The lower the index level, the more likely the FRL student is to interact with non-FRL peers. The segregation index is commonly found in the social science literature.[21]

A similar but not directly related metric known as a dissimilarity index, commonly used since the 1950s, measures the fraction of students within a given geographic unit who would need to move in order to reach complete integration.[22] According to Duncan Chaplin, the national dissimilarity index level for primary schools based on socioeconomic status is 0.5. If segregation were reduced by half, the new dissimilarity index level would be 0.25, indicating that one-fourth of the student population would have had to move in order to decrease segregation by half. (This presupposes, under a system of controlled choice, that middle-class students would not move from an urban district to the suburbs and that low-income students from the suburbs would not move to magnet schools in an urban district, given that such moves would exacerbate socioeconomic segregation.)[23] Within this framework, I develop my second assumption. I assume that one-quarter of the students in the interdistrict network would travel for their schooling: one-eighth would choose to commute full-time from more affluent areas to magnet schools in less-affluent areas, and one-eighth would choose to commute full-time from poorer areas to middle-class schools in more-affluent areas (see Figure 4.1). This post-intervention treatment condition can be contrasted with

FIGURE 4.1. Interdistrict Distribution of Students, Before and After Intervention



a pre-intervention comparison condition in which these students would attend their neighborhood schools full-time.

It is important to keep in mind that my scenario is built around districts with average—not complete—levels of segregation. Thus, the voluntary movement of students across district lines is intended to augment existing levels of socioeconomic diversity, rather than to constitute the entirety of integration. In other words, the movement across district boundaries of one-quarter of more-affluent suburban students (that is, one-eighth of total students) to magnet schools will not, on its own, lead to middle-class schools in the urban areas. But these students will be joining a student population that already has some level of socioeconomic diversity (recall that the national average segregation index level is 0.47), and the expectation is that these new students will raise previous levels of diversity dramatically—especially in any subset of magnet schools to which they are targeted.[24]

Third, I assume that graduating students within the scenario have attended socioeconomically integrated schools for half of their K–12 tenures, or seven years. (I round up to the nearest full year from six and a

half years in order to facilitate annual compounding for net present value cost estimates.[25]) In the studies cited below on the benefits of attending integrated schools, there is no indication about the duration of integrated schooling, so I assume a midpoint estimate. (I also estimate the cost of the intervention over other durations, such as four years for high school and thirteen years for an entire K–12 tenure.)

Costs

The expected costs of an interdistrict desegregation plan are principally driven by two factors. One, the additional expense of implementing and operating magnet schools in order to attract middle-class suburban students to urban schools. And two, the cost of instituting mechanisms by which to bring urban students to the suburbs for their education—mainly, an incentive payment to non-magnet schools that receive transfer students in order to reduce the very real possibility of political opposition from suburban residents resisting an influx of low-income students. The extra cost of transporting students across district boundaries comprises a key component of both of these factors.

Urban Magnet School Costs

Magnet schools develop particular strengths around given curricular themes or pedagogical approaches and market themselves accordingly. For example, a magnet school might be especially strong in math and science or in the performing arts, or it might use a Montessori teaching approach. Because of these unique themes, magnet schools often require additional equipment, singular facilities, and/or specially trained teachers, which lead to costs that traditional schools normally might not incur. Transportation costs are also greater than for neighborhood schools. However, as the studies mentioned below indicate, the extent of these costs is muted considerably by two factors. Magnet schools tend to spend less on fringe benefits for their personnel, given that magnet school teachers are generally higher-salaried, and their improved retention rates reduce the financial obligations of unemployment compensation.[26] Second, magnet schools are more likely to use their facilities cost-effectively because they often maximize student enrollment and retention from a pool of applicants eager to attend the themed school.[27]

The most systematic studies of the additional expense of magnet schools were conducted in the 1980s, when magnet schools were first

created. Although these studies are not new, the core factors that contribute to higher magnet school costs have not changed: staff development, personnel costs, materials/equipment, facilities, publicity, and transportation. These studies reveal that, as a general rule, the marginal increase in the cost of a magnet school, including transportation, is about 10 percent, +/– 2 percent in the school's initial start-up years—and even lower as the school becomes operational. The landmark study on magnet schools, including their costs, was conducted in 1983 by Rolf Blank and colleagues, with researchers at Abt Associates and Lowry and Associates, by looking at data from fifteen urban school districts that represented a range of student populations and geographic locations across the country. The school districts were selected randomly from among all urban districts in the country—stratified by size, region, and other characteristics—that applied for federal funding for magnet schools and that had the requisite number of magnet schools, whether with a merit admissions process or, as in my scenario, the more common lottery admissions process.

