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Summer Opportunity Scholarships: A Proposal To Narrow the Skills Gap

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Summer Opportunity Scholarships (SOS): A Proposal to Narrow the Skills Gap

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Abstract

Even in early grades, a large gap in skills exists between students from economically advantaged and disadvantaged families. Evidence suggests that a substantial share of this skills gap emerges during the summer months, when school is not in session. Children from disadvantaged families experience greater losses in skills during summer vacations than do their more advantaged counterparts. Several studies provide evidence that summer school or summer enrichment programs are effective interventions for stanching this summer learning loss. Based on this evidence, we propose and design a policy of Summer Opportunity Scholarships (SOS), which will provide scholarships so that economically disadvantaged children in kindergarten through fifth grade can participate in a six-week summer school or summer enrichment program of their parents' choosing. SOS summer program providers will be required to use small-group, scientifically based instruction with a strong emphasis on improving basic reading and math skills, which are a particular area of concern for many disadvantaged children. Students and providers participating in SOS will be evaluated annually to assess the program's effectiveness. We provide budgetary estimates for a nationwide SOS program. In our budget, financial responsibility for SOS would be shared equally by the federal and state governments, with each responsible for \$2 billion per year once SOS is fully phased in. In view of the promising evidence on the effectiveness of summer school, we believe that SOS has the potential to make a lasting contribution toward narrowing the skills gap between advantaged and disadvantaged students.

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I. Learning Loss during Summer Vacation

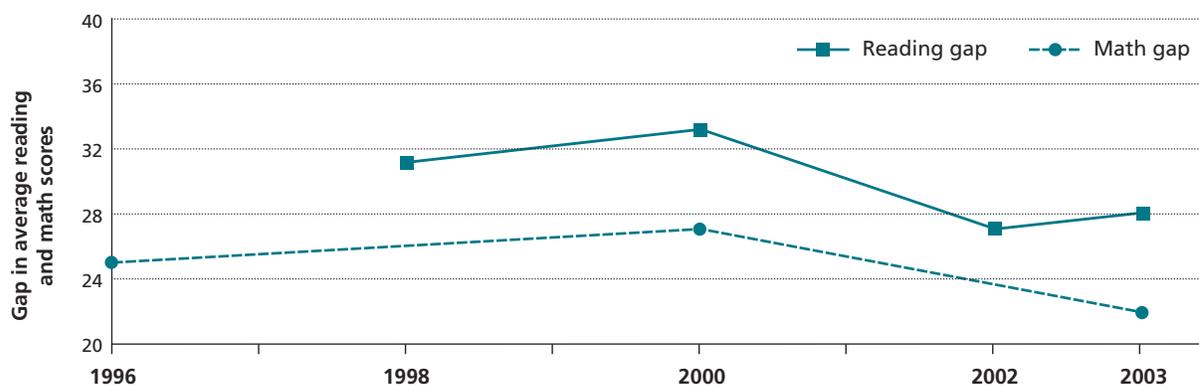
Even in relatively early grades, a large gap in skills is apparent between students from economically advantaged and disadvantaged households. One way to measure the skills gap is to look at the differences between students who were eligible for free or reduced-price lunch and those who were ineligible for the lunch program in their performance on the National Assessment of Educational Progress (NAEP), a test given to a nationally representative sample of fourth-, eighth-, and 12th-graders. In the 2003 NAEP, which was given to approximately 343,000 fourth-grade students, those who were eligible for free or reduced-price lunch scored an average of twenty-eight points lower in reading and twenty-two points lower in math than students not eligible for free or reduced-price lunches (on a test in which a perfect score would be 500 points). To put this in perspective, the score of the average fourth-grade low-income student falls just below the 25th percentile of the distribution of reading and math scores for the remaining students.

Since African Americans are relatively more likely to be found in these low-income households than whites, there is little surprise in discovering that the African American-white gap in test scores is similar to that based on income levels. In 2003, white students in fourth grade on average

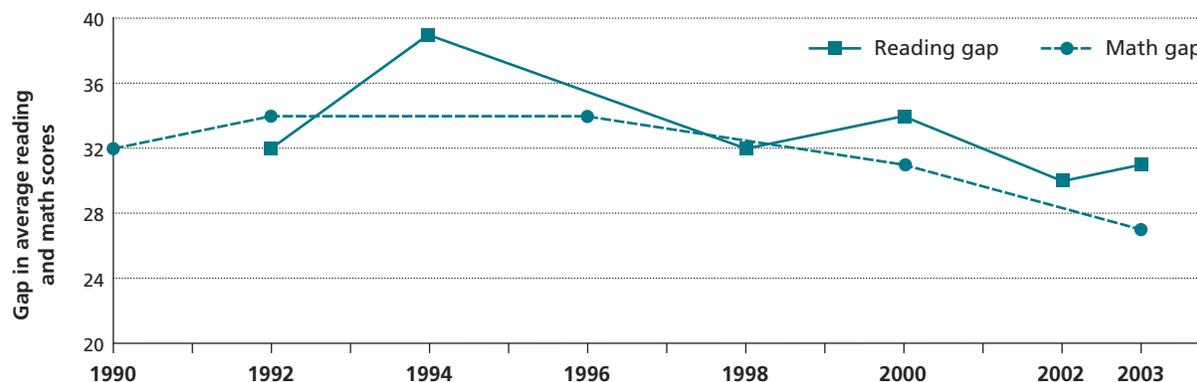
scored thirty-one points higher than African American students on reading and twenty-seven points higher on math. Similar gaps in skills across African American and white students have been found in a variety of studies using a variety of different tests (Rock and Stenner 2005). Trends in these gaps by free or reduced-price lunch eligibility or race over time, using data available from NAEP, are displayed in figures 1 and 2. As is evident from the figures, some progress has been made in closing these gaps, but they remain sizable.

Much of the discussion of the skills gap has implicitly assumed that this gap reflects circumstances and events—whether at school, at home, or in the community—that occur during the standard school year from September to June. However, a body of evidence suggests that a substantial share of the skills gap emerges during summer vacation. For many American children, the traditional three-month summer vacation is a time when their skills atrophy by as much as a third of a school year of learning (Cooper et al. 1996). Moreover, during the summer vacation, students are more likely to be victims of violent crimes and to engage in risky behaviors than they are during the school year (Snyder and Sickmund 1999). Summer learning loss is well known by teachers, who routinely anticipate dedicating one or two months at the

Figure 1. Gap in Average Reading and Math Fourth-Grade NAEP Scores, Higher Income vs. Free or Reduced-Price Lunch–Eligible Students



Source: NAEP Data Tool using the 1998, 2000, 2002, and 2003 fourth-grade reading and the 1996, 2000, and 2003 fourth-grade mathematics assessments.

Figure 2. Gap in Average Reading and Math Fourth-Grade NAEP Scores, White vs. African American Students

Source: NAEP Data Tool using the 1992, 1994, 1998, 2000, 2002, and 2003 fourth-grade reading and 1990, 1992, 1996, 2000, and 2003 fourth-grade mathematics assessments.

start of each school year to reviewing forgotten material (Fairchild and Boulay 2002).

