

Staying in School: A Proposal to Raise High School Graduation Rates

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MISSION STATEMENT

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We believe that today's increasingly competitive global economy demands public policy ideas commensurate with the challenges of the 21st Century. The Project's economic strategy reflects a judgment that long-term prosperity is best achieved by fostering economic growth and broad participation in that growth, by enhancing individual economic security, and by embracing a role for effective government in making needed public investments.

Our strategy calls for combining public investment, a secure social safety net, and fiscal discipline. In that framework, the Project puts forward innovative proposals from leading economic thinkers — based on credible evidence and experience, not ideology or doctrine — to introduce new and effective policy options into the national debate.

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NOTE: This discussion paper is a proposal from the authors. As emphasized in The Hamilton Project's original strategy paper, the Project was designed in part to provide a forum for leading thinkers across the nation to put forward innovative and potentially important economic policy ideas that share the Project's broad goals of promoting economic growth, broad-based participation in growth, and economic security. The authors are invited to express their own ideas in discussion papers, whether or not the Project's staff or advisory council agrees with the specific proposals. This discussion paper is offered in that spirit.

BROOKINGS

Abstract

High school dropouts fare substantially worse than their peers on a wide variety of long-term economic outcomes. On average, a dropout earns less money, is more likely to be in jail, is less healthy, is less likely to be married, and is unhappier than a high school graduate. But despite this growing education gap, dropout rates have remained mostly unchanged over the past three decades. This problem disproportionately affects low-income and minority students: among these populations, nearly half of all individuals do not graduate with their class. This paper presents a plan to increase the high school graduation rate. A key element of the proposal is for all states to increase their minimum school-leaving age to eighteen. In many studies, this intervention has been found to have a significant positive impact on several long-term outcomes. The proposal also calls for more resources for enforcement of new and existing compulsory-schooling laws, to maximize the impact of the policy change. More effort is also needed to keep students engaged in school, even at an early age. If states invest in effective support programs, they can further increase graduation rates and reduce future costs of enforcing compulsory-schooling policies. All of these interventions should be implemented with the goal of strengthening America's primary education system to promote college attendance and improve career outcomes among America's youth.

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Chapter 1: Introduction

The roots of education are bitter, but the fruit is sweet.

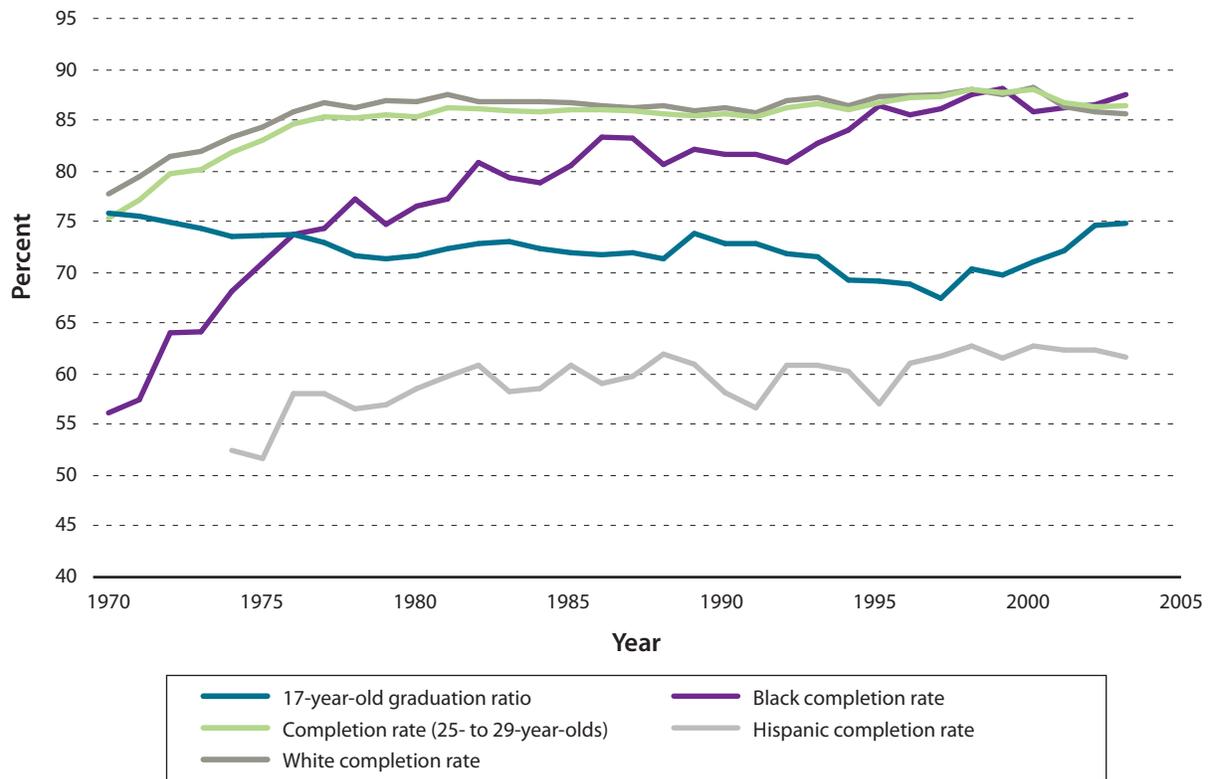
—Aristotle (384 BC–322 BC)

High school dropouts face daunting challenges over the rest of their lives. Skills and educational attainment are increasingly important in today’s economy, and those with the least education fare particularly badly. Among recent dropouts in the United States, 16 percent are unemployed and 32 percent live below the poverty line; those with jobs earn an average of only \$12.75 per hour, with the most common jobs found in the construction, food services, and landscaping

services industries. Labor-market outcomes remain bleak throughout life. Dropouts aged fifty earn an average of \$16.50 an hour, with the three most common industries of employment being construction, food services, and truck transportation. In addition to difficulties in the labor market, social outcomes are worse for dropouts compared to any other education attainment group. Thirty-three percent of recent female dropouts have given birth while a teenager, 13 percent of male and female dropouts are separated or divorced, 32 percent report being unhealthy, and 22 percent report being unhappy.¹

Several studies also link a region’s proportion of dropouts to its overall prosperity. Individuals earn higher wages if they work in

FIGURE 1.
High School Completion Rate vs. Seventeen-Year-Old Graduation Rate



Source: Replicated from Heckman and LaFontaine (2010). The seventeen-year-old graduation ratio is from the Digest of Education Statistics. It includes both public and private school diplomas and excludes recipients of GEDs and other certificates.

Notes: The twenty-five- to twenty-nine-year-old completion rate is the percentage of individuals in this age bracket with a high school diploma or equivalent credential such as a GED certificate.

regions with fewer dropouts, irrespective of their own level of educational attainment (e.g., Ciccone and Peri, 2006; Moretti, 2004; Rauch, 1993). Crime rates are lower (Lochner and Moretti, 2004), and civic participation is higher (Dee, 2004; Milligan, Moretti, and Oreopoulos, 2004). For these reasons, the high school dropout rate is sometimes used as a quality measure of schools and an appraisal of the skill level of the future national workforce (Heckman and LaFontaine, 2010).

In the early 1970s, almost one in four seventeen-year-olds did not graduate with his or her class each year and, over the course of the next three decades, this trend actually worsened. Figure 1 shows that graduation rates for seventeen-year-old students fell below 70 percent in the late 1990s and has only

In hindsight, adults that dropped out almost universally express regret: 74 percent admit that they would have stayed in school if they could make the same decision again...

slightly improved recently. The overall completion rate—the proportion of twenty-four- to twenty-nine-year-olds that have a high school diploma or equivalent certification—is relatively high and increased slightly over time. Many of these students never finished high school but completed a one-day test to obtain their General Education Development (GED) certificate.