Blank and his colleagues found that the cost difference between magnet schools and traditional schools is about 8 percent, the largest factor of which is transportation (about one-fourth of the additional expense), and "narrows over time" as initial sunk costs are spread out over successive school years.[28] In his separate analysis of the Blank study's data, Kent John Chabotar, who was one of the original study's authors, stresses not only this point about the change from start-up costs to operational costs, but also the effects on start-up costs of increased enrollment: "Magnet schools in general cost more than non-magnets; however, most of these extra costs tended to be fixed. As magnet school enrollments increased, their per pupil costs decreased to a point near and often below per pupil costs at non-magnets."[29] Studies on the eve of the 1990s reiterated the Blank study's findings. After studying "nine urban high schools that prepare students for specific occupational fields as well as for college entrance," Vernay Mitchell and colleagues found that "differentials in operating or recurring costs appear to be relatively small when the exemplary schools are compared to other schools."[30] Lorraine McDonnell cites William Snider's 1987 conclusion that "magnets are from 10 percent to 12 percent more expensive to run than traditional schools" and includes the caveat that "a system of public school choice may impose start-up costs, but its operational costs should be no more than the current system's."[31] Finally, a 2008 report that "analyzes a recent survey

of several hundred teachers and administrators affiliated with magnet schools across the country" confirms the consensus amongst these earlier studies that the additional cost of magnet schools is about 10 percent of non-magnet school expenditure.[32] In this chapter's scenario, I assume that some students will cross district lines to attend magnet schools, which may involve higher transportation costs than intradistrict magnet schools; but given the long-run reductions in operating costs, the 10 percent premium seems reasonable to apply. Because only half of the schools in the hypothetical integration scenario are magnet schools (that is, every urban school), total additional expenditure due to magnet school expenses (including transportation) would be half of the 10 percent premium, or about 5 percent system-wide.

Suburban Transfer Costs

The scope and structure of state financing for transferring students to suburban schools have varied widely in states that have implemented school choice programs, whether voluntarily or by court order. Along with transportation costs, some states provide additional funding to the receiving suburban districts. Such supplementary payments serve as incentives to encourage suburban districts to admit urban transfer students.

The size of these incentive payments varies among states. In their review of the incentive payments made by states in eight school choice integration programs across the United States, Jennifer Jellison Holme and Amy Stuart Wells found that incentive payment designs range from arrangements in which the state pays the receiving district a fixed fee to ones in which the state pays the average per-pupil expenditure of the receiving district, the home district, or the state.[33] (These expenditure numbers vary because districts generate different amounts of funding from three main sources: federal, state, and local governments.) For example, in the interdistrict transfer programs in Milwaukee and Indianapolis, the state's incentive payment to the receiving suburban district is equal to the suburban district's per-pupil expenditure. This means that, for each transfer student, the receiving district collects funding from the state equal to what the local government spends on each of its home students in addition to the usual federal and state funds.[34] In the Rochester and East Palo Alto programs, the incentive payment is equal or nearly equal to the home urban district per-pupil expenditure. In other words, receiving districts receive all or most of the federal, state, and local funds that would have been allotted for the transfer student in the student's

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home district. In general, the former funding scheme (Milwaukee and Indianapolis) generates larger incentive payments than the latter scheme (Rochester and East Palo Alto) because suburbs generally, but not always, spend more than urban areas on education. As alternatives to both of these funding schemes, the state might allocate only the state's average per-pupil funds for the receiving district, such as in the case of Minneapolis's program, or the state might pay an incentive payment to the receiving district and a "shadow payment" to the home district, such as in the case of Little Rock's Majority-to-Minority program in Arkansas.[35]

Further insight into the structure and costs of incentive payments is provided by the experience of St. Louis's interdistrict racial desegregation program, which was established in 1983 and, as one of the country's largest school choice programs, has incorporated different incentive payment schemes over the years. For each transfer student, Missouri formerly allocated federal and state funds to receiving suburban districts equal to the district's total per-pupil expenditure. But the state recently switched to providing only the state's average per-pupil expenditure after suburban districts opted to continue voluntarily in the program despite the expiration of a court-supervised desegregation order. In its incipient stages, the program's financial arrangement was "the key" to its success, according to William Freivogel. Under the original plan, for each transfer student, the state paid the receiving school district the amount that the district spent educating each of its students. This fee would range from as little as $3,000 to as much as $10,000.[36] In theory, a suburban district does not gain financially from such an arrangement because the state covers only the district's cost of educating a new student; but, in practice, suburban districts would find this financial arrangement advantageous because, due to economies of scale, the marginal cost of educating each additional (transfer) student is below the per-pupil cost of educating the district's original core cohort of students.[37] Under the original plan, the state would, in addition, also pay the transfer student's home district (that is, St. Louis) half of the state's average per-pupil expenditure with the presumed intention that this money would be used to improve the quality of education in urban schools and would prevent urban districts from discouraging its students from transferring. In 2008 the payment to the receiving district was fixed at $8,000, roughly the state's average per-pupil allotment of funds (that is, it does not include local funds) and the "shadow payments" to home districts were discontinued.[38] The St. Louis experience with incentive payments offers a gloss on how these

payments function—in two different forms, one above average state per-pupil expenditure and one equivalent to it.