Several studies confirm the existence of summer learning loss and find that it is not evenly distributed among advantaged and disadvantaged students. In a groundbreaking study, Barbara Heyns (1978) compared reading and math school year and summer achievement gains among 1,128 sixth- and seventh-graders in Atlanta, Georgia. While achievement gains over the school year were moderately associated with family income, gains over the summer were very strongly associated with family income. High-income white students gained 0.29 grade equivalents in their test scores over the summer, while middle-income white students gained 0.18 grade equivalents and low-income white students gained just 0.07 grade equivalents. The situation was even more lopsided for African American students: while high-income African American students made achievement gains of 0.22 grade equivalents over the summer, on average, middle-income African American students suffered losses of 0.12 grade equivalents, and low-income African American students suffered losses of 0.28 grade equivalents. Heyns (1978, p. 187) summarized the evidence as follows: “The gap between black and white children, and between low- and high-income children, widens disproportionately during the months when schools are not in session. Schooling apparently attenuates the influence of socioeconomic status on achievement and thereby

reduces the direct dependence of outcomes on family background.”

Numerous other studies have documented the disparate effects of summer vacation on disadvantaged students. Cooper et al. (1996) conducted a meta-analysis that pulled together data from thirteen previous studies that examined the effects of summer vacation on achievement, including Heyns (1978). A proper meta-analysis can draw on a greater body of data than any single study and can also adjust for different methodologies that may have been used in the literature. Cooper and colleagues found that among students as a whole, taking all the studies as a group, students’ fall test scores were slightly less than they were in the previous spring, consistent with a modest overall summer loss. All students suffered summer learning losses in math, regardless of family income. However, the reading skills of middle-income students actually improved over the summer, while those of low-income students deteriorated, so that a three-month reading achievement gap emerged during the summer.

A similar result emerged from a recent analysis by Alexander, Entwisle, and Olson (2004) of Baltimore’s Beginning School Study. The researchers used three factors—family income relative to family size, parents’ education levels, and parents’ occupations—to classify students according to socioeconomic status, or SES. They found compelling evidence that the negative effects of summer

vacation are attenuated or reversed for students with higher socioeconomic status. This pattern is depicted in figures 3A and 3B, which display school year and summer reading comprehension and mathematics gains for a random sample of nearly 700 first-graders from twenty Baltimore public schools in the fall of 1982.¹ These figures suggest three conclusions. First, (if one accepts the scaling of the exams) achievement gains are generally greater in the earlier elementary grades for both reading and math, suggesting the existence of a peak learning period in a child's education. Second, student performance during the school year is not significantly influenced by socioeconomic status. Figure 3A shows that the school year gains in reading and math among students of low and high socioeconomic status are virtually indistinguishable. Third, student performance during the summer is strongly correlated with socioeconomic status, especially for math. Figure 3B shows that while students from high-socioeconomic-status families make gains during the summer months, students from low-socioeconomic-status families, on average, experience relatively large losses, especially in the early grades. Indeed, Alexander, Entwisle, and Olson conclude that the widening skills gap is due almost exclusively to differential rates of summer learning, since all students experience parallel gains during the school year, but students of higher socioeconomic status pull ahead during the summer while students of lower socioeconomic status fall behind.²

In an earlier study, Entwisle, Alexander, and Olson (1997) attributed this pattern of summer learning loss to "faucet theory," since when school is in session, the faucet of learning is turned on and achievement rises for all children.

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1. Test score gains are reported in California Achievement Test scale scores.
 2. One recent study by Fryer and Levitt (2004) contradicts the evidence presented here on the disparities in summer learning loss by race. Using data from the Early Childhood Longitudinal Study (ECLS), Fryer and Levitt found that the summer setback among African American kindergarten students was not significantly different from that of white kindergarten students and that African Americans' scores decreased, not increased, in both math and reading during the school year. However, it is our opinion that this contradiction does not undermine the motivation for our proposal for two reasons: First, the results using the ECLS data are substantially different from those from all other studies (Rock and Stenner 2005). Second, unlike Fryer and Levitt, our paper is focused primarily on disparities in summer learning loss across income levels, not race.

During the summer, however, the faucet is turned off for children of lower socioeconomic status, while the faucet is left on for children with higher socioeconomic status since they often continue to participate in some form of educational activity, either at home or in an organized program away from home. Common elements of socioeconomic status, such as poverty status, parental education, and family structure, all influence a child's home learning environment (Schacter 2001). Children from poor families are read to less often, own fewer books, and watch more television. The more education a mother has, the more likely she is to read to and to introduce literacy techniques to her child. Never-married mothers are least likely to monitor a child's schoolwork or to supervise a child at home. By many measures of "disadvantaged," the home environments of disadvantaged students are considerably less conducive to continuous academic achievement from the school year through the summer. Krueger (2000) called this phenomenon the "Harry Potter divide," as low-income children are much less likely to read the Harry Potter books, or any other book for that matter, over the summer than are high-income children. (Indeed, the lower rate of reading Harry Potter is borne out by Gallup poll data.)

But despite the phenomenon of summer learning loss, surprisingly few children are attending summer school. Using data from the October Current Population Survey, the National Center for Education Statistics estimated that, among children enrolled in grades one through seven, 7.5 percent, or just under 2 million children, attended summer school in 1996 (National Center for Education Statistics 1998).³ Rates of summer school attendance are slightly higher, but still notably low, for children in families with incomes in the bottom quintile of the income distribution, with only 9.4 percent attending summer school. Parents from many of these families recognize the potential problem. A recent study by the Council of Chief State School Officers (2005) reports that 60 percent of low-income parents are concerned

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3. Since the survey questions regarding a child's summer activities were included as a one-time supplement to the 1996 October Current Population Survey, we are unable to produce more recent estimates using this data set. In addition, there seems to be no other centralized data source gathering information on summer school participation. Thus, this 1996 estimate of summer school participation is the best estimate available to our knowledge.

