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The Costs of High School Failure and School Suspensions for the State of California

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Publication Date
2014-10-01

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October 2014

Commissioned by
The Civil Rights Project/*Proyecto Derechos Civiles*
University of California, Los Angeles
with support from The Atlantic Philanthropies

The Center for Civil Rights Remedies
at The Civil Rights Project | *Proyecto Derechos Civiles*

SUMMARY

In this report, we first calculate the economic losses to the state of California that result from students' failure to complete their high school education, and then relate these losses to current school policies on suspension.

California's current education system does not ensure that all students will graduate from high school and enter adulthood fully prepared for productive citizenship. Almost 100,000 members of each cohort of California students will drop out of high school. These dropouts typically face substantially poorer economic and personal well-being than those who earn a high school diploma, which puts financial pressure on the state and local government agencies that spend increased amounts on health, criminal, and welfare services due to high dropout rates. Federal government spending on dropouts is also significant.

Using a standard economic model, along with state-specific data and up-to-date research, we calculate the social and fiscal consequences for California students of dropping out of high school. We take the perspective of an 18-year-old student in California in 2014 who is facing a lifetime of work. The consequences are expressed as the lifetime differences between high school dropouts and graduates in terms of income; taxes paid; government spending on health care, crime, and welfare; tax distortions; and productivity gains. Spending is calculated separately based on whether it comes from federal or state/local sources. Separate analyses are performed by sex and race/ethnicity, and then pooled to derive statewide estimates.

- The social losses per high school dropout in California cost from $381,000 to $580,000. The impact of social losses costs the state $37-$56 billion per cohort.
- The fiscal consequences of dropping out are also significant. The state loses between $118,000 and $175,000 in net tax revenues per dropout, while the aggregate impact for California taxpayers is a loss of $11-$17 billion per cohort.

These are annual amounts; each year brings a new cohort of students who may not complete high school. These economic figures, combined with evidence on the disparate impact of school suspension policies, provide compelling evidence for the need to improve high school opportunities for the current cohorts of California students. These opportunities might include dropout prevention programs, tutoring assistance, summer schools, or college prep programs.

One area ripe for improvement is the high number of school suspensions. Suspension is known to have an adverse effect on high school completion and thus to have clear economic consequences. Applying the results of our model, we simulate the aggregate burden under different suspension policies.

Table S1: Economic Consequences of Suspension for California

Baseline suspension rate	*15%*
Number of suspensions per cohort	78,410
If impact of suspension on HS graduation falls from 3pp to zero	
Reduction in HS dropouts	2,350
Social loss averted ($m)	$1,363
Fiscal loss averted ($m)	$412
If impact of suspension on HS graduation falls from 7pp to zero	
Reduction in HS dropouts	5,490
Social loss averted ($m)	$3,183
Fiscal loss averted ($m)	$961

In California, a baseline suspension rate of 15% will result in 78,410 suspended students in each cohort. These students will have graduation rates 3-7 percentage points lower than non-suspended students. If the adverse impact of suspensions on high school graduation can be eliminated, there will be 2,350-5,490 fewer dropouts per cohort, the averted cost of social losses will be $1.36-$3.18 billion, and the fiscal loss averted will be $412-$961 million. These substantial savings are only the effect of suspension on high school failure; other economic effects of having many suspended students – e.g. within the school or local community – should be added to these totals.

Many states and localities are seeking to reduce suspension rates. Studies have indicated that, if successful, these districts will also reduce their high school dropout rates because they will avoid the "suspension penalty" of a substantially increased risk for dropping out. Keeping the likelihood of dropping out constant, even very small changes in the suspension rate will yield significant savings:

- If the baseline suspension rate falls by only one percentage point (e.g., from 15% to 14%), there will be 160-370 fewer dropouts. This will avert an aggregate social loss of $93-$215 million and an aggregate fiscal loss of $28-$110 million for each cohort.
- If the baseline suspension rate falls by ten percentage points (from 15% to 5%), there will be a greater reduction in dropouts. The social loss averted will be $452-$1,061 million and the fiscal loss averted will be $137-$320 million.

These amounts suggest the significant fiscal implications elevated suspension rates have on high school completion.