With so much hardship associated with leaving high school before graduating, why do so many students decide to do it? Of course, there is no single explanation: conflicts at home, urgent financial difficulties, and unexpected pregnancies are only a few examples. Some dropouts say they are too poorly prepared to complete. A majority say they are unmotivated or uninspired to go to class (Bridgeland, Dilulio, and Morison, 2006). Dropouts are more truant, experience more academic troubles, and record more failing grades throughout all levels of schooling compared to their peers who graduate (Barrington and Hendricks, 1989; Lee and Burkam, 1992). Dropouts are more likely to be from households where parents are less active in promoting and helping with school; by the time students decide to leave, they often feel there is disconnect or a lack of

support between themselves, their parents, and their teachers (Catterall, 1998; Croninger and Lee, 2001). The act of dropping out, therefore, must be understood not as a single event, but as an outcome that begins with school disengagement, often long before finally deciding to stop coming to class (Alexander, Entwisle, and Horsey, 1997; J. Breslau et al., 2009; Ensminger and Slusarcick, 1992).

Many studies have found, perhaps to no parent's surprise, that youth are particularly predisposed to impulsive behavior, especially in situations involving immediate costs relative to long-term benefits (Laibson, 1997; O'Donoghue and Rabin, 1999). Similar forces seem to be at play with high school dropouts. In hindsight, adults that dropped out almost

universally express regret: 74 percent admit that they would have stayed in school if they could make the same decision again (Bridgeland et al., 2006). So while the reasons students disengage from school are important to understand and address (a point we will return to frequently), we must also consider the possibility that students miss out on long-term payoffs from doing so.

For decades, compulsory-schooling laws in the United States have been used as a tool to raise educational attainment, reduce the number of dropouts, and address the problems myopic youth and disinterested parents have in choosing whether the student stays in school. The compulsory-

schooling age sets the minimum length of time that students must spend in school before they have the legal option to leave. Laws that determine this age have been around for many decades, in some cases for more than one hundred years, and are generally determined at the state level. They have been updated periodically over time—sometimes increasing and sometimes decreasing, depending on the particular needs and desires of each state.

The evidence suggests that historical efforts to impose minimum compulsory-schooling ages have raised the educational attainment of students and in turn have improved important life outcomes such as students' later earnings and well-being. As a result, many states have discussed raising the school-leaving age to seventeen or eighteen, encouraging high school completion for all students. In fact, twenty-nine states have already increased the minimum school-leaving age above sixteen, although often with exceptions. President Barack Obama, in his 2012 State of the Union address, encouraged all states to raise the school-leaving age to eighteen.²

In this paper, we suggest that states raise their compulsory-schooling age to eighteen, but propose to complement that change with new efforts to support at-risk youth early in their educational careers, to enhance the way that compulsory-schooling laws are administered and enforced, and to recontextualize the purpose of compulsory-schooling laws as part of the broader effort to improve the skills and labor-market options of young Americans. We recognize that raising the compulsory-schooling age in isolation and unilaterally is not a silver bullet for addressing the problem of dropouts. However, we believe that it could form the cornerstone of a suite of policies to reengage the most at-risk young students; establish the right expectations for students, their families, and educators; and provide a focus for related policies to improve educational outcomes.

Such a broad scope is warranted because of the economically disastrous consequences that dropping out of high school could have for both individuals and their communities. There is a consensus among policymakers that we need to improve high school graduation rates in the United States for many reasons—alleviating polarization, global competitiveness, regional competitiveness, and other social factors. However, there is no consensus on how to attack the problem. We believe that compulsory-schooling laws can form an important part of a comprehensive strategy to promote high school completion. We propose a four-part, national approach to address the challenge:

1. The federal government should educate states on the benefits of high school graduation and encourage legislative action to increase the minimum age at which students are legally allowed to drop out of high school to eighteen years.

On balance, the evidence suggests that students would do better across a wide range of lifetime outcomes from more compulsory schooling, despite lacking interest or motivation in going to class. These benefits should be clearly communicated to state and local policymakers, with the understanding that the gains from promoting high school completion through compulsory schooling outweigh the costs of implementing and enforcing such laws.

2. States should be encouraged to develop new programs to reengage at-risk youth.

Compulsion should be a last resort alongside other policies to promote engagement and foster an environment in which struggling students are encouraged and assisted to complete high school. States should be challenged to come up with innovative plans, relevant to their communities, to keep young students engaged and learning before they approach high school ages where they actually drop out.

3. State and local governments should improve enforcement of new and existing laws.

The ways in which compulsory-schooling laws are administered and enforced are likely to matter a great deal for their success. We are only beginning to understand, through new research, how best to implement these laws. A greater initial enforcement may help establish new norms so that compulsory-schooling laws exist more in the background. States must also promote these laws and their benefits to garner more support from administrators and parents.

4. Compulsory-schooling laws should be designed to promote college attendance and to improve the career outcomes of students.

Increasing high school attainment should be considered as part of a more general goal to keep students in school and thus to make youth more attractive in the labor market. The purpose of compulsory-schooling laws should be to prepare students for labor-market success. As such, a broader range of educational and human capital investments should qualify under compulsory-schooling laws, including promising alternatives such as vocational programs or other programs for at-risk youths that will help them compete in the workforce.

Chapter 2: America's Education Problem

Each year, almost one-quarter of high school students in the United States do not graduate on time with their class. As figure 1 shows, some of these dropouts eventually go on to receive their high school equivalency through the GED program, but approximately 10 percent of young adults enter the labor force without a high school credential. This problem is even more severe among racial or language minority groups: nearly half of all black, Hispanic, and Native American public high school students fail to graduate with their class (Bridgeland et al., 2006). Dropouts are often from families with comparatively low earnings and education; in 2008, students from low-income households dropped out at four times the rate of their peers from high-income families (Chapman, Laird, and KewalRamini, 2010).

Individuals typically drop out between the tenth and twelfth grades when it becomes legal in their state to do so. This means that they are often dropping out less than two years before graduation. Students are more likely to drop out if they are from a divorced family, a lone-parent family, or if their mother was a teenager when they were born. These parents are often more constrained in the amount of time and resources they have available to coach their children through school and to ensure their children are attending classes regularly. In addition, these parents are more likely to have dropped out from school themselves (Natriello, McDill, and Pallas, 1990) and may inherently regard the completion of high school as less important for later success. Since low-income families tend to reside in less-affluent neighborhoods, it may be harder for these parents or children to recognize potential benefits of completing high school and going on to college for lack of adult role models nearby.

By the time high school students decide to drop out, there is typically a long history of truancy, failing grades, suspensions, and observed behavioral problems that extend as far back as early elementary school (e.g., Barrington and Hendricks, 1989). Students often report leaving because they are not

motivated or inspired to work hard, or because classes are not interesting enough. Because these social and academic problems facing at-risk students compound over time, some individuals wishing to put past failures behind them are led to drop out. And in many cases these students go on to obtain their GED credentials. Currently, more than 700,000 high school dropouts attempt to certify as high school equivalents each year through GED testing, and more than 65 percent of them are under twenty-four years of age (American Council on Education, 2010). This overuse of the GED program is problematic. While GED recipients have the same measured cognitive abilities as high school graduates who do not attend college, on average they have the same socioeconomic outcomes as otherwise similar dropouts who do not exam certify (Heckman and LaFontaine, 2010). In 2001, through the passage of the No Child Left Behind Act, the federal government recognized the poor performance, on various socioeconomic dimensions, of GED recipients by excluding them from official high school graduation measures.