Figure 3A. School Year Gains, by Socioeconomic Status, Beginning School Study

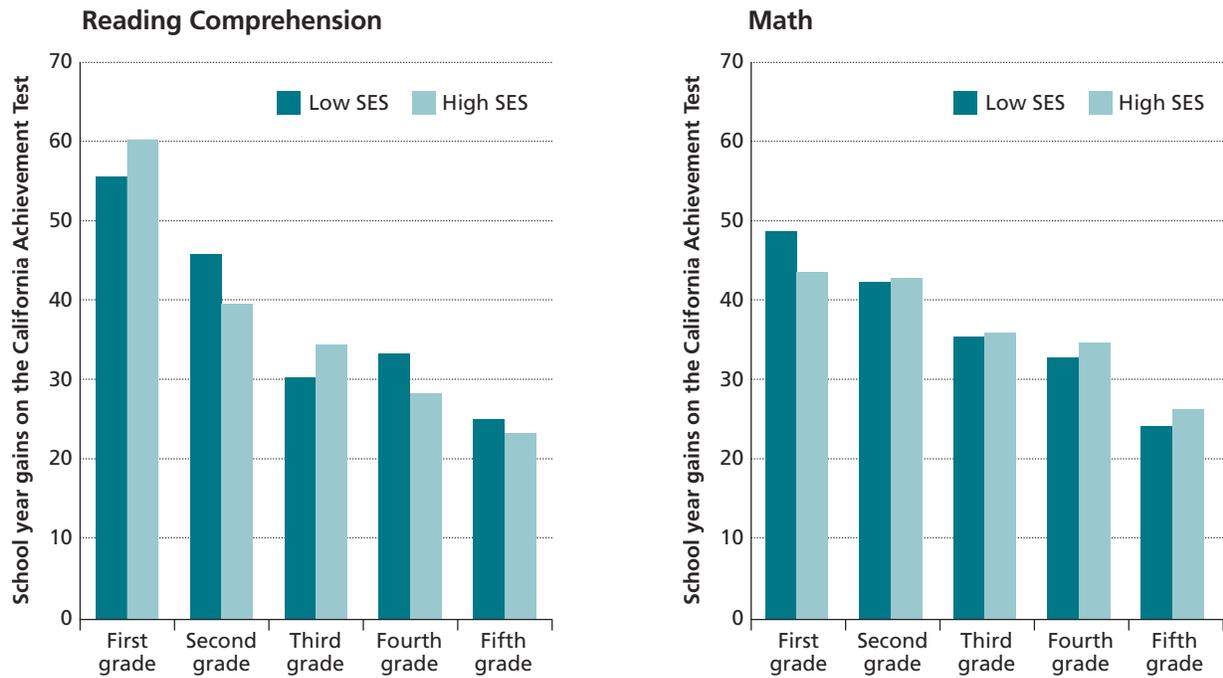
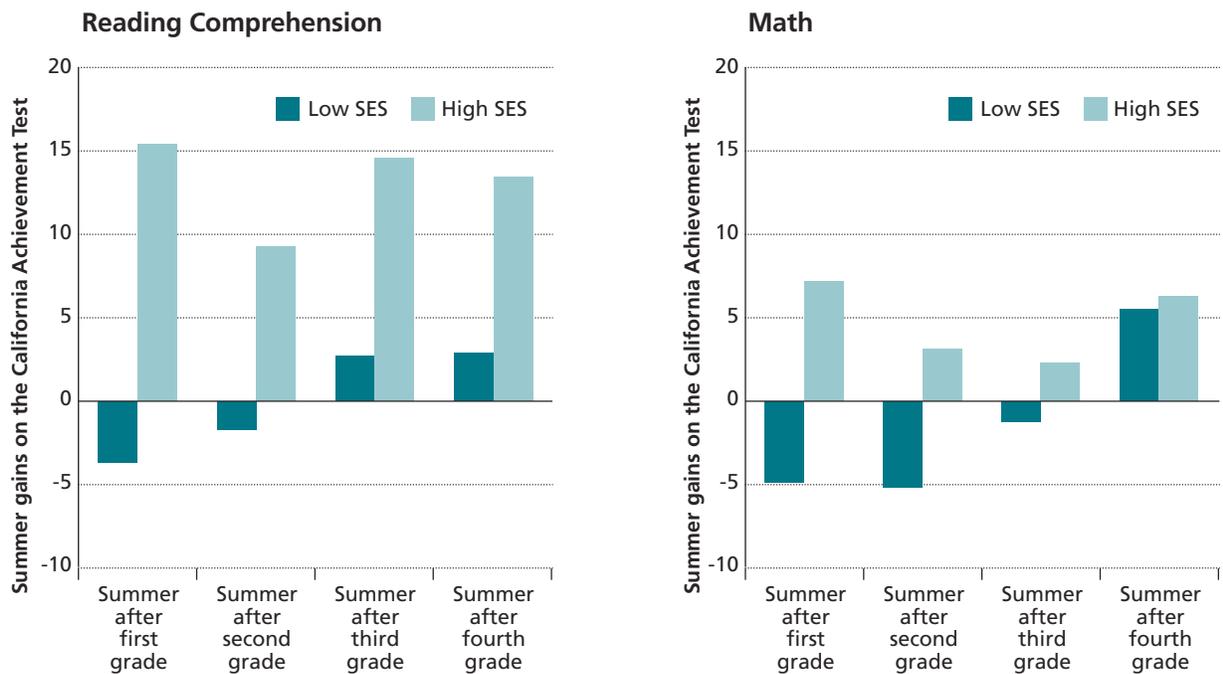


Figure 3B. Summer Gains, by Socioeconomic Status, Beginning School Study



Source: Alexander, Entwisle, and Olson (2004), table 2.3, p. 33. The sample consists of 665 Baltimore public school students who entered first grade in 1982.

that their children will fall behind during the summer, compared with only 32 percent of higher-income parents, where low-income is defined as below \$25,000 and higher-income as above \$50,000. In addition, more than two-thirds of low-income students and four-fifths of minority students showed an interest in participating in a summer program that would help them manage their work during the school year or prepare them for the upcoming school year. As argued below, several studies on the effects of summer school, most notably a summary by Cooper et al. (2000) of the summer school literature, provide firm evidence that summer school is an effective tool for stanching summer learning loss.

The policy prescription in this situation seems clear: expand access to summer school and other academic enrichment programs among those who experience the largest summer learning losses to reduce the negative impact of summer learning loss. We propose a policy of Summer Opportunity Scholarships (SOS), which will allow students from low-income families to participate in

summer school or other summer enrichment programs chosen by the child's parent(s). The program would target economically disadvantaged children: students who are eligible for free school lunches under the National School Lunch Program (NSLP), which requires that a child's family income is below 130 percent of the federal poverty line, will be eligible for SOS. The program we outline will apply to kindergarten through fifth-grade students because programs initiated for younger cohorts may put the children on a higher learning trajectory (Entwisle, Alexander, and Olson 1997).

In the next section, we describe in some detail the design and costs of our proposal for Summer Opportunity Scholarships. The following section compares and contrasts our proposal with some other interventions commonly proposed as remedies for summer learning loss: spreading the existing number of school days more evenly across the calendar year, a longer school year, and summer school. The final section discusses the possible gains from our proposal.

II. Designing Summer Opportunity Scholarships

Our proposed Summer Opportunity Scholarships will pay for economically disadvantaged children to attend a six-week summer school program or summer enrichment camp, of their parents' choosing, that offers five days of at least half-day instruction per week. Limiting the program to six weeks of the summer will allow students to enjoy the vacation aspect of summer as well. Eligible providers for the summer programs will include school districts, for-profit companies, nonprofit organizations, summer enrichment camps, and possibly faith-based institutions. Summer enrichment camps are often held at college campuses or community centers, and some examples include computer, science, theatrical, and public speaking camps for students in the fourth grade and higher hosted at college campuses such as Stanford, the University of California-Berkeley, UCLA, or Tufts, as well as those offered for children as young as four years old by Education, Sports, and Fun.⁴

Eligible Students

A child's grade level and family income will determine eligibility. In studies of summer school, the most successful summer school interventions take place in the early elementary school grades (Cooper et al. 2000). For this reason, SOS will be phased in in two waves, concentrating on children in the early grades. In the first wave, spanning the first three years of the phase-in, students who have just finished kindergarten through third grade will be eligible. In the second wave, beginning in the fourth year of the phase-in, eligibility will be extended to students finishing the fourth and fifth grades. Students may participate in repeated summers, as long as they remain eligible for the program. The decision to cap SOS eligibility at fifth grade was largely influenced by a desire to keep costs down when the program is first being implemented. However, it would be reasonable to extend eligibility to students through the eighth grade or

higher once a successful implementation for the younger students has taken place.