Historically, incentive payments have not been included in all interdistrict transfer programs. Some suburban districts determine that their schools benefit from the diversity fostered by transfer programs and willingly absorb a financial hit under the program's arrangement. State funding for these particular receiving suburban districts is below the state's average per-pupil expenditure. Under the interdistrict school choice designs of Boston's Metropolitan Council for Educational Opportunity (METCO) program and Hartford's Project Choice program, state funding per student was as low as $3,700 and $2,500 respectively in 2008. Rather than an incentive payment to the receiving district, this funding constituted a below-cost per-pupil tuition payment.[39]

Whether or not deemed politically necessary, financial incentives have a historical track record of encouraging voluntary desegregation successfully. Most school districts in the South hesitated on integration for more than a decade after *Brown v. Board of Education* (1954). In 1965 Congress passed legislation to provide federal Title I grants under the Elementary and Secondary Education Act and made the aid contingent on efforts to desegregate. Research finds that federal aid significantly affected the behavior of local officials in the South in the 1960s by encouraging them to desegregate their schools voluntarily. As a result, the incentives reduced "the burden that desegregation had long placed on the courts."[40]

As Holme and Wells's review of eight interdistrict transfer programs reveals, incentive payment designs vary widely—to the point where, in the case of Boston and Hartford, receiving districts effectively lose rather than gain funding by accepting urban transfer students. Because of both variance in current state funding schemes and uncertainty as to whether incentive payments are necessary, I model an amount of funding that has often proven effective in attracting students across school district lines: the 10 percent premium for additional magnet school costs (which covers both transportation and other special costs). A 10 percent premium for suburban districts receiving transfer students would cover transportation costs and would acknowledge the possibility of some political opposition to such transfer programs (even though some progressive communities might not need a financial carrot to encourage their adoption of a program whose potential benefits for suburban and urban students alike they recognize). Because only half of schools would receive this funding under my scenario, incentive payments would constitute an

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increase in total expenditures of 5 percent (that is, half of 10 percent). The "shadow payments" to urban districts, used in places such as St. Louis under its original transfer plan, would be unnecessary because urban districts would be receiving an additional flow of students and resources into their magnet schools, which would offset the loss of students and resources to the suburbs.

The 5 percent increase in total spending given to receiving districts would cover the additional cost of transferring more students to the suburbs, which is important because providing transportation free of charge to transfer students is essential to guaranteeing access to this opportunity to transfer to suburban schools, especially for low-income students.[41] Based on the studies of magnet school costs, the 5 percent increase in total expenditure seems to far exceed transportation costs for moving the same sized cohort of students across neighborhood school boundaries. Blank and colleagues found that about one-fourth of this additional expenditure covers transportation costs.[42] Assuming that the transportation mechanics for magnet students and transfer students to the suburbs would be roughly equivalent (in both cases, students would be transported from a selected group of pick-up points in one neighborhood to schools in another), the proportion of magnet school costs spent on transportation should serve as a rough guide for the proportion of the incentive payment that suburbs would need to spend on transportation.[43]

Indeed, for suburban transfer students, interdistrict transportation costs would likely constitute a quarter of the incentive payment. Given variance in the distances these students would travel, it is reasonable to assume that the average inter-district transportation cost per transfer student in the scenario would fall somewhere between the national average transportation expenditure per student transported, about $750 in 2005–06, and the high-end transportation costs of inter-district programs with ambitious transportation schemes. These latter high-end costs can reach, according to Holme and Wells, $2,000 per year, and perhaps more.[44] Accordingly, I estimate the transportation cost per non-magnet transfer student at the rough midpoint of this range, or $1,375. Under the scenario's assumptions, only one-eighth of the total students transfer from cities to suburbs, and, given that just over half of the country's students already use transportation, it can be further assumed that only about one-sixteenth of the total students would incur new non-magnet transfer student transportation costs of $1,375 each.[45] The other half of non-magnet transfer students (one-sixteenth of total students) would

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incur only the additional transportation cost between $1,375 and the current national average expenditure, resulting in a new cost of $625 per student. When the new costs incurred by all of the non-magnet transfer students are spread out across all students within the inter-district network, the cost amounts to $125 per student, or roughly 1.3 percent of total per-pupil public expenditure nationally in 2005–06.[46] Thus, these calculations indicate that one-fourth of the receiving district's incentive payment would cover new transportation costs and the balance would constitute a true incentive.[47]