In hindsight, dropouts almost universally regret leaving high school and regard graduation as important for success (Bridgeland et al., 2006). Over the past forty years, the annual median earnings of prime-aged men (ages twenty-five to sixty-four) fell by 28 percent, largely due to the poor performance of high school dropouts in the labor market (Greenstone and Looney, 2011). Table 1 shows how annual earnings for workers without a college diploma fell substantially from 1970 to 2000. For example, average earnings for male workers with less than a high school diploma declined by 12.6 percent over the period, whereas male college graduates saw their earnings rise by 9.9 percent. Less-educated workers also saw the largest increases in unemployment and labor-market nonparticipation rates. Trends for women differ because of changes in the composition of women entering the labor market over time. Overall, technological advancements have led to massive growth in the demand for skilled labor but workers with minimal skills have been left behind.

TABLE 1.

Change in Earnings and Employment, 1970 to 2000

	Mean Annual Earnings (percent change)				Employment (percentage point change)			
	Full-year workers	All workers	Full-year males	All workers, male	Unemployed, all workers	Not in LF, all workers	Unemployed, males	Not in LF, males
Ages 25–64	15.3	20.0	17.7	15.7	0.8	–8.6	1.3	8.3
Ages 30–50	12.8	17.7	13.9	11.5	0.9	–10.2	1.6	7.5
By education								
Less than high school	–6.5	–7.0	–7.8	–12.6	5.7	8.2	5.5	23.5
High school only	–9.3	–6.1	–8.6	–11.3	1.7	–5.3	2.1	12.4
Some college	–9.9	–5.3	–7.6	–8.5	1.2	–9.5	1.5	7.5
College	4.6	9.0	10.9	9.9	1.1	–3.0	1.6	7.1
By ethnicity								
Blacks	36.2	39.0	28.5	23.6	3.6	0.5	4.9	16.9
Whites	15.4	20.5	18.7	17.4	0.3	–10.2	0.7	6.5
Other	3.7	6.4	2.7	2.7	2.2	–3.3	2.5	10.0

Source: Data are from the 1970 and 2000 waves of the U.S. census.

Note: Unless otherwise specified, results are for individuals aged twenty-five to sixty-four of both sexes with positive earnings and work experience in the reference year. Full-year workers are individuals who worked for at least forty weeks in the reference year. Earnings are inflation-adjusted.

LF = labor force.

Chapter 3: Proposals for Increasing High School Attainment

1. THE FEDERAL GOVERNMENT SHOULD EDUCATE STATES ON THE BENEFITS OF HIGH SCHOOL GRADUATION AND ENCOURAGE LEGISLATIVE ACTION TO INCREASE THE MINIMUM AGE AT WHICH STUDENTS ARE LEGALLY ALLOWED TO DROP OUT OF HIGH SCHOOL TO EIGHTEEN YEARS.

Some of the best evidence suggesting that high school dropouts actually gain, on average, from staying in school comes from historical changes in compulsory-schooling laws.³ The first empirical studies in this area dealt with increases to the minimum school-leaving age that occurred in the first half of the twentieth century. These studies consistently found large gains to adult socioeconomic outcomes (see table 2). For the United States, Angrist and Krueger (1991) and Acemoglu and Angrist (2001) found that annual earnings are nearly 10 percent higher for students compelled to stay an additional year in school. Harmon and Walker (1995) and Oreopoulos (2005) found comparable results for the United Kingdom and Canada.

Those nudged to finish high school through mandatory schooling laws also fare better than dropouts on outcomes other than employment and income. Compulsory schooling has been shown to lower overall crime and incarceration rates (Anderson, 2012; Lochner and Moretti, 2004), although there is some evidence that increasing the minimum school-leaving age to eighteen results in higher in-school violence (Gilpin and Pennig, 2012). Compulsory schooling also makes individuals healthier: high school dropouts are more likely to use cigarettes and illicit drugs than are high school graduates (Mensch and Kandel, 1988), and an additional year of compulsory schooling substantially lowers the probability of dying sooner among elderly people (Lleras-Muney, 2005). Compulsory schooling reduces the incidence of teen pregnancy (Black, Devereux, and Salvanes, 2005), and it even has positive effects on memory and other cognitive abilities (Banks and Mazzonna, 2012). There are also documented broader consequences of compulsory education that make democracies more effective by increasing political interest and involvement (Milligan et al., 2004). It can also decrease intergenerational inequality in educational attainment: parents with more compulsory schooling are less likely to have children repeat a grade or drop out of school themselves (Oreopoulos, Page, and Stevens, 2006).

These studies on the effects of compulsory education on earnings use policy reforms that increased the minimum school-leaving age to fourteen, fifteen, or sixteen many decades ago, when the circumstances behind dropping out were quite different from those today. The demand for skilled workers has increased, as have the gains from additional education attainment. On the other hand, more students today graduate from high school and pursue college; today's dropouts come from a relatively small set of poorer families. From the 2000 census, 73 percent of dropouts under age twenty and living at home have parents with household income below the 25th percentile compared with only 55 percent of dropouts from the 1960 census. It is not clear whether compelling these individuals to remain in school beyond sixteen would generate the same effects found in earlier studies.

Figure 2 shows the effects of raising the school-leaving age above sixteen on education attainment for a recent sample of twenty- to twenty-nine-year-olds. For each year the dropout age was extended above sixteen, school attainment increased by an average of 0.12 years per student. High school completion rates increased 1.3 percentage points, on average, from raising the school-leaving age to from sixteen to seventeen, and 2.4 percentage points from raising it to eighteen. Raising the school-leaving age also led to an increase in college enrollment rates by 1.5 percentage points, suggesting that those encouraged to stay on and complete high school take advantage of new opportunities by pursuing college. Using these estimates, increasing the school-leaving age to eighteen for every state would lead to approximately 55,000 more students completing high school and 34,000 more students entering college per year (assuming the same percentage point increases in states with dropout ages lower than eighteen; future numbers would depend on population change and other factors behind overall increases in high school completion).

It is important to note that the effects of compulsory-schooling laws are not necessarily driven by enforcement of school attendance through fines and other penalties. Truant students or their parents are often first contacted by teachers, principals, or caseworkers in an effort to reengage and address reasons behind the truancy. More resources for addressing or enforcing truancy may also come from changes

TABLE 2.

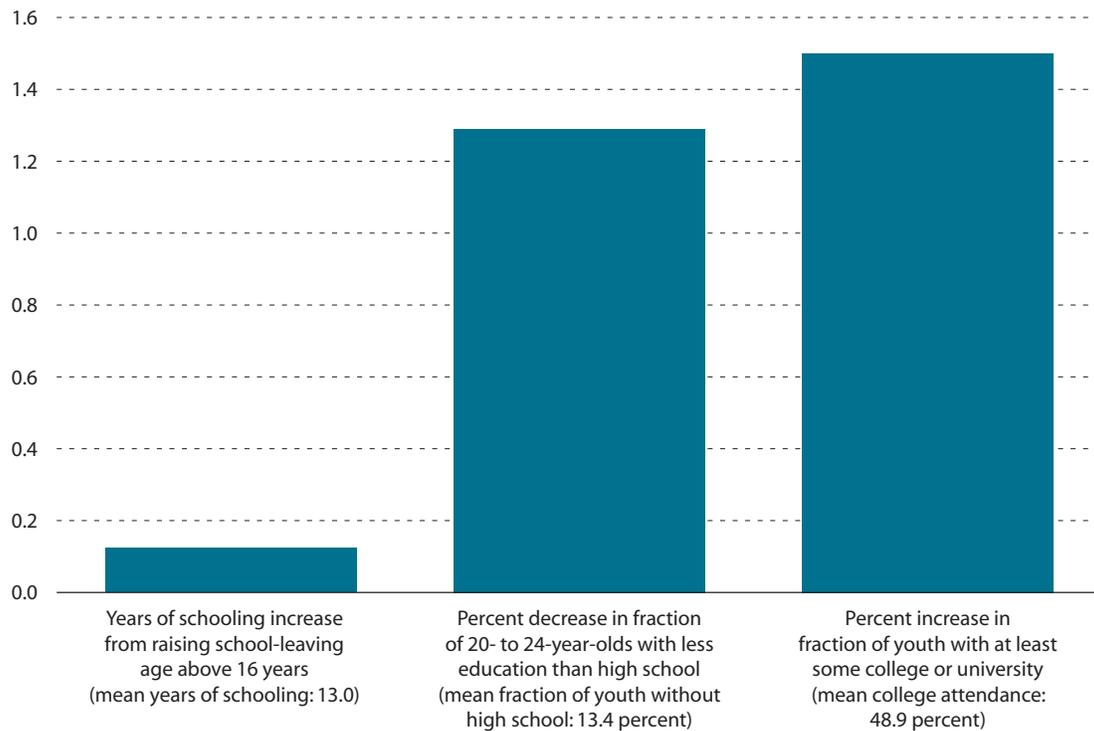
Effects of Education on Earnings and Life Outcomes, Summary of Empirical Findings