In addition to grade level, eligibility will be determined by a child's family income. We use eligibility for free school lunches from the National School Lunch Program, where students with family incomes below 130 percent of the federal poverty line are eligible, as the cutoff based on economic status. This is our preferred measure of economic status for two reasons: this information is easily obtained and verified with the use of school- or district-level records, and it will allow for comparisons with results from other studies that also use this measure. As an alternative, the program could be made accessible to more students if we based eligibility on eligibility for free or reduced-price lunches from the National School Lunch Program. In this instance, students with family incomes below 185 percent of the federal poverty line would also be eligible. In our discussion of program participation and the budget below, we describe the expected effect on costs of such an extension of eligibility.

Finally, we propose that a child be eligible for multiple summers, or for every summer between the end of kindergarten and the end of third or fifth grade, depending on the extent to which the program has been phased in. There has been some concern in studies that achievement gains associated with summer school might fade over time (Cooper et al. 2000; Grossman and Sipe 1992). However, there is also some encouraging evidence that when children from low socioeconomic backgrounds participate in summer school for multiple years, it can have positive long-run effects on the development of their skills (Borman et al. 2005). These results will be discussed at greater length later in this paper.

Participation Estimates

To get a sense of how many students are likely to participate in SOS, we first estimated how many children would be eligible, based on the eligibility criteria for

4. For more information, see <http://www.educationunlimited.com> and <http://www.esfcamps.com/index.htm>.

free school lunches through the National School Lunch Program. The results from this exercise are displayed in the first section of table 1. We estimate that for the entire United States, approximately 3.8 million kindergartners through third-graders in 2006 and an additional 1.9 million fourth- and fifth-graders in 2009 will meet the income qualification for NSLP.⁵ If eligibility is extended to students who are eligible for reduced-price, not just free, school lunches from NSLP, these numbers would rise to approximately 5.4 million kindergartners through third-graders in 2006 and 2.8 million fourth- and fifth-graders in 2009.

However, as with any government program, we expect that less than 100 percent of those who are eligible will actually take advantage of the program. A good benchmark is Head Start, the forty-year-old federal program that provides support for mothers with children younger than school age. For Head Start, approximately 60 percent of eligible children currently participate in the program. However, the Head Start program is relatively well established and well known. Given that it would take time for parents to learn about SOS, we use a lower initial take-up rate estimate of 25 percent for the first year of the program and then assume the rate will increase over time. In the first part of the phase-in, when only kindergarten through third-grade students are eligible, we postulate that the take-up rate among eligible families will rise by five percentage points annually. During the second part of the phase-in, we predict that rate of growth in the take-up rate among eligible families with students in kindergarten through third grade will remain unchanged, but the initial take-up rate among

fourth- and fifth-grade students will be 35 percent. This is slightly higher than the initial 25 percent take-up rate for the younger group, since the program will have already been in operation for three years, and therefore we expect there to be greater program awareness among the older students and their parents.

Based on these assumptions, in 2006, the first year of the program phase-in, approximately 926,000 children are projected to participate in SOS. That number rises to 2.4 million by 2010, or the fifth year of the phase-in. Again, if the broader eligibility criterion is used, whereby students eligible for free *or* reduced-price lunches can participate, approximately 1.4 million children in 2006 and 3.6 million children in 2010 are projected to participate in SOS.

Eligible Providers

Providers' eligibility will be based, in large part, on their mode of instruction and curricular content. SOS will require that providers use small-group, scientifically based instruction, akin to that required by the No Child Left Behind Act, with a strong emphasis on improving basic reading and math skills, which have been shown to be effective in these settings (Cooper et al. 2003), and which are a particular area of concern for many disadvantaged children. An effort should be made to align the summer and school year curricula to capitalize on the greatest potential achievement benefits. However, remedial reading and math will not be the exclusive focus of the program, since many researchers argue that one of the beneficial features of summer that affluent students enjoy is the chance to have new educational and cultural experiences that are not feasible during the regular school year (Schacter 2001; Fairchild and Boulay 2002).

There are many potential SOS providers, and much can be learned about which providers are most appropriate from the implementation of an already existing special provision of No Child Left Behind (NCLB): Supplemental Educational Services. This provision funds tutoring services for children attending schools that fail, three years in a row, to meet the academic standards set under NCLB. In particular, when a school is labeled "failing," the school district is required to set aside funds from its

5. These estimates were calculated using the Census Bureau's online Current Population Survey Table Creator and projected population growth rates from the Census Bureau (Census Bureau 2005a, 2005b). Since the CPS Table Creator does not include data on grade in school, we grouped children ages six through nine for the kindergarten through third-grade (K-3) group and children ages ten and eleven for the fourth- and fifth-grade (4-5) group. While these age groups may not perfectly correspond with the grade levels, there is sufficiently little variation in the number of children per age such that using ages five through eight and nine through ten for the K-3 and 4-5 grade groups, respectively, would not substantially change the results. Also, the CPS Table Creator allows an income threshold of 125 percent of the federal poverty line, not 130 percent. So, these estimates might marginally underestimate the actual number of eligible children.

Table 1. Five-Year Budget for Summer Opportunity Scholarships¹

Calendar Year	2006	2007	2008	2009	2010	Five-Year Total
Annual Participation						
Number of eligible children, per year						
Grades K–3	3,703,988	3,706,870	3,709,755	3,712,643	3,715,532	—
Grades 4–5	—	—	—	1,850,500	1,851,940	—
Total	3,703,988	3,706,870	3,709,755	5,563,142	5,567,472	—
Take-up rate						
Grades K–3	25%	30%	35%	40%	45%	—
Grades 4–5	—	—	—	35%	40%	—
Number of participating children, per year						
Grades K–3	925,997	1,112,061	1,298,414	1,485,057	1,671,989	—
Grades 4–5	—	—	—	647,675	740,776	—
Total	925,997	1,112,061	1,298,414	2,132,732	2,412,765	—
Annual Per-Pupil Cost						
Mean school year expenditure per-pupil						
in average daily attendance, per year	\$9,421	\$9,704	\$9,995	\$10,295	\$10,604	—
Number of days in the school year	180	180	180	180	180	—
Total number of days in a						
six-week SOS summer program	30	30	30	30	30	—
Scaling factor : (number of days in SOS) /						
(number of days in school year)	0.17	0.17	0.17	0.17	0.17	—
Per-pupil cost of SOS, per year	\$1,570	\$1,617	\$1,666	\$1,716	\$1,767	—
Annual Total Cost						
Total annual cost of SOS (in millions)						
Grades K–3	\$1,454	\$1,799	\$2,163	\$2,548	\$2,955	\$10,919
Grades 4–5	—	—	—	\$1,111	\$1,309	\$2,420
Total	\$1,454	\$1,799	\$2,163	\$3,659	\$4,264	\$13,339
State annual 50% match (in millions)	\$727	\$899	\$1,081	\$1,830	\$2,132	\$6,670
Federal annual 50% match (in millions)	\$727	\$899	\$1,081	\$1,830	\$2,132	\$6,670

1. All dollar figures are reported in real 2005 dollars. Projections for annual per-pupil cost estimates are calculated assuming a 3% annual growth rate. Sources: Bureau of Labor Statistics (2005); Haskins and Sawhill (2003); National Center for Education Statistics (2003); Census Bureau (2005a and 2005b).

allotment of federal Title I funds to pay for additional tutoring services for their students. Parents choose a tutor for their children from a pool of eligible providers, and while school districts can be providers, so can private institutions. Such private institutions may include large for-profit providers, such as Catapult Learning and Kumon; smaller and less well-known for-profit providers; and nonprofit community-based providers, including faith-based institutions (Gorman 2004). For SOS,

all these providers would be eligible to provide services. We also include in this list of potential providers summer enrichment camps, on the condition that scientifically based instruction is a component of the camp curricula.