When the additional costs incurred by the development and operation of magnet schools (5 percent) and incentive payments (5 percent) are considered, the total increase in public expenditure of inter-district socioeconomic integration is estimated to be 10 percent.[48] Using the 2004–05 school year as a base year, the net present value of the investment in socioeconomic integration over half of a student's K–12 tenure (seven years), rounded to the nearest ten, is estimated at $6,340. This cost calculation is outlined in the formula below, where t equals the years since the present (understood as the 2004–05 school year) and c equals the national average per-pupil expenditure for each year.[49]

$$\text{Per-pupil NPV of total cost over seven years, with 2004–05 as } t = 0 \quad = \sum_{t=-6}^{0} \frac{c}{10} (1.035)^{-t} = \$6{,}340$$

Benefits

The link between increased and improved education on one hand and increased employment, earnings, and productivity on the other is well-established.[50] This premise is at the heart of the desire to better quantify the economic payoff that students receive as the result of a given education intervention, namely its net impact on lifetime earnings. The benefit of integrated schools can be approximated by looking at the effect on high school graduation rates, and through this lens, on lifetime earnings. The economic gain of an intervention goes beyond simply the private gain as expressed by the high school graduate's higher earnings; it also includes public gain, such as all the benefits that are experienced by people other than the person who received the extra education. It includes increased tax revenues, as well as savings from reduced spending associated with health care, crime, and welfare. Inevitably, estimates for both

private and public gain will fail to capture other less tangible benefits to society, some of which I detail below.

An intervention's impact on high school graduation rates is particularly revealing for a cost-effectiveness study given that high school graduation is a significant indicator of an individual's economic prospects, especially because of the strong correlation between high school graduation and college matriculation.[51] Claude Fischer and colleagues write that "social scientists have long established that people's educational attainments are the strongest immediate determinants of their economic fortunes."[52] Indeed, this fact is a large part of the reason that there has been a recent upswing of interest in graduation rates, especially since the enactment of the No Child Left Behind Act in 2002.[53] As President Barack Obama insisted in his first address to the U.S. Congress, "Dropping out of high school is no longer an option. It's not just quitting on yourself, it's quitting on your country."[54] The particular failure of schools to graduate underprivileged students makes this measurement especially critical for assessing how well an economic intervention addresses the needs of the huge proportion of students in "dropout factories."[55] Moreover, relative to other modes of educational assessment, such as test scores, the long-run consequences of high school graduation rates have been better established, and their economic impact has proven more conducive to economic analysis.[56] In his endorsement of the use of graduation rates in cost-effectiveness studies, Clive Belfield concludes: "Given the empirically identified economic benefits to the state of high school graduation (higher tax payments, lower expenditures on criminal justice, health, and welfare), a large fraction of investments that are effective in this domain should be cost-effective."[57]

High school graduation does not capture all the benefits of socioeconomic integration, such as higher academic performance or better preparation for laboring in a global and diverse workforce. But it does arrive at a central consequence with quantifiable results, and it avoids double counting benefits through overlapping measures of success.[58] At a minimum, the benefits of a socioeconomic integration program can be approximated through its effects on graduation rates; these provide a low bound on the full social benefits. Nevertheless, it is worth considering additional benefits, at least qualitatively. Among these benefits, for example, is the fact that a more highly educated population will be more civically and politically engaged. Although more than half of high school graduates tend to vote in major elections, just over one-third of

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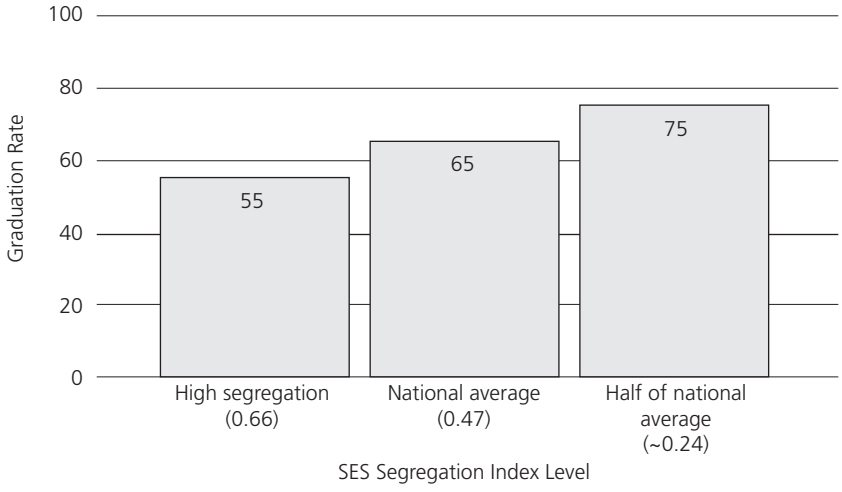
Americans without a high school degree voted in the 2000 and 2004 elections.[59] Other social benefits from increased education include an echo effect leading to more highly educated subsequent generations, healthier families, more efficient consumer choices (constituting an effect similar to that of increased earnings), and reduced teenage pregnancy.[60] Further, students who attend integrated schools are better prepared to participate in a global and diverse workforce. Employers believe that employees are more productive if they know how to work and get along with colleagues of various backgrounds. The 553 social scientists who authored an *amici curiae* brief for *Parents Involved v. Seattle School District* in support of the Seattle School District's integration program presented research results before the U.S. Supreme Court that support this link between past experience in an integrated environment and future productivity. Tellingly, the social scientists stressed that "the U.S. military has found that policies that encourage the participation and leadership of African Americans are essential for the effective functioning of the military in a multiracial society."[61]