Author(s)	Dependent Variable(s)	Sample and Data	Primary Findings
Angrist and Krueger (1991)	Weekly wage	Men born 1920–1929 in the 1970 U.S. census. Men born 1930–1939 or 1940–1949 in the 1980 U.S. census.	Monetary return of an additional year of schooling for those compelled to attend school is about 7–10%.
Acemoglu and Angrist (2001)	Weekly wage	U.S.–born white males aged 40–49 from the 1960–1980 U.S. censuses.	The total social return to schooling is around 8–9% (7% private return plus 1–2% return from human capital externalities).
Oreopoulos (2006)	Weekly wage	U.S.–born individuals aged 25–64 from the 1950–2000 decennial U.S. censuses.	Dropouts compelled to take an additional year of high school earn about 10–14% more than dropouts without the additional year.
Oreopoulos (2007a)	Reported physical or mental health disability that limits personal care/daily activity	U.S.–born individuals aged 25–64 from the 1990 and 2000 U.S. censuses.	An additional year of compulsory schooling reduces the likelihood of reporting a physical or mental disability that limits personal care by 1.7% and that limits daily activity by 2.5%.
	Reported bad health		Lowers the likelihood of bad health by 3.2%.
	Reported good health		Increases the likelihood of good health by 6%.
	Reported life satisfaction	Sample of 18–65 year olds from the UK and Northern Ireland in the 1973–1998 Eurobarometer Surveys.	An additional year of compulsory schooling increases the likelihood of being satisfied overall with life by 5.2 percentage points and increases the likelihood of being very satisfied by 2.4 percentage points.
Lochner and Moretti (2004)	Imprisonments	Males aged 20–60 in the 1960–1980 decennial U.S. censuses.	An additional year of schooling reduces the probability of imprisonment by 0.1 percentage points for whites and by 0.3–0.5 percentage points for blacks.
	Arrests	Males aged 20–59 from the FBI Uniform Crime Reports by state, criminal offense, and age for 1969, 1970, 1980, and 1990.	An additional year of schooling reduces arrests by 11–18%. A 10-percentage-point increase in graduation rates would reduce murder and assault arrests by 20%, motor vehicle theft by 13%, and arson by 8%.
Black, Devereux, and Salvanes (2008)	Teenage birth indicator	Women aged 20–30 from the 1940–1980 decennial U.S. censuses.	Increasing the minimum dropout age to 17 reduces the probability of a teen birth by 8.8%.
Milligan, Moretti, and Oreopoulos (2004)	Indicator of whether the individual reported voting in last national election.	Respondents of the 1948–2000 biannual National Election Studies (NES) database.	The difference in the probability of voting between high school dropouts and individuals with 12 or more years of schooling is around 20–25%.

Notes: See text for more information on individual studies.

FIGURE 2.

The Effects of Raising the Compulsory-Schooling Age by One Year on School Attainment



Source: Values are obtained by regressing indicator variables on a dependent variable for dropout age faced at sixteen. Data are from the NBER's extracts of the 1979–2005 Merged Outgoing Rotation Files of the Current Population Survey and collapsed into cell means by year of birth, state of residence, age, race, and gender (weighted by cell population size). Regressions also include state, cohort, and survey-year fixed effects; the main specification is found in Oreopoulos (2007b).

Notes: The sample includes twenty- to twenty-nine-year-olds who were aged sixteen between 1970 and 2001. Results are all significant at the 1 percent level.

to compulsory-schooling laws. Some evidence for this comes from estimating effects on decreasing dropout rates in grades 8 and 9 (Oreopoulos, 2007b). On the other hand, one reason for the modest magnitude of these effects may be from a lack of enforcement or resources.

The subsequent benefits of these reforms, for those affected, are summarized in figure 3. Again, using various states' recent changes to the minimum school-leaving age, each year of additional schooling a student receives lowers the probability that she will end up unemployed by 3.6 percentage points, lowers the likelihood of her being on welfare by 5.5 percentage points, and lowers the likelihood of her being below the poverty line by 8.1 percentage points. Among those working more than twenty-five hours per week, a year of compulsory schooling also is associated with a 10.7 percent increase in annual earnings. These results are consistent with earlier findings. They may even be understated by the fact that education earnings gaps tend to increase with age and these results focus only on younger cohorts (Bhuller, Mogstad, and Salvanes, 2011).⁴

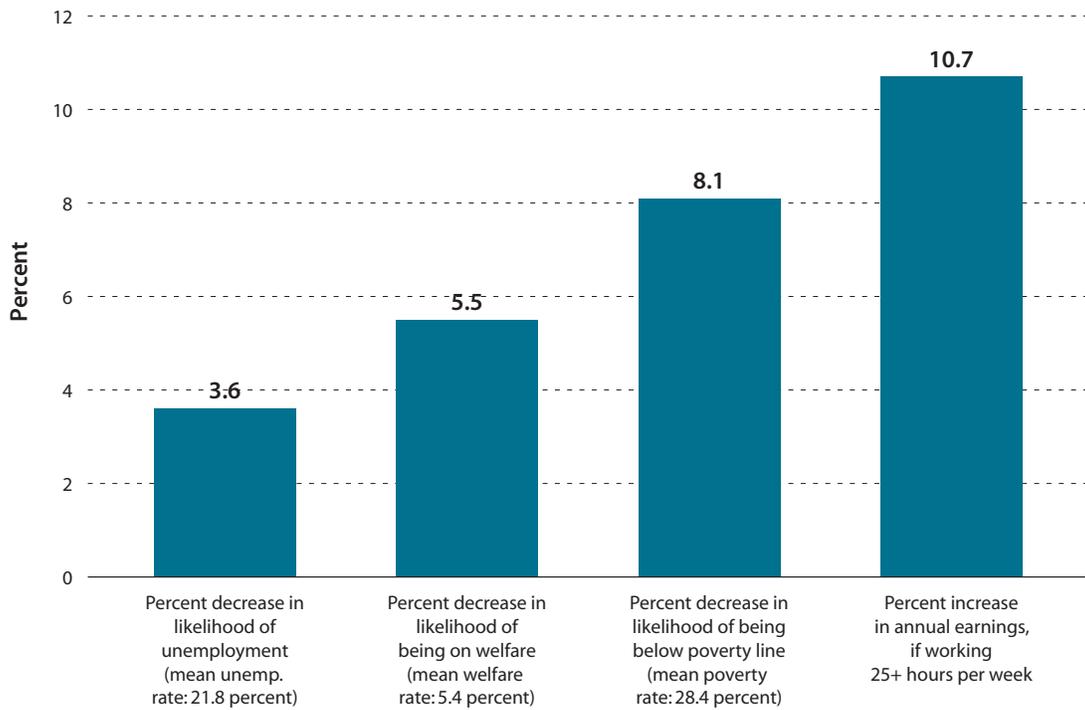
On average, the evidence suggests that private benefits to raising the school-leaving age to eighteen in America are large. Note that since these returns are averages, some students may benefit more than others, and it is likely that not everyone is made better off from remaining in school. Exceptions to these laws are therefore needed in order to accommodate these expected cases, as we discuss further below.