Schacter's review (2001) of a summer literacy day camp is a useful illustration of what the key features of summer enrichment camps are for the purposes of SOS. This camp featured an eight-week literacy program for dis-

advantaged first-grade students from poorly performing schools where at least 75 percent of the student population received free or reduced-price lunches. The program allotted thirty-two days for instruction and eight days for testing or field trips. On each instructional day, students received two hours of reading instruction from a credentialed elementary school teacher, who was assisted by camp counselors. In addition, each student received at least one hour of tutoring a week with a volunteer tutor. Students were tested at the beginning and at the end of the intervention. The remaining hours of the instructional days were spent doing typical summer camp activities, such as arts and crafts, drama, music, and sports. Since the goal of a program like SOS is to strike a balance between the dual objectives of accelerating students' learning in an academic setting and maintaining the freedom to explore less traditional avenues of learning through arts and outdoor activities, this literacy day camp exemplifies what a SOS summer enrichment camp should provide.

It is sometimes claimed that a lesson to be learned from the implementation of NCLB's Supplemental Educational Services is that the school district should not play the dual role of program administrator and service provider. In the case of Supplemental Educational Services, critics argued that school districts were too involved in the administration of the program to be able to act as an independent service provider. In particular, districts often had the most direct contact with parents and therefore developed a monopoly power over the market for the provision of Supplemental Educational Services (Gorman 2004). This reduced the incentive for private providers to enter the market, resulting in fewer providers from which parents could choose. Under SOS, districts would still be eligible to provide services, but the SOS program itself would be administered by an independent, state-level official to avoid such a conflict of interests. Among other responsibilities, this official would be charged with producing and maintaining a list of approved providers, while local superintendents and district-level officials would be responsible for determining if the summer and school year curricula are aligned and if the state education standards are being met.

A final issue to consider when determining provider eligibility is whether providers will be allowed to reject students with disabilities or limited English proficiency. This issue is also currently being faced by NCLB's Supplemental Educational Services. Supplemental Educational Services providers claim that they lack the resources and the expertise to educate these special needs children properly. Given that children from a lower socioeconomic background are more likely than other children, all else being equal, to be identified as special needs students, this issue cannot be overlooked (Entwisle, Alexander, and Olson 1997). We propose that in every local area there be at least one designated provider, perhaps an institution that specializes in the education of special needs children, that will serve students with disabilities and limited English proficiency. An important consideration is whether such providers should receive a higher payment per student than other SOS providers should.

Evaluating Student Progress

Under SOS, student testing will be conducted twice a year, during the last week of the year in the spring and during the first week of the year in the fall. Of course, if any school year instruction takes place between the dates of the spring and fall tests, then the effects of the summer program may be estimated inaccurately (Cooper et al. 1996). For this reason, it is crucial that testing take place as close as possible to the end of the school year in the spring and at the beginning of the school year in the fall. When school calendars differ substantially across school districts, data on the number of days of summer each student receives should be used to adjust the achievement gains. In addition, a formal evaluation of the program's impact should be conducted. One especially useful approach would be to assign children randomly into SOS scholarships in a certain school district or region, which allows a straightforward comparison of how the program works compared with students who were randomly assigned to a control group.

Regulating SOS Providers

Informal regulation of SOS providers may take place through market forces: parents who are dissatisfied with their children's achievement gains may choose to move

their children to a different approved provider for subsequent summers. However, additional funding will not be awarded for children who want to switch providers in midsummer.

Still, a parent may not have access to all the information necessary to choose the best summer school program for a child. To inform parents and to align the providers' incentives with SOS's goals, a list of top-performing providers in each geographic area will be maintained and distributed by a state-level official. In addition, providers reporting achievement effects below a certain threshold, or who deviate from the specified instructional and curricular guidelines, may be disqualified from receiving future SOS funding. However, this disqualification may be temporary, with reentry into the SOS program dependent upon evidence of a fundamental change in instructional practices or curricula. A state-level official will be in charge of ensuring that all participating providers are financially sound institutions, while local superintendents and district-level officials—either or both—will be responsible for determining if the summer and school year curricula are well aligned and if the state education standards are being met.

Budget

To make budgetary calculations for SOS, it is necessary to have an estimate of the average cost of providing approved summer school or summer enrichment services. Because SOS would provide much of the same resources as are provided during the regular school year, we estimated the cost of the scholarship by scaling down average school year per-pupil expenditure by the length of the SOS summer program. As displayed in the middle section of table 1, we estimated the mean per-pupil annual expenditure for the years 2006 through 2010 using estimates from the National Center for Education Statistics and assuming a 3 percent rise in costs each year. For example, the projected mean per-pupil school year expenditure in 2006 is \$9,421. (The estimates of school-year expenditure used here do not include capital expenditures or interest on school debt.) The regular school year spans 180 days of instruction. The SOS program would meet five days a week for six weeks, for a total of

30 instructional days—or one-sixth of a school year. The amount could be less (for example, if the program met only for half days), but for the sake of erring on the side of overstating costs, we use one-sixth. Taking one-sixth of the mean per-pupil annual expenditure projections, we obtained an estimated annual per-pupil cost for SOS of approximately \$1,600 for 2006, rising to nearly \$1,800 by 2010. We believe this is a reasonable prediction of per-pupil expenditures for SOS, especially since several major private learning centers we interviewed remarked that they would be willing to act as SOS providers at this estimated cost.

Multiplying the estimated annual per-pupil cost by the number of students who are projected to participate in each year, the total annual cost for SOS, as displayed in the bottom section of table 1, will grow from approximately \$1.5 billion in 2006 to \$2.2 billion in 2008. In addition, the total cost jumps to \$3.7 billion in 2009 and \$4.3 billion in 2010, with the introduction of fourth- and fifth-graders into the program. If SOS eligibility is extended to students who qualify for free or reduced-price lunches, these estimated cost figures would increase by approximately one-third.