Another benefit of socioeconomic integration that I do not include in the quantitative estimates—outside of their correlation with increased attainment—are gains of increased academic achievement, especially increased test scores and the deeper knowledge and understanding that these might imply.[62] Again, research suggests that economic and racial desegregation improve test scores.[63] Increased test scores are tied to increased earnings, although the size of the effect is disputed. In his review of the relevant literature, Belfield highlights three studies. In one, Eric Hanushek writes that a one standard deviation increase in test scores raises annual earnings by as much as 12 percent.[64] However, in the second study, James Heckman and Edward Vytlacil's study found a much weaker association.[65] Finally, Heather Rose found mixed results based on gender.[66] As Belfield writes, although it is clear that higher educational achievement leads to higher earnings, "the magnitude of the gain from higher achievement is open to debate."[67]

Socioeconomic Integration and Graduation Rates

A link between socioeconomic school integration and increased high school graduation is suggested by Christopher Swanson's recent study on graduation rates across the country and the factors influencing these rates. His study marks "the most extensive set of systematic empirical findings on public school graduation rates in the United States available to date."[68]

FIGURE 4.2. Estimated Graduation Rates, by SES Segregation Index Level



After controlling for other pertinent district characteristics, Swanson found a modestly strong negative correlation (r = –0.45) between graduation rates and socioeconomic segregation within districts.[69] In fact, there is a "more dramatic pattern" between socioeconomic segregation and graduation rates than between racial segregation and graduation rates.[70] Swanson's analysis of the differences in graduation rates in a cohort of sixteen southern states plus the District of Columbia suggests a difference in graduation rates of roughly ten percentage points between school districts whose high schools are at the national average socioeconomic segregation index level of 0.47 (approximately 65 percent graduation rate) and school districts whose high schools experience half that level of segregation (approximately 75 percent) (see Figure 4.2).[71] Other research suggests that the changes in graduation rates connected to integration do not constitute a zero-sum phenomenon: when low-income students do better, middle-class students are not hurt.[72] Ten percentage points is also the difference that Swanson found between the graduation rate of highly socioeconomically segregated schools with a segregation index level of 0.66 (55 percent) and the graduation rate of schools with an average segregation index level of 0.47 (65 percent).[73]

One promising area for future study is measuring the impact on graduation rates of the implementation of a socioeconomic integration plan by

comparing graduation rates in the two different contexts—before and after integration—as it would help us understand the relationship between socioeconomic integration and high school graduation. A longitudinal study that examined the relationship would offer more confident conclusions about integration than those provided by my use of Swanson's data, which compare graduation rates between segregated and integrated schools rather than documenting an actual switch in segregation context. However, given the current paucity of research on this topic, the ten percentage point graduation rate difference between economically segregated and integrated schools suggested by Swanson's data is the most reliable estimate available and is consistent with the findings of research studying the effect of actual implementations to decrease racial segregation.[74]

Moreover, the ten percentage point graduation rate differential is supported indirectly by a recent longitudinal study of Charlotte-Mecklenburg's school choice program in which ninth-grade students from low-quality neighborhood schools could enter a lottery to attend schools outside their neighborhoods. The study found that the program increased the high school graduation rate of lottery winners by about nine percentage points. Although the study did not specifically measure the amount of socioeconomic integration engendered by Charlotte-Mecklenburg's school choice program, the program prioritized FRL-families' preferences to attend FRL-minority schools and was thus oriented toward significant socioeconomic integration.[75]

Thus, despite the limitations of the current research literature, the experiences of urban-suburban school choice programs in Charlotte-Mecklenburg and elsewhere help corroborate that such an increase in graduation rates due to socioeconomic integration—and, in the case of St. Louis's school choice program, racial integration as well—is realistic. In St. Louis, the graduation rates in 1993 for black students who were freshmen in 1989 and either attended an urban magnet school or transferred to a suburban school were around thirty percentage points higher than they were for black students who were enrolled neither in the magnet schools nor in the suburban schools.[76] The St. Louis example suggests that integration might raise graduation rates even more than ten percentage points, especially given the additional positive effect of improved educational quality at the magnet schools.