State role vs. federal role

Compulsory schooling, and education in general, is usually legislated at the state level. The federal government, as it has recently done, can encourage states to consider more-restrictive laws and grade states based on the extent to which states follow federal recommendations. Even if the federal government could impose a national minimum school-leaving age, it is clear, based on experience, that such legislation is not likely to be effective if buy-in does not exist at the regional levels. The federal government has a larger role in disseminating best practices and motivating policies from a cost-benefit perspective.

FIGURE 3.

The Effects of One Additional Year of Schooling on Labor-Market Outcomes



Source: Data are from the 2000–2005 American Community Surveys.

Notes: Values are obtained by regressing educational attainment on the dependent variable, instrumenting using compulsory-schooling laws. The sample includes twenty- to twenty-nine-year-olds who were aged sixteen between 1987 and 2001. See figure 2 notes for further details. Reported means are for the dropout sample.

The motivation for raising the compulsory-schooling age

Motivation for wanting to increase the school-leaving age often rests on paternalistic assumptions that students wishing to leave school early are, in fact, better off from staying on. For example, a senior policy analyst at the National Conference of State Legislatures stated the following in support of a recent bill that increases the dropout age in Maryland: “It’s symbolically important for state laws to indicate that kids shouldn’t be leaving school before they receive a high school diploma. It’s no longer a viable option to drop out” (Zapana and Wagner, 2012).

And, in New Jersey, a sponsor of a bill to increase the legal age at which students can leave school from sixteen to eighteen stated, “Societal changes and the increasing demands of the labor market continue to place a premium on education. A person who stops attending school at age sixteen will always lack the skills and preparation to successfully compete in the workforce and function in society” (D’Amico, 2012).

Compulsory-schooling laws help establish social norms and expectations for minimum school attainment. They provide a context and a stated goal for developing policies to keep youth

in school. But policies to increase attainment must extend beyond fines and other penalties for school absenteeism. Effective approaches to keep students interested and engaged in learning are needed to help them make the choice to stay in school, even when dropping out becomes permissible.

2. STATES SHOULD BE ENCOURAGED TO DEVELOP NEW PROGRAMS TO REENGAGE AT-RISK YOUTH.

The decision to drop out of school often results from a much longer process of disengagement that begins in elementary school. Patterns of high absenteeism and lower performance by future dropouts tend to start as early as the third grade (Barrington and Hendricks, 1989). Thus, policies that combat early disengagement may also prevent at-risk students from falling into a downward spiral, where missing school causes them to fall behind in their studies, which, in turn, makes them feel even less motivated to attend classes and puts them farther behind (Lamdin, 1996; Peterson and Colangelo, 1996; Strickland, 1998). At young ages, truancy is more often due to issues related to parents. Addressing parent situations that keep kids away from school while working with parents to improve conditions for children to cope with social and academic challenges of school are ways to foster school

engagement. Children tend to do better when parents set high expectations for them (Alexander, Entwisle, and Bedinger, 1994; Ensminger and Slusarcick, 1992). Setting rules and helping with homework are ways that parents can encourage their children to adapt to school early and do well in the long term (Astone and McLanahan, 1991; Rumberger, 1995).

Parents also need to be actively involved through all levels of schooling. Although many parents become more involved upon learning that their child is considering leaving school, they are often not aware of their child's poor performance until it is too late (Bridgeland et al., 2006). When school administrators and educators communicate more regularly with parents regarding their children's performance, they provide a means for parents to take a more active role.

Students should be made to feel they are expected to complete high school, and that teachers and parents are there to help make that happen. Compulsory-schooling policies, in a broader context, exist to set minimum expectations on school attendance and attainment.

The school environment itself is obviously another strong determinant of whether at-risk students succeed. Students who are supported, motivated, and encouraged by their teachers, who regard their teachers as caring, and who receive guidance from their teachers are less likely to drop out (Brewster and Bowen, 2004; Catterall, 1998; Croninger and Lee, 2001; Lee and Burkam, 2003). In contrast, dropouts often report leaving school because they did not get along with their teachers or classmates (Catterall, 1998). Smaller class sizes or counseling and guidance programs for struggling students are ways to improve how students perceive their teacher support networks.

Recent evidence points to the importance of setting high academic expectations (e.g., Fryer, 2011). Students should be made to feel they are expected to complete high school, and that teachers and parents are there to help make that happen. Compulsory-schooling policies, in a broader context, exist

to set minimum expectations on school attendance and attainment. A number of other interventions show promise in fostering expectations and engagement, even at an early age. Mentoring programs, especially, provide opportunities for administrators to directly interact with students and families, and they are relatively cost-effective. For example, Check and Connect is a program that sends support workers to meet with students and parents in urban middle schools to discuss attendance and academic performance. Previous randomized controlled trials find that the program leads to lower tardiness and absenteeism, and increased graduation, as well as to increases in literacy and school completion (Anderson, Christenson, Sinclair, and Lehr, 2004; Lehr, Sinclair, and Christenson, 2004; Sinclair et al., 1998; Sinclair, Christenson, and Thurlow, 2005; Sinclair and Kaibel, 2002). Of course, this intervention is not without cost—the price tag of Check and Connect is approximately \$1,100 per student per year (Sinclair et al., 2001)—but the long-term benefits of the program likely far outweigh its costs.

3. STATE AND LOCAL GOVERNMENTS SHOULD IMPROVE ENFORCEMENT OF NEW AND EXISTING LAWS.

Although a strictly enforced minimum school-leaving age should, in theory, cause every student to either remain in school until the requisite age or face a penalty, compulsory-schooling laws tend not to be strictly enforced, often for reasons of cost. For example, Los Angeles had 260 attendance counselors to cover 660 schools in 2002 (Helfand, 2002). Yet Boston only employed seven truant officers in 2003 (Silverman, 2003) and Denver only employed one officer in 2004 (Ludwig, 2012). In the 1990s, Chicago eliminated all truant officers for budgetary reasons in favor of using mentoring programs to tutor and reengage moderately truant students. The effectiveness of involving parents when students are truant was discussed in the previous section; this evidence suggests more resources to hire truant officers would be a worthwhile (and cost-effective) venture.

Punitive measures may be useful to curb absenteeism in cases where counseling is not as successful. Parents may be unwilling or unable to discipline children to attend school, especially for older adolescents who are more independent. In some cases, the parents may also suffer from problems of mental illness or drug addiction, which further complicates the matter. The credible (and possibly implicit) threat of fines and court hearings for parents may entice them to make sure their children are attending school regularly. Community

TABLE 3.