SOS will be funded by a combination of federal and state funds. States wishing to make SOS available to their students will be required to make a contribution that will be matched by the federal government. Many education-related programs are funded in this way, including Head Start and the National School Lunch Program.⁶ We recommend that the fiscal responsibility for SOS be split evenly: the federal government and the state will each

6. For example, Head Start is funded by a federal-nonfederal match, in which the federal government pays for 80 percent of program costs and the rest is made up by the state or locality (Head Start Information and Publication Center 2005). Also, the National School Lunch Program and Even Start, a program that is designed to improve the academic achievement of low-income children and their parents, are funded by federal-state matches (National School Lunch Program 1996, as amended; discussion with Even Start program staff). For NSLP, states are required to make a minimum expenditure of 30 percent of the amount of federal school lunch funds received for the school year starting in 1980. For Even Start, the federal government pays 90 percent and the state pays the remaining 10 percent of operating costs during the first year of operation, and the federal government's share of the fiscal responsibility falls over time, reaching 35 percent by the ninth year of operation.

contribute 50 percent of the total cost of the scholarship. With such a match, the states and the federal government will each face an annual cost of just over \$700 million in 2006, rising to \$2.1 billion in 2010, as displayed in the bottom section of table 1. The estimated five-year cost to the federal government is \$6.7 billion. Again, if SOS eligibility is extended to those who qualify for free and reduced-price lunches, these cost figures would increase by approximately one-third.

Why Scholarships

Some may wonder why scholarships in the form of vouchers are the preferred mode of funding for SOS, instead of direct provision of summer school through a child's existing school. We would argue that vouchers are preferable for four reasons. First, vouchers provide parents with more choice than mandatory summer school when it comes to deciding what their children do during the summer, or whether to send their children to summer school at all. Particularly during the summer months, parents will value this flexibility. Second, while the best available evidence suggests that low-income students who have been provided private school vouchers for the 180-day school year have not performed better than a control group of students who were not provided such vouchers, there is no compelling evidence that students who were given vouchers performed worse, either (Rouse 1998; Krueger and Zhu 2004). In our view, there is thus little reason to suspect that mandatory summer school provided by public school districts will outperform the scholarship approach.

Third, experimentation with vouchers to provide education is valuable in its own right, since there is a lack of consensus on their likely effects. Fourth, since vouchers have produced mediocre results, at best, during the regular school year, a proposal to use vouchers in the summer may provide a new and more productive outlet for the voucher movement, but in a way that shifts the focus away from disrupting the regular school year.

Distributing the Scholarships

The funds can be distributed to one of two parties: the parents or the providing institution. If the funds were distributed to the parents, it could come in the form of a check or a refundable tax credit. A refundable tax credit may be an unattractive avenue for distribution since low-income parents are often cash constrained and would be unable to pay for their children's participation in a summer program upfront. In addition, both these methods of distributing the scholarship directly to the parents share a major drawback: the risk of fraud, in which no educational services are provided but the check is cashed or the tax credit is claimed nonetheless. The payment system in school voucher experiments during the 180-day school year—like the PACE program in Dayton, Ohio; the DC Opportunity Scholarship Program in Washington, D.C.; and the Milwaukee Parental Choice Program in Milwaukee, Wisconsin—offers a model that would reduce the risk of fraud: a check, made out to the parents, would be sent to the providing institution in which the child has been enrolled; the parent must sign the check over to the school, thereby ensuring not only that the funds are not misused but also that the funds pass through the parents' hands and not directly to the provider.

III. Policy Interventions to Remedy Summer Learning Loss

Three main types of interventions have been suggested to prevent or to minimize summer learning loss: a modified school calendar to shorten the summer break, a longer school year, and summer school. In particular, we view the evidence on the effect of summer school programs as especially relevant to our SOS proposal.

The proposals for a modified school calendar typically call for the redistribution of vacation days such that the total number of days of instruction remains unchanged, but any extended breaks are eliminated. Proponents of this sort of intervention argue that by eliminating “summer,” you can eliminate summer learning loss. However, the evidence on the effectiveness of such an intervention is weak, at best (Cooper et al. 2003; Glass 2002). In a comprehensive synthesis of existing literature on modified school calendars, Cooper et al. (2003) conclude that the potential effect of shifting from a traditional to a modified school calendar is small. In fact, the estimated effect of a modified school calendar on student achievement is only one-fifth to one-third of the effect of summer school, as measured by Cooper and his colleagues in an earlier paper (2000). The authors do qualify this conclusion with two caveats: a modified school calendar may have a cumulative effect that has not been adequately observed in the data, and it may have a greater effect for lower socioeconomic students.

In another review of school reform proposals, Glass (2002) cites some early findings from the 1982 implementation of a modified school calendar by Chatfield Elementary, a school in Colorado’s Mesa County Valley School District. Glass finds that compared with district-wide gains, students in the Chatfield implementation experienced statistically insignificant improvements in reading, math, and language achievement. Glass adds that these early findings have been replicated across the United States in more recent years (Naylor 1995; Zykowski et al. 1991; Carriedo and Goren 1989). Thus, the available evidence on modified school calendars does

not suggest that it should be the centerpiece of a reform package aiming to close the achievement gap.

Proponents of extending the school year argue that the United States lags behind many other countries in terms of the number of days children attend school in a year and that this deficit in instructional time is at least partially responsible for the mediocre ranking of U.S. students in international comparisons of student test scores. We think the jury is out regarding the effectiveness of extending the school year as a tool for improving student achievement. In part, the lack of variation in the length of the school year across school districts in the United States makes this issue very difficult to study.

Regardless of the evidence, however, the institutional and financial obstacles to extending the school year are quite substantial. First, some parents are voicing strong disapproval of such an intervention. Recently, some school districts have begun starting classes in late July or early August to have more instructional time before spring standardized testing takes place, as required by the No Child Left Behind Act. In response, parent-initiated grassroots organizations are springing up across the nation in opposition (Janofsky 2005): for examples, see Save Our Summers at <http://www.saveoursummers.com/pages/19/index.htm> and Texans for a Traditional School Year at <http://www.traditionalschoolyear.org/>. Parents argue that an earlier start to the school year disrupts family vacationing, summer camps, and sports activities. It is important to note that the mandatory nature of an extended school year is what creates the parental dissent. SOS, on the other hand, is entirely voluntary, thereby eliciting participation only among those students who have the desire to attend school for more than the typical 180 days per year. While Janofsky (2005) reports that some parents are in direct opposition to lengthening the school year, data we cited earlier from the National Center for Education Statistics (1998) showed that other parents, namely those with low incomes, support increasing the amount of time their

children spend in school via summer school. SOS would give parents an opportunity to opt in to a lengthened school year by their children's voluntary participation in a summer school program.

Second, teachers often oppose extending the school year, anticipating an increase in their workload and a greater chance of teacher or student burnout. In addition, a longer school year would result in reopening labor negotiations with teachers' unions across the country. Finally, lengthening the school year is an expensive intervention (Aronson, Zimmerman, and Carlos 1999), since the costs must be paid for all students, not just those eligible for our SOS proposal. If all students were eligible for a full nine-week summer term, then the program would involve eight times as many students and one and one-half times as much instruction, so the total cost would be twelve times as high as the estimates for the SOS program. In contrast, summer school programs are voluntary for both students and teachers. They can be targeted to a smaller number of students, which holds down costs.