As in St. Louis, integration is associated with high graduation rates in Cambridge, Massachusetts and Hartford, Connecticut. Since the early 1980s, Cambridge has integrated its schools by race and, more recently,

by socioeconomic status. Cambridge's 2009 graduation rates for black (79.8 percent), Hispanic (90.6 percent), low-income (85.3 percent), and limited English proficiency (79.1 percent) subgroups exceeded—in each case—the state graduation rates by roughly ten to over thirty percentage points. Cambridge's graduation rate for low-income students (85.3 percent) far exceeded Boston's (60.4 percent) and the commonwealth's (66.9 percent).[77]

A study from the 1960s through the 1990s followed the progress of 700 urban students in Hartford, nearly all black, who participated in the city's urban-suburban transfer program known as Project Concern. Along with keeping track of the graduation rates of a cohort of urban students, virtually all of whom were randomly selected to transfer to the suburbs, the study also followed a control group of students who remained in urban schools. Whereas 36 percent of the control group dropped out of high school, all of the transfer students graduated.[78]

The possibility of such a striking relationship between integration and increased graduation is plausible for several reasons. As was mentioned at the beginning of this chapter, the factors that educators consistently cite as essential to successful education—better teachers with higher standards, more active parents, and a student culture conducive to graduating from high school and matriculating at college—are more likely to be found at middle-class schools than at high-poverty schools. The influence of a student's peer environment is particularly critical for improving the chances of the student's graduation. A student is likely to perform better in a school where the student's peers study, do their homework, expect to graduate, and plan on going to college. Research indicates that poor children are particularly sensitive to their school environment. In the absence of strong family backgrounds—which are more prevalent amongst middle-class students—the aspirations of students from low-income families are more heavily influenced by the peers they meet at school.[79]

The Economic Benefits of Graduation

Although uncertainty exists regarding the magnitude of the economic gain of increased achievement, as measured by test scores, there is a growing consensus on the economic magnitude of increased attainment, as measured by high school graduation rates. This development is due to the recent work of several researchers from Columbia, Princeton, Harvard, Tel Aviv University, City University of New York, and the University of California-Berkeley on the economic consequences of high school

graduation. Their findings were brought together and published by Clive Belfield and Henry Levin in *The Price We Pay: Economic and Social Consequences of Inadequate Education*.

In exploring what it costs taxpayers not to make an investment regarding a given intervention that increases high school graduation rates, the group of researchers led by Belfield and Levin found that the net lifetime public cost-savings per additional high school graduate is, on average, $209,200 in constant 2004 dollars. Given the difference between a dollar spent today and one received in the future, Belfield and Levin discount future gains at a rate of 3.5 percent per year (the same rate I applied in my cost calculations) and present all of their estimates at present value for a cohort of individuals who were twenty years old in 2005. Their estimate of the net lifetime public cost-savings per additional high school graduate accounts for public savings from four factors: increased tax revenue due to increased earnings ($139,100), decreased health care spending ($40,500), decreased costs associated with the criminal justice system ($26,600), and decreased welfare spending ($3,000). Potential savings from graduating more black males—the demographic whose graduation rates are most likely to be improved by inter-district socioeconomic integration—are even higher. Belfield and Levin calculate that the public savings for each additional graduate who is a black male is as high as $268,500.[80] Indeed, a study by Mark Cohen and Alex Piquero concludes that the public gain of graduating a high-risk youth can range into the millions of dollars.[81]

A 2009 study by Northeastern University's Center for Labor Market Studies confirms the findings of Belfield and Levin's group in calculating that "the average high school dropout will cost taxpayers over $292,000 [2007 dollars] in lower tax revenues, higher cash and in-kind transfer costs, and imposed incarceration costs relative to an average high school graduate."[82] In constant 2004 dollars, the study's estimate of the cost of a high school dropout is roughly $266,030, or about Belfield and Levin's estimate for the cost of a black male high school dropout.[83]

Further, in addition to these public economic gains are private gains for high school graduates resulting from increased earnings due to higher wages and increased working hours and weeks per year. Indeed, it is precisely these increased earnings that are fueling the increased tax revenue attained by the public at large. Nobel laureate James Heckman and Pedro Carneiro summarize the research consensus that the rate of private return to an additional year of schooling "exceeds 10 percent and may

TABLE 4.1. Cost Savings per Additional High School Graduate

Study	*Public, Private, or Total*	*Savings per Average Youth ($)*	*Savings per Higher-risk Demographic ($)*		*Discount Rate (%)*
Belfield and Levin (with Rouse)	Public	209,200	Black male	268,500	3.5
	Private	260,000		—	3.5
	Total	330,100[a]		370,900[b]	3.5
Center for Labor Market Studies	Public	266,030	—	—	Not reported

Note: All dollar figures are constant 2004 dollars.