Compulsory-Schooling Laws for States with Minimum School-Leaving Ages Greater than Sixteen, 2005

State	School-leaving age	Punishment for habitual truancy	Major exemptions
Arkansas	17	Up to \$500 (for parent)	16+ and in adult education 10 hrs a week
California	18	Community service (for student and/or parent), juvenile delinquent school (student), parent education, \$1,000 fine	Work permit
Connecticut	18	Social and rehabilitation service (parent and/or child)	16+ and parent's consent or work permit
District of Columbia	18	Parent subject to community service, fine, or imprisonment	17+, part-time school if working
Illinois	17	Community service (for child), graduation incentives program, misdemeanor (parents and/or child)	Working
Indiana	18	Ineligible for driver's license, misdemeanor (parents and/or child)	16+ and student, parent, and principal agree to withdrawal
Kansas	18	Social and rehabilitation service (parent and/or child)	Parent consent and signing of disclaimer that child lacks skills and earnings will be lower
Louisiana	18	Up to \$250 or 30 days imprisonment	17+ and parent consent
Maine	17	None mentioned	15+, parent consent, part-time school, and working
Minnesota	18	Misdemeanor (parents and/or child)	16+ and parental consent
Mississippi	17	Misdemeanor (parent), foster care (child)	None
Nebraska	18	Misdemeanor (parents and/or child)	16+ and parent consent or need to work
Nevada	17	Advisory board meeting, misdemeanor (parent), foster care (child)	Distant from school or need to work or 14+ and working
New Mexico	18	Ineligible for driver's license, social and rehabilitation service (child), misdemeanor (parent)	17+ and working
New York	17	Fine or imprisonment	16+ and working
Ohio	18	Misdemeanor (parents and/or child)	Work permit
Oklahoma	18	Misdemeanor (parents and/or child)	16+, principal and parent consent
Oregon	18	Notice to parent	16+, parent consent, and working
Pennsylvania	17	Misdemeanor (parents and/or child)	None
Rhode Island	18	Fine or imprisonment	16+ and parent consent
South Carolina	17	Fine or imprisonment	Need to work
Tennessee	17	Misdemeanor (parents and/or child), truancy school	None
Texas	18	Misdemeanor (parents and/or child), truancy school	None
Utah	18	Misdemeanor (parents and/or child), truancy school	16+ and working
Virginia	18	Misdemeanor (parents and/or child)	Parent consent
Washington	18	Misdemeanor (parents and/or child), social and rehabilitation service (parent and/or child)	16+ and working
Wisconsin	18	Fine or imprisonment	None

Source: Oreopoulos (2007b).

service requirements, fines, and misdemeanors sanctioned on students are other ways of targeting truancy in cases where absenteeism is a result of student delinquency. Imposing restrictions on driving privileges has also shown to be a successful deterrent to truancy (Barua and Vidal-Fernandez, 2011). Table 3 shows a sample of punitive measures for habitual truancy that were in place in 2005 by some states with compulsory-schooling laws. Since fines and court hearings are resource-intensive, however, they should be used as last resorts after counseling or other corrective measures have been exhausted.

These different approaches to enforcement likely have different results. We are only now learning about which approaches

The motivation for a renewed focus on compulsory-schooling laws is the increasingly poor labor market outcomes of high school dropouts.

work best. For instance, a study is under way to test explicitly different approaches to enforcing compulsory-schooling laws for a sample of truant youth in Chicago, in the absence of any other enforcement of those laws (Ludwig, 2012)

Special exceptions

Table 3 also shows that exemptions to compulsory-schooling laws are common in many states. These exemptions permit adolescents to leave school when obviously appropriate. In many cases, dropping out is a result of teenage pregnancy, the need to care for a family member, or an immediate necessity to make money (Bridgeland et al., 2006). States often address these concerns by requiring parental consent, coupled with a younger minimum dropout age, to ensure basic educational requirements are still met. Having clear exemptions in place would allow administrators flexibility to accommodate cases where the costs of continuing are obviously too high.

4. COMPULSORY-SCHOOLING LAWS SHOULD BE DESIGNED TO PROMOTE COLLEGE ATTENDANCE AND TO IMPROVE THE CAREER OUTCOMES OF STUDENTS.

The motivation for a renewed focus on compulsory-schooling laws is the increasingly poor labor-market outcomes of high school dropouts. In the past several decades, an increasingly competitive global economy and technological advancements have reduced the job opportunities available to less-educated, less-skilled workers and increased them for higher-skilled workers (Greenstone and Looney, 2011). This increased demand for skilled labor is reflected in the rise in earnings premiums of high school and college graduates compared to high school dropouts. For example, the U.S. Census Bureau (2005) reported that individuals who graduated from high school earn 1.5 times more than dropouts, and college graduates earn 2.7 times more than dropouts. Yet even high school graduates have seen large declines in their average earnings levels and employment rates relative to college graduates over the past several decades (see table 1). This suggests additional opportunities for improved social and economic success through college. Increasing high school attainment should be regarded as part of a more general goal to make youth more competitive in the labor market. Completing high school helps youth to consider options for college.

While traditional education is clearly highly prized in today's labor market, the goal of compulsory-schooling laws is not to try to shoehorn all students into that model. Its purpose should be to prepare America's youth for a range of opportunities, including college and careers. To that end, nontraditional programs that have a clear track record of proven results should be eligible to fulfill the requirements of compulsory-schooling laws. For instance, vocational training and school-to-career programs may also be effective ways of providing disengaged students with alternative school options for developing practical, hands-on learning and useful skills for success in the labor market. For example, career academies—programs in high schools focused on both preparation for postsecondary education and the transition to work—allow students to combine standard in-class learning with on-the-job work experience. These programs are primarily located in urban schools and serve a cross section of students, including many at-risk minority students. They offer small learning communities that combine academic and technical curricula around a career theme to enrich learning. Monthly earnings are higher for career academy graduates, particularly for

males, than for similar students who did not participate in the program (Kemple and Willner, 2008). More important, these gains most consistently accrued to students classified as being at the highest risk of dropping out of school. The option to receive assistance in finding work after school also entices many students to graduate on time, as the financial benefits of remaining in school are made more salient. Per student costs of school-to-work programs can be similar to mentoring programs and may even be repaid by graduates through subsequent payroll taxes.

Furthermore, compulsory schooling may be one way of encouraging youth to pursue higher education, even though such laws do not explicitly mandate it. We mentioned evidence that raising the school-leaving age above sixteen increases the likelihood that students go on to college (see figure 2). One story consistent with this finding is that some individuals nudged to complete high school become more interested in

college or view higher education as less daunting an obstacle than when they were younger (Oreopoulos, 2007b). Mandating that students complete the college-application and financial-aid process may also lead to increased college-enrollment (e.g., Bettinger, Long, Oreopoulos, and Sanbonmatsu, 2009).

In addition to communicating the importance of continued education and mitigating absenteeism, the mentoring programs and parent-teacher outreach initiatives discussed earlier also provide opportunities to help students choose courses and plan their learning paths to achieve their long-term career goals. It is important that high schools offer a wide array of course options to keep students interested in learning and to prepare them for college. Vocational training, such as student-work programs, may be useful for providing students who would otherwise typically not go on to college with real-world work experience, which may in turn open doors to a successful career.

Chapter 4: Costs and Benefits of Compulsory Schooling

Economic evidence points to sizable financial and nonfinancial benefits, on average, for students from raising the minimum school-leaving age. But while compulsion and truancy prevention affect particular groups of students more than others, costs and resource burdens affect schools, administrations, and states on a wider scale. This raises the question of whether such costs are justified or offset by the observed gains to at-risk groups.

On the benefits side, many studies estimate roughly a 10 percent increase in annual income, on average, from nudging a student to stay a year in school. This means that the lifetime-earnings increase from finishing high school and joining the labor force at age eighteen rather than exiting high school at age sixteen is approximately \$226,700 over the course of one's life.⁵ When we correct for the fact that much of this income comes long after the high school years, this sum is equivalent to a one-time payment of \$94,300 at the age of sixteen (when individuals are facing the decision of whether to drop out). There are also many benefits of compulsory schooling that are difficult to quantify but that are nevertheless important: increases in the minimum school-leaving age have been shown to reduce teenage pregnancy, improve individuals' health, reduce dependency on public-support programs, decrease crime rates, and increase voting and political involvement. Thus, beyond the increase in earnings of would-be dropouts, there are broader benefits to the students and to their families and communities.