Most important for our purposes, summer school programs have shown some success in combating summer learning loss and improving academic achievement. In a meta-analysis of ninety-three studies on the effects of summer school programs, Cooper et al. (2000) conclude that programs focusing on remedial instruction substantially increased participating students' scores. In fact, students from families with lower socioeconomic status attending a remedial summer program increased scores by a magnitude that is about as large as the summer learning loss that others have found typically occurs for low-income students. The authors also found that programs focusing on accelerating learning (as opposed to remedial instruction) had positive effects, but remarked that this conclusion is tenuous since it is based on only a handful of studies. In addition, Cooper and his colleagues report that effects were greater for students with middle socioeconomic status compared with students with lower socioeconomic status (although, as described above, the effects were still positive for students from lower-socioeconomic-status families). Effects were also greater when small group or individualized instruction

was used, when parents were actively involved, and when the intervention took place in early elementary school grades or in secondary school.

Dozens of studies have been done regarding the effects of different summer school programs, and of course, the results are not unanimous. When confronted with enough studies to fill a file cabinet, one important way in which social scientists and policy analysts gain confidence in their conclusions is to examine whether similar answers emerge from studies that use both different data and different analytical approaches. In the case of summer school, studies of the intervention's effectiveness are conducted using three broad analytical approaches: an observational study, an experimental study, and a natural experiment.

The first approach, called an "observational study," looks at the performance of students who have entered a summer school program under the natural circumstances that lead students to go into such programs. An advantage of observational studies is that a large quantity of data is often available from programs about the students who enrolled and how they performed. An inherent difficulty with observational studies of summer school, however, is the possibility that in some way, perhaps obvious or perhaps not, those who entered the summer school program were a group that would be expected to perform better or worse (or improve more quickly or more slowly), on average, than the comparison students who did not go into the program. For example, if participation in a summer school program requires that students and their families sign up, then those who sign up will tend to come from families with the desire and ability to take the initiative to improve their children's learning, a factor that may have more influence on a child's academic achievement than the summer school program itself. Alternatively, if students who score below a certain cutoff are the ones who attend summer school, we might expect their average scores to be lower than other, nonparticipating students.

A second methodology for summer school studies is called an "experimental study." Controlled experiments in public policy, of course, are not quite the same as experiments

in a science laboratory. The simplest and probably most persuasive design of an experiment in social science is to randomly assign students into two groups: those who are eligible to participate in the program, or the “treatment” group, and those who are not, or the “control” group. That is, eligible students are assigned based on the equivalent of a coin flip. Setting up a policy experiment in this way can be politically and administratively difficult. But an experimental study has a major advantage over an observational study: namely, the interpretation of the results is much more straightforward. The average characteristics of those in the treatment and control groups should be much the same, since selection into the program is at random. As a result, if randomization is successfully done, studying the effects of the program simply involves comparing outcomes between members of the treatment and control groups. Other than the treatment, there is no reason to suspect outcomes would be different for the two groups, on average.

A third method is sometimes called a “natural experiment.” This approach refers to a situation in which events conspire to more or less randomly allocate some students to receive the treatment (summer school in this case), and some not to receive the treatment. Quirky changes in laws or the interaction between program requirements and individuals’ characteristics are common circumstances that create natural experiments researchers can exploit. For example, imagine a summer school program that is available only for students born after February 1, 2000. A policy analyst could compare the change in test performance over the summer of those who were born just before the February 1 cutoff with the change for those who were born just after it, on the assumptions that the two groups are otherwise probably highly similar (given that birthdays are almost randomly distributed) and that individuals cannot intentionally manipulate their birthdays to be on one side of the threshold or the other to change their eligibility status.

A recent example of an observational study of summer school comes from John Portz (2004) on the Boston Public Schools Transition Services Program, a reform package that sought to end “social promotion”—the automatic grade-level advancement of students without

regard to achievement. This program includes a package of reforms. During the school year there is additional instructional time, a modified curriculum, and before- or after-school support for targeted students. In addition, students in the second, fifth, and eighth grades who fail to meet a promotion standard are required to attend summer school. If these students still cannot meet the promotion standard at the end of the summer, they face grade retention. In his review, Portz found that among those students who could not pass the promotion standard for math and reading at the beginning of summer, roughly half met the benchmark by the end of the summer. In addition, students who completed the summer program were more likely to be promoted to the next grade, compared with students who were also required to attend summer school but did not complete it. However, since this is an observational study, a threat to the validity of these results is “mean regression”—the phenomenon by which the performance among individuals with initially below-average scores is generally expected to improve over time, while the performance among individuals with initially above-average scores tends to deteriorate.

An experimental program is Teach Baltimore, a remedial summer school program for ten high-poverty, urban Baltimore schools. From a pool of applicants, Teach Baltimore randomly assigns kindergarten and first-grade students to treatment and control groups, where the treatment group is eligible to participate in a six-week summer program, with a focus on reading and writing instruction, and the control group is ineligible for the program. A series of studies by Geoffrey Borman and colleagues have examined the effects of Teach Baltimore on student achievement (Borman, Benson, and Overman 2005; Borman et al. 2005; Borman et al. 2004), and found that a simple comparison of summer reading gains for kindergarten students reveals that treatment students outperformed control students in all three summers during which the program took place (Borman et al. 2004).

After taking a variety of other factors into account, Borman, Benson, and Overman (2005) conclude that just being assigned to the Teach Baltimore treatment group had no effect on summer learning loss. However, the number

of weeks a student actually attended the program was found to have a positive impact on achievement. Still, the authors acknowledge that this effect could be due to self-selection: students whose parents ensured that their child kept good attendance may differ from other parents in systematic ways that could be related to a child's expected achievement gains, independent of his or her program attendance. Borman et al. (2004, 2005) found that treatment assignment was a significant predictor of test score gains when students participated for multiple summers. However, the effect of treatment assignment was close to zero after the first year of participation. Thus, Borman and his colleagues conclude that while the single-year effect of summer school may be trivial, there could be substantial cumulative effects that should not be overlooked.⁷

In an example of a natural experiment study, Jacob and Lefgren (2002) consider the implementation of the Chicago Public Schools Summer Bridge school reform. This program requires students in the third, sixth, and eighth grades who fail to meet a promotion standard to attend summer school. Thus, the researchers may compare those students just below the promotion standard to those just above the standard—creating a situation that the researchers describe as almost as good as random assignment to summer school. Jacob and Lefgren found that, for third-graders, the effect in the first year after the completion of summer school was approximately 20 percent of a year's worth of learning. By the second year, the effect for third-graders was an attenuated but still significant 14 percent of a year's worth of learning. For sixth-graders, however, the effects of the summer program were essentially zero in the first and second years after the program.

Roderick, Jacob, and Bryk (2004) take a different approach when analyzing the natural experiment created by the implementation of Chicago's Summer Bridge program. In particular, they use data from students' testing histories to predict what students' summer learning gains would have been in the absence of the interven-

tion. Then the authors compared the actual scores that students received after the summer program against their projected gains. They found increases in achievement among third-graders in the first year after summer school: reading skills increased modestly, while math skills increased by as much as six months. This study found that sixth-graders' reading and math skills, unlike in the previous study, improved by four months. The authors conclude that Summer Bridge's relatively large test-score effects, especially the notably positive results for sixth graders, may be credited to the high-stakes nature of the intervention (whereby students face grade retention should they not pass the promotion standard at the completion of the summer program), the extent to which the summer and school year curricula were aligned, and the small class sizes in the summer program.