[a]$139,100 is subtracted from the summation of public and private gains in order to avoid double counting this tax revenue (income, property, and sales).

[b]Rouse's study does not report a separate private earnings estimate for a black male high school graduate, so the total estimated savings for a black male is a summation of the public savings estimate for a black male and the private earnings estimate for an average youth, minus $157,600, the estimated additional tax revenue—income, property, and sales—for a black male graduate (in order to avoid double counting this tax revenue).

be as high as 17 to 20 percent."[84] According to a recent study by Cecilia Elena Rouse, also included in Belfield and Levin's volume, that assumes an annual discount rate of 3.5 percent and annual income growth of 1.5 percent, the lifetime difference in earnings between a high school graduate and a dropout is $260,000.[85] This research suggests that an individual's completion of high school results in lifetime private gains that exceed even the substantial lifetime public gains.[86]

The Economic Benefits of Socioeconomic Integration

The association between integration and graduation rates highlighted by Swanson's study—which, despite its limitations, is the most promising empirical analysis of the relationship between integration and graduation currently available—suggests that an intervention that reduces current segregation from the national average to half of that average could raise overall graduation rates by ten percentage points and lead to each new graduate saving the public approximately $209,200 over the student's lifetime—and perhaps even more, to the extent that socioeconomic integration will raise the graduation rates of black males in particular, saving the public $268,500 for each male who completes high school.

Using student population data from 2005–06, during which 3.84 million students began ninth grade nationwide, increasing this cohort's

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graduation rate by ten percentage points would mean 384,000 more graduates would each save the public $209,200 for a total present value of more than $80 billion in constant 2004 dollars over the students' lives. To put that savings into perspective, averaged out over the cohort of 3.84 million students, the gain would be $20,920 public dollars per student.[87]

When the public and private gains are amalgamated using the more conservative estimate of the link between graduation rates and earnings suggested by Rouse's more recent study, the total gain from the investment in integration would be $33,010 per student in constant 2004 dollars.[88] Put differently, increasing the graduation rate of the nation's 3.84 million freshmen by ten percentage points through socioeconomic integration would result in a gain of nearly $127 billion, on the order of 1 percent of GDP.

As mentioned, it is possible that in some cases the economic benefit of socioeconomic integration would be dramatically higher than the estimates presented above suggest. For example, consider the well-documented case of Hartford's Project Choice program. The graduation rate of the mostly randomly selected urban students who transferred to the suburbs was thirty-six percentage points higher than that of a randomly selected control group of urban students who did not transfer (yet, unlike in my proposed scenario, did not receive the advantage of integrating with incoming suburban students transferring to magnet schools). Further, most of the beneficiaries of increasing graduation rates through integration would be black males, each of whom is projected to save the public $268,500 by graduating from high school. (This figure is similar to the one the Northeastern University study suggested as the average public benefit of each additional high school graduate, regardless of the student's race or gender.) Using this public benefit estimate and Hartford's level of increased graduation, the public benefit of socioeconomic integration would average out across all students to $96,660 per student. The total benefit, public and private, would be $133,520 per student.[89] These figures suggest an enormous yet latent economic potential might exist in heavily segregated districts with low-socioeconomic-status schools.

Returning to the more conservative estimate of benefits, how do these benefit projections compare to the intervention's cost projections? Recall that the model's assumption that seven years of integration—a midpoint estimate of a K–12 tenure—costs a total present value of $6,340 per pupil. The public benefit of a ten percentage point increase in the

TABLE 4.2. Benefit-cost Ratios of Socioeconomic School Integration

Graduation Rate Increase (percentage points)	*Public or Total Benefits*	*Lifetime Benefit per High School Graduate, Using Belfield and Levin Estimates ($)*	*Total Benefit for National Cohort ($)*	*Benefit-Cost Ratio*		
				Four Years of Expenditure (High School Tenure) or $3,690	*Seven Years of Expenditure (Half of K–12 Tenure) or $6,340*	*Thirteen Years of Expenditure (K–12 Tenure) or $11,400*
10	Public	20,920	80 billion	5.7	3.3	1.8
10	Total	33,010	127 billion	8.9	5.2	2.9
36	Public	96,660	[a]	[b]	[b]	8.5
36	Total	133,520	[a]	[b]	[b]	11.7

Note: All dollar figures are constant 2004 dollars.

[a]Total benefit not calculated because a thirty-six percentage point increase in the national graduation rate would exceed 100 percent. The thirty-six percentage point graduation rate increase is offered as a possible high-bound estimate for integration's effects in heavily segregated districts with low socioeconomic status schools and not as a national estimate.