On the cost side, more truant officers or caseworkers would likely be needed—although it is unclear precisely how many. If each makes \$85,000 per year (the average in Maryland) and one worker can monitor forty students, that's an increase of more than \$4,000 to monitor each additional student for two more years (Maryland General Assembly, 2012).

There are also the additional costs associated with attending classes to consider. Accommodating tens of thousands of students across the country who otherwise would have dropped out will entail direct costs from some combination of hiring more teachers, building new schools, or increasing class sizes—and all of these measures come at a price. Per pupil spending in the United States is roughly \$12,300 per year (National Center for Education Statistics, 2011). If

accommodating each new student costs this amount, a state would pay almost \$25,000 to keep a sixteen-year-old dropout in school through graduation. In reality, however, adding students to the education system is likely to increase costs by far less than the average rate per student. Some new schools and classrooms may have to be built to accommodate the would-be high school dropouts who remain in school, but by-and-large most of the infrastructure already exists to support these students. Actual costs of education, then, may be closer to \$10,000 or \$15,000 for each additional student.

Beyond these direct costs, however, there may be indirect costs, many of which are difficult to quantify. For example, increasing the number of students in public schools could lead to larger class sizes if schools accommodate these students without hiring new teachers or building new classrooms. Furthermore, some of those students who would remain in school as a result of the law change may be disruptive to their peers because they are among the least-enthusiastic students. This is most likely to impact already struggling students, who are most at-risk of being distracted and falling into bad habits. There are also concerns that the incidence of crime and violence in schools might rise because of the increased attendance of unhappy and unwilling teenagers. The risk of compulsory schooling negatively impacting the peers of would-be dropouts is of particular concern, and will be discussed in more detail in the following section. Finally, many schools are already pressed for funds, and the increased financial burdens from compulsory schooling would divert resources from other valuable uses.

Noting the limitations and challenges of quantification of all of the costs and benefits in this setting, table 4 provides a summary of the available evidence on these important ingredients into decisions about compulsory-schooling laws. Panel A repeats the benefits from an additional two years of school for would-be dropouts, which is roughly \$94,300. Although there is not an “off-the-shelf” compulsory-schooling program, we assume that it involves increasing the number of teachers and classrooms to hold a school system's class size constant as well as substantial increases in truant officers for potentially unenthusiastic students. An upper estimate for these costs is roughly \$28,800 for each student

TABLE 4.

The Benefits and Costs of Raising the Compulsory-Schooling Age from Sixteen to Eighteen

A. Quantifiable benefits	
Increase in lifetime earnings per affected student	+ \$94,300
B. Quantifiable costs	
Labor cost per pupil for two additional years of school	-\$12,900
Capital cost per pupil for two additional years of school	-\$11,600
Cost per pupil of additional truant officers	-\$4,300
C. Currently unquantifiable benefits and costs include	
Less crime in communities	+
Improved health outcomes	+
Reduced teenage pregnancy rate	+
Reduced dependence on government programs	+
Population that is more politically active	+
More-disruptive classrooms	-
More crime in schools	-
More-crowded classrooms	-
Additional strain on the legal system	-

Sources: Maryland General Assembly (2012); NCES (2011).

Note: Increased lifetime earnings are an NPV calculation with a 3.5 percent discount rate. The cost of an additional truant officer assumes that each officer can serve forty students.

who is compelled to stay in school for an additional two years; as discussed above, actual costs may be significantly lower.

Thus, per student, the quantifiable benefits of increasing the compulsory-schooling age appear to exceed the costs substantially. This calculation assumes that the law change is binding, and a would-be dropout remains in high school until the age of eighteen. If students drop out in spite of the law, both the benefits and costs of compulsory schooling would be lower. As Panel C makes clear, however, there are also a series of other important consequences of raising the compulsory-schooling age whose effects cannot currently be quantified, and their inclusion should naturally play a role in policymakers' decisions. We believe that the balance of the economic evidence suggests that, on average, the benefits of compulsory schooling outweigh the costs.

It is important to note that, although the quantifiable costs of increasing the compulsory-schooling age might seem high, not only are these costs surpassed by the quantifiable benefits, but the vast majority of the costs are incurred in the actual education of would-be dropouts, as opposed to in the enforcement of these laws. But any intervention that

succeeded in reducing the dropout rate by a commensurate level would entail those same direct education costs. Compulsory schooling, then, is only expensive insofar as it is successful in keeping students in school, which, the economic evidence suggests, is a worthy goal. Furthermore, as we have emphasized throughout this paper, programs that target disengagement among at-risk students at an early age will not only increase high school graduation rates—which will only augment the benefits that compulsory schooling brings—but these programs also have the potential to significantly lower many of the costs described above. For instance, states will have to devote fewer resources to enforcing compulsory schooling laws if relatively less-expensive programs such as Check and Connect curb disengagement early in students' academic careers. These programs also may decrease the number of disruptive students in the public school system, which would also minimize some of the potentially negative peer effects of compulsory-schooling. States may find, then, that many of these support programs are sound investments for increasing their population's education level and economic outcomes in the most cost-effective way.

Chapter 5: Potential Barriers to Implementation

Encouraging students to remain in school longer may give them more time to mature and develop the values and character traits required for citizenship. The private and social benefits of compulsion have been discussed throughout this paper. However, there are several objections that can be raised to increasing the compulsory-schooling age.

One key concern is that forced attendance may also contribute to violence or discipline problems by students who would rather not be in school. This would affect the learning environment of others and undesirably burden teacher and administrator resources who need to deal with delinquents. Such behavior by would-be dropouts imposes a negative externality on other students who would otherwise be better off from a more studious learning environment. Some research does suggest negative impacts on classmates from disruptive behavior (e.g., Lavy and Schlosser, 2011). Yet, if disruption led to worse long-term outcomes for a significant portion of classmates, we would expect these effects to show up in our estimates in terms of small or even negative overall effects on cohorts exposed to more compulsory schooling. In fact, we see the opposite: higher earnings, likely driven by those nudged to stay in school. One explanation is that school-leaving laws work more in the background. Students may stay in school either through stronger social norms about attainment, or through school efforts to address reasons behind truancy and disengagement in the first place. This is another reason why we advocate focusing on targeting disengagement before considering enforcement through fines or other penalties.

So, on the whole, students seem to benefit from compulsory-schooling laws. While some individuals may indeed be adversely affected by the presence of additional at-risk students, rather than using this as justification for abandoning the large returns that can be achieved from raising the minimum school-leaving age, policymakers should seek to minimize this cost. Indeed, disruption is likely to be greatest if an increase in the compulsory-schooling age is not accompanied with significant measures designed to support at-risk students. Both would-be dropouts and struggling pupils would benefit from this support system in a manner that could negate any disruption that additional troubled students might cause.

Another concern regarding an increase in the minimum school-leaving age is that there are other interventions that are more cost-effective and that might have larger effects. It is true that raising the minimum school-leaving age is by no means policymakers' only tool in their efforts to raise high school graduation rates. For example, in New York City the Multiple Pathways to Graduation Program includes a variety of interventions targeted at low-income, at-risk youth, including evening tutoring, career training, and smaller learning environments for students who are falling behind. Multiple Pathways to Graduation shows similar promise by offering extensive tutoring, mentoring, and financial support to students throughout their high school years. Adopting approaches from effective charter schools—high expectations, longer school hours and terms, and tutoring—also looks promising. These options, however, are expensive, and sufficient data do not currently exist to evaluate their impact on long-term outcomes such as earnings.

Chapter 6: Conclusion

In this paper, we reviewed the arguments and empirical evidence for raising the compulsory-schooling age to eighteen years. On balance, the evidence suggests that an additional year of high school is associated with a 10 percent increase in lifetime earnings, on average, and that the gains to graduating from high school may be even larger, especially considering the likelihood of social and health benefits as well. Individuals who complete high school are in a better position to go on to college or university and have the opportunity to increase their lifetime earnings even further. These individuals also live longer, are more healthy and happy, are less likely to ever be incarcerated, and are more politically mindful. There are many reasons for wanting to keep children in school longer, and states have a responsibility to assist children and families in meeting this objective in cases where it is appropriate to do so.