We also acknowledge that some evidence on the long-term impacts of summer school programs is less encouraging. Grossman and Sipe (1992) studied the long-run effects of the Summer Training and Education Program (STEP) that was implemented in five U.S. cities (Boston, Massachusetts; Fresno, California; Portland, Oregon; San Diego, California; and Seattle, Washington) in the mid-1980s. STEP participants were teenage students, aged fourteen to fifteen, who faced a high risk of dropping out of high school and becoming teenage parents. In this experimental program, some participants were randomly assigned into a fifteen-month program that coupled remedial summer education and life skills instruction with work opportunities, while others were offered a single-summer job. Studies on the short-term effects found that those in the fifteen-month program outperformed the control group in reading and math achievement (Sipe, Grossman, and Milliner 1988). Achievement scores fell for the control group over the summer, but not for the treatment group. Despite this short-term benefit, three to four years after the program was completed, students in both groups were equally as likely to drop out of school, to graduate from high school, to get a GED, to go to college, and to be employed (Grossman and Sipe 1992). These results cast some doubt on the overall effectiveness of summer school programs. However, there are three important caveats to consider with regard to this study. First, the results are likely to have been more

7. Results are murkier when student background characteristics are taken into account (Borman, Benson, and Overman 2005).

promising if the intervention had started earlier in a child's education. Second, if the program had lasted for more than two summers it might have had lasting effects. Third, the educational treatment in the STEP program involved just ninety hours of reading and math remedial education and eighteen hours of life skills, whereas we are proposing a more intensive summer academic program.

Other studies have examined less conventional approaches to curbing summer learning loss. As mentioned above, Schacter (2001) studied the effects of summer literacy day camps, which combine reading instruction and recreation into a single summer program. Schacter found that participating students considerably outperformed their nonparticipating counterparts. However, the validity of this finding is subject to two criticisms: it does not take into account the extent to which more-motivated or more-talented students might have been disproportionately likely to join the program, and the number of students involved is relatively small. Therefore, the extent to which the results of this study can be extrapolated is unclear.

In another approach, Kim (2005) designed and implemented a randomized controlled experiment to reduce summer reading loss by increasing students' access to books that were matched to their skill level and preferences. From a multiethnic K-6 public school, Kim randomly selected 355 students to receive ten books from the Scholastic Guided Reading series, which categorizes books into twenty-six reading levels. In addition, each of the ten books was accompanied by a letter from the teacher and a postcard that helped educate students about skill-level-appropriate strategies to increase reading comprehension and word recognition. Kim found that the greatest reading gains were among third- and fifth-graders: for third-graders, scores increased by five points, on average, from a mean initial score of 620; for fifth-graders, scores increased by eleven points, on average, from a mean initial score of 658. Statistical tests suggest that the third-grade reading gains were small enough that they might have been produced by chance

variation, but the gains for fifth graders are quite unlikely to have been the result of chance variation. Still, the effects of this intervention are likely attenuated due to the fact that, in spite of the randomization, treatment students had significantly lower preintervention reading attitudes than control students, and this difference may have biased the results. In addition, the mode of instruction for the younger grades was arguably less conducive to improving a student's independent reading skills since it did not include one-on-one reading instruction from a teacher or parent. Last, the sample sizes in each grade level were small, perhaps contributing to difficulty in determining whether the effects are reliably different from chance outcomes. A replication of this study with a larger sample size and improvements in the randomization and the mode of reading instruction for younger students might produce more favorable results.

From this review of the evidence on summer school programs—and particularly from Cooper and colleagues' systematic review of the literature (2000)—we conclude that summer school programs have generally been found to have ameliorative effects when it comes to summer learning loss. Furthermore, the gains associated with summer school seem to be larger and better targeted than those caused by a modified or extended school year. Of course, it would be preferable if the estimates of summer school effects using different data sets and methods were perfectly aligned. Still, taking the evidence as a whole, we believe that improving summer school is a promising approach to eliminating summer learning loss. Indeed, the attentive reader may have noticed that several aspects of our proposal for Summer Opportunity Scholarships are based on the evidence from existing studies. For example, studies suggest that a six-week program is long enough to produce desirable results. In addition, the evidence on the benefits of summer school for younger children is stronger than that for older children. Last, nontraditional programs such as the summer literacy camps, run outside of a conventional school setting, seem capable of producing the desired results.

IV. Conclusion

A considerable academic literature has developed on the topic of summer learning loss, affirming that students' basic reading and math skills suffer during summer vacation. Furthermore, summer vacation deepens the skills divide: children from affluent families maintain their pace while children from disadvantaged families fall further and further behind. Our proposal for Summer Opportunity Scholarships aims to reverse the summer slide among students from lower-socioeconomic-status families and therefore to make strides toward closing the skills gap. We believe that the key stakeholders would support such a program.

Summer Opportunity Scholarships will provide a chance for lower-socioeconomic-status children to attend the same sort of summer school programs and enrichment camps that are already available to many of their affluent counterparts. As noted earlier, survey results suggest that more than two-thirds of low-income students and four-fifths of minority students are interested in a summer program (Council of Chief State School Officers 2005). The same survey shows that parents of low-income families are concerned about their children falling behind. For such parents, Summer Opportunity Scholarships offer both better opportunities for their children and a chance to reduce worries over day care and safety, because the SOS program will provide child supervision for a substantial portion of the summer.

Some teachers' unions may hesitate to support this program, fearing that if their school districts opt to provide services to children receiving Summer Opportunity Scholarships, additional burdens will be placed on the existing school staff, as was frequently the case with the implementation of NCLB's Supplemental Educational Services (Sunderman, Kim, and Orfield 2005). Furthermore, teachers' unions will object if the federal or state monies used to fund SOS are transferred from other education spending. Teachers' unions might also lobby that the SOS program be required to employ only certified teachers.

But these concerns are not insurmountable. The SOS program need not place additional burdens on existing school staff or require a transfer of funds currently being spent on other education needs. Participation by teachers will be entirely voluntary; so while many teachers may welcome an opportunity to increase their incomes over the summer months, others can choose not to participate. Perhaps more to the point, school districts now bear substantial costs as a result of summer learning loss. Fairchild and Boulay (2002) estimate that two months of lost instruction, at a median annual expenditure of \$7,000 per pupil, can cost a school district approximately \$1,500 per student annually in remediation. If summer learning loss of this magnitude occurs each year, one child's cumulative summer learning loss could cost the district more than \$18,000 in teaching time (not to mention teacher frustration from reviewing material at the beginning of each year). For large urban school districts, the potential for reallocating resources to more gainful uses than dealing with summer learning loss would be quite substantial.

Finally, we conducted informal interviews with several of the major for-profit learning centers that provide private tutoring or who are approved providers, or both, for NCLB's Supplemental Educational Services program. The feedback gathered from these interviews suggests that the learning centers are generally amenable to SOS's curricular and instructional requirements. In addition, many providers expressed a strong interest in being a potential provider for the SOS program and remarked that our estimated cost figures seem reasonable.

For society as a whole, Summer Opportunity Scholarships offer an investment with a potentially high rate of return. An intervention, such as Summer Opportunity Scholarships, that takes place during the summers following the elementary school grades could produce a lasting positive impact on a child's lifetime learning trajectory.

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