[b]The thirty-six percentage point graduation rate increase is drawn from the Hartford Project Choice experience, in which students participated for thirteen years.

graduation rate is estimated at $20,920 per student. Accordingly, such an intervention would exceed its costs by a factor of 3.3. The total benefits—public and private ($33,010 per pupil)—are estimated to exceed the intervention's costs by a factor of 5.2. Past experiences such as that of Hartford's inter-district program, however, suggest that the public benefits and total benefits might exceed costs by a factor ranging as high as 8.5 and 11.7, respectively.[90]

My assumption that the ten percentage point graduation increase reflects seven years of the intervention's implementation was generated out of uncertainty regarding the duration of integration in studies documenting the relationship between integration and graduation. Notably, Swanson's study looks at a snapshot of graduation rates and segregation levels in high school. The graduation rates he reports might reflect differences in integration for just the four years of high school. Alternatively, his findings might reflect longer exposure to integration, perhaps over students' entire K–12 tenures. Adjusting cost estimates accordingly, in the former case the public benefit-cost ratio of integration is estimated at 5.7, and the total benefit-cost ratio is estimated at 8.9. In the latter case, these ratios would be 1.8 and 2.9, respectively.

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Conclusion

Cost-effectiveness studies of long-term education interventions necessarily require a chain of mutually dependent assumptions. In establishing my assumptions, I have tried to be consistently moderate to conservative in their impact on the net cost-effectiveness of the education reform. Thus the results—although gesturing toward a possible range of estimations—tend to constitute low- to medium-bound estimates of benefits and medium- to high-bound estimates of costs. Nevertheless, my analysis—which applies results of current research on the relationship between integration, graduation, and economic payoff—suggests that the benefits of a program to achieve voluntary socioeconomic integration through support of magnet schools and financial incentives constitute improvements in lifetime outcomes that exceed costs. Of course, the absence of direct evidence from longitudinal studies of those districts that have implemented programs of socioeconomic integration requires us to look at a hypothetical program. But, at the very least, I conclude with reasonable confidence that socioeconomic integration raises high school graduation rates and that greater graduation generates higher individual earnings and public savings to the point of exceeding integration's costs. As a useful benchmark, I have drawn on research suggesting that reducing socioeconomic segregation to half of its current level would raise graduation rates by about ten percentage points. Accordingly, I have estimated the cost-effectiveness ratio of socioeconomic school integration to be 3.3 for public benefits and 5.2 for total—that is, public and private—benefits.

This suggests that socioeconomically integrated schools might be more cost-effective than private school voucher programs, an intervention that has demonstrated only modest gains that do not offset the large adjustment costs of such programs.[91] My estimates also suggest that socioeconomic integration might be more cost-effective than the reduction of class size, which studies have indicated yields a public benefit-cost ratio of 1.46, as well as more effective than the improvement of teacher quality through increasing teacher salaries by 10 percent, which research has suggested yields a public benefit-cost ratio of 2.55. One intervention that some studies indicate is more cost-effective than my estimates of socioeconomic integration's cost-effectiveness is the implementation of specialized, publicly funded preschool programs such as the Chicago Parent-Child Center and the Tennessee First-Things-First programs.[92] Yet these

programs have not proven themselves scalable. Head Start, the most ambitious attempt at scaling such preschool programs, has demonstrated much more limited results.[93] Moreover, the results of these specialized preschool programs might conflate the effects related to their particular intervention and the effects of their early timing. In other words, any intervention—including socioeconomic integration—may well have more impact the earlier it is administered. Indeed, studies have documented that socioeconomic integration at the pre-kindergarten level has had substantial effects.[94]

The research reviewed and amalgamated in this paper weighs strongly that segregated environments thwart students' achievement of their full potential. Focusing on one key variable, high school graduation rates, this study has sought to estimate the prospective gains of school integration as it affects lifetime earnings, tax payment, and demand on public services. Even though the study was moderately cautious, the existing evidence is promising for socioeconomic diversification strategies. It suggests that every one dollar spent today to promote socioeconomic integration might be expected to yield, through public saving and private earnings, more than five dollars in the future at present value. Such promise warrants further and more rigorous research of this education intervention.

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Appendix 4.1
National Average Per-Pupil Expenditures for Years Used in Cost Calculations

Number of School Years Included in Cost Calculation	*t* =	*School Year*	*Average Per-Pupil Expenditure ($)*
1	0	2004–05	9,316
2	–1	2003–04	8,900
3	–2	2002–03	8,610
4	–3	2001–02	8,259
5	–4	2000–01	7,904
6	–5	1999–2000	7,394
7	–6	1998–99	7,013
8	–7	1997–98	6,676
9	–8	1996–97	6,393
10	–9	1995–96	6,147
11	–10	1994–95	5,989
12	–11	1993–94	5,767
13	–12	1992–93	5,584

Source: "Table 181. Total and Current Expenditures per Pupil in Public Elementary and Secondary Schools: Selected Years, 1919–20 through 2005–06," Digest of Educational Statistics, IES National Center for Education Statistics, U.S. Department of Education.