However, the costs of keeping would-be dropouts in school with punitive enforcement measures are high. For this reason, we recommended that compulsory-schooling laws be used as

one approach in a series of strategies to keep students engaged in class throughout their school careers. Truancy prevention, such as tutoring or student-mentoring programs as well as parental education or counseling, are cost-effective ways of making sure that enforcement is used as a last resort. Students will invariably gain more from being in school when they want to be there.

Although the costs of implementing a statewide increase in the legal dropout age are high, the private returns from better labor-market outcomes tend to offset such investments over time. Higher income-tax revenue also partially offset states' costs and provides a worthwhile return on investment. We recommend states implement reforms that make schooling to age eighteen compulsory, keeping in mind the enormous long-term potential benefits of assisting students in completing high school and in gaining the required skills to competitively enter the labor market or go on to higher education.

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Endnotes

1. Data on teenage births, separated/divorced, unhealthy, and unhappy are from the 2005–2010 waves of the General Social Survey and apply to individuals aged eighteen to twenty-four in the year 2000.
2. “When students don’t walk away from their education, more of them walk the stage to get their diploma. When students are not allowed to drop out, they do better. So tonight, I am proposing that every state—every state—requires that all students stay in high school until they graduate or turn eighteen” (Obama, 2012).
3. See the technical appendix for a precise discussion on methodology, including more description on why compulsory schooling reforms help pin down the causal effect of education on earnings and other socioeconomic outcomes. Some important caveats are also discussed in the appendix.
4. Two important caveats must be mentioned. Estimated benefits to compulsory schooling vary widely outside North America (Brunello, Fort, and Weber, 2009; Brunello, Weber, and Weiss, 2012; Devereux and Hart, 2010; Grenet, 2011; Meghir and Palme, 2005; Pischke and von Wachter, 2008). One possibility is that returns are individual-specific and even change over the life cycle. Studies that estimate returns by looking at different samples of workers in different age brackets might produce inconsistent results. Other explanations discussed by Grenet (2011) are that institutional factors (e.g., minimum wages) affect returns to schooling, or that the implementation and enforcement strictness of compulsion laws vary across countries. Pischke and von Wachter (2006) suggest that the tracking of students into vocational or academic schools at early ages in some countries will result in different returns to basic labor-market skills.
5. See the technical appendix for a description of the methodology behind this calculation.

Technical Appendix

Effects of compulsory-schooling laws on educational attainment

The main regression model to estimate the effects of raising the school-leaving age above sixteen is the following:

$$(1) \text{ EDUC}_{iscy} = \lambda(\text{DROPAGE}_{sc} > 16) + u_s + u_c + u_y + e_{iscy}$$

where EDUC_{iscy} is a measure of education attainment for individual i , living in jurisdiction s , born in year y , surveyed in year y . The variable DROPAGE_{sc} is equal to one (1) if the individual faced a school-leaving age above sixteen when he or she was sixteen-years-old in jurisdiction s . The variable equals zero (0) otherwise, and e_{iscy} is the error term. The regression includes fixed effects for state of residence, birth cohort, and survey year. These variables control for perennial differences in state education attainment that do not vary over time, as well as national trends in education that do vary over time.

The variable of interest, λ , is the average effect of facing a school-leaving age above sixteen on educational attainment. The identification of compulsory schooling effects comes not only from changes in the school-leaving laws but also from state-to-state variation in the leaving age within regions. On average, raising the school-leaving age above sixteen years increases the individual's years of schooling by 0.12 years.

Equation (1) is also estimated with high school completion and postsecondary school enrollment indicators as outcome variables. The results also indicate that raising the school-leaving age matters in explaining dropout rates and college entrance.

Effects of educational attainment on socioeconomic outcomes

The next step is to estimate the effect of educational attainment on labor-market outcomes, such as worker earnings:

$$(2) \text{ EARN}_{iscy} = \lambda \text{ EDUC}_{iscy} + u_s + u_c + u_y + e_{iscy}$$

where EARN_{iscy} is the level of earnings as defined in the text and all other variables are defined above. Here, the coefficient λ captures the average effect of an additional year of schooling on earnings. However, directly estimating equation (2) can be problematic for many reasons. For example, it is often difficult to distinguish between the effect of staying in school beyond sixteen and the effect of underlying factors, such as motivation, that lead some teenagers to remain in school longer than

others. If we observe that someone who finished high school earns more than someone who did not, it may be because the individual stayed in school longer or it may be because the individual is generally more motivated, which is why he or she both stayed in school longer and went on to perform better in the labor market. It is important to distinguish between these two possibilities, so that extra emphasis is not put on the effect of schooling when the effect is really individual characteristics that are independent of school policies.

Using equation (1) as an intermediate stage in estimating equation (2) permits an identification of the effect of policy reforms on earnings from the individual-specific effects. This is because policy reforms to compulsory schooling happen for political reasons that are unrelated to a particular individual. This method takes into account changes in compulsory-schooling laws in different states at different times. It permits an estimate not only of the overall impact of compulsory-schooling laws, but also of their impact on students specifically affected by them and who would have otherwise left school. Obtaining an unbiased estimate of the effect of compulsion on unemployment, receiving welfare, or living below the poverty line is achieved by replacing the dependent variable in equation (2) with these other outcome variables.

Calculating the net present value of completing of high school

We estimate that the expected net present value of completing high school, as opposed to dropping out at age sixteen, is \$94,300. From the ACS, we take average income for all wage-earning, male high school dropouts at every age between sixteen to sixty-five inclusive. We discount future earnings at 3 percent per year, and find that the expected present discounted value of a high school dropout's lifetime earnings is about \$611,100. According to Bhuller et al. (2011), each year of compulsory schooling increases one's income by, on average, 10.7 percent. An individual who remains in school for two additional years, we assume, earns no income at ages sixteen and seventeen, and thereafter, earns 21.4 percent more than he would have had he dropped out. Using these assumptions, the present discounted value of the lifetime earnings of an individual who received two additional years of compulsory schooling is about \$705,400—an increase of \$94,300 relative to dropping out of high school at age sixteen.

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Highlights

Derek Messacar and Philip Oreopoulos of the University of Toronto discuss the many economic challenges facing high school dropouts in today's economy, and propose a new plan to increase graduation rates.

The Proposal

Raise the compulsory-schooling age to eighteen. Many studies have shown that raising the compulsory-schooling age makes students better off on a wide variety of long-term social outcomes including earnings, employment, and health. In light of this economic evidence, every state should mandate that students remain in school until eighteen years of age or until they graduate from high school.

Reengage at-risk students early in their educational careers. Raising the compulsory-schooling age is a good start towards increasing high school attainment, but more should be done to achieve this important goal. Schools should target students' disengagement in the elementary grades by increasing mentoring and counseling programs directed toward at-risk students.

Encourage state-government experimentation to increase high school completion rates. When it comes to education reform, there is no one-size-fits-all approach. Within the framework laid out in this proposal, states and school districts will have to decide which combination of programs and policies work best for them. To that end, the U.S. Department of Education should disseminate information to state and local governments on what options are available to them, and which programs have a track record of success.

Benefits

Increasing the compulsory-schooling age has been shown to increase graduation rates by 2 percentage points. When combined with other policies aiming to keep at-risk students engaged in their education, these effects are likely to be even larger. Increasing educational attainment not only benefits those students who are the direct recipients of high school diplomas and college degrees—studies show that having a more-educated workforce raises wages across the board and increases civic participation.



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