1. INTRODUCTION

Graduating from high school has become a prerequisite for individual economic prosperity. A wealth of social science research has established positive links between education and income, health, and personal well-being, and, further, that these links are not coincidental but causal (Fernandes-Alcantara, 2012; Oreopoulos and Salvanes, 2011). Investing in education is an important mechanism by which young people—particularly those who come from disadvantaged backgrounds—can create a better future for themselves.

These private gains from college also generate public benefits. Individuals with more education pay more in taxes and are less reliant on government health and welfare programs; they are also less likely to be involved in criminal activities (Belfield and Levin, 2007a). Education yields a fiscal benefit to the taxpayer and a social benefit to local residents, thus failing to complete high school has long-term and pervasive economic consequences.

Although the benefits of education should provide strong motivation for individuals to stay in school and enroll in college, many students fail to complete high school (Rumberger, 2011). Annually, between one-fifth and one-quarter of each age group leaves school without having met the standards for high school graduation. Male, minority, and low-income students have even higher failure rates. Moreover, students who drop out typically forgo college, and if they do enroll they have a low probability of completing their degree program (Knapp et al., 2011).

Students fail to complete high school for many reasons (Rumberger, 2004), including financial pressures, family responsibilities, poor health, and limited English proficiency. Some school policies also hinder students' ability to complete high school, suspension practices in particular (Losen and Gillespie, 2012). If suspension practices were improved, it is likely that more students would finish high school.

In this report we present an empirical study of the link between the economic burden of dropping out of high school and the effects of suspension practices across California. (For a companion study on Florida, see Belfield, 2014; for a discussion of California's demographic patterns and economic standing relative to the rest of the U.S., see Brady et al., 2005). We apply a lifecycle economic model to estimate the fiscal and social consequences that result when California students fail to graduate from high school. We

then link these consequences to suspension policies across the state in order to calculate their economic burden. These calculations enable us to estimate the cost to the state of California of ineffective school suspension policies.

Our analysis is structured as follows. First, we describe educational attainment in California and the pattern of public spending across the state. Next, we briefly explain our economic model and key parameter values. We then determine the economic value of education in terms of higher incomes, amount of taxes paid, lower government spending, and other outcomes. With a consistent accounting framework, these economic values can be added up to estimate the burden of high school failure from the perspective of an 18-year-old student. We use these values to estimate the economic burden of ineffective school suspension policies. Finally, we discuss the policy implications of our analysis.

2. High School Failure: The California Context

2.1 Educational Attainment in California

More than one in five California public high school students does not graduate on time. Estimates of the graduation rate vary according to the formula used (using the NCLB formula, the four-year adjusted cohort high school graduation rate in 2011-12 was 78.5%), but a reasonable approximation is that 20% of California high school students do not meet the completion standard by the age of 20 (Rumberger and Rotermund, 2008). More than half (58%) of these students drop out before reaching 12th grade and thus fail to gain the basic skills required for employment (Rotermund, 2008).

Table 1 shows the number of dropouts and the dropout rate for high school students in California (see Table Notes for sources). In 2012-13, 486,270 17-year-olds were eligible to be in the final year of public school and 37,330 in private schools. A conservative estimate is that 96,210 (18%) of these students will not complete high school. Dropout rates vary by sex—the rate for females is two-thirds that for males—and by race—rates for African American students are almost double those for White/Asian students, and rates for Hispanic students are also elevated. The dropout total does not include those who have completed a GED or who graduated late from high school.

Many of these dropouts have been suspended or expelled from school for a period of time (Losen and Martinez, 2013; Losen and Gillespie, 2012, Table 2). Across California, the

suspension rate is 7% for secondary school students, but this is almost certainly a conservative estimate and it masks significant racial gaps; for example, the rate is 18% for Black students and 8% for Hispanic students. Suspension rates vary across the state, but the total numbers of students is substantial. The suspension rate across all students in the Los Angeles Unified School District is 9.6%; 29,275 secondary school students have been suspended at least once. Across the district, 54 schools have suspension risk rates that exceed 25%. Other districts across the state exhibit striking suspension patterns; for example, the Jefferson Union High District has a suspension risk rate of 61% for Black students, the fourth highest in the U.S.

Being suspended from high school is strongly associated with dropping out, although the association cannot be precisely identified. Evidence from Florida (Balfanz et al., 2014) indicates that graduation rates for ninth-grade students who are suspended are 6.6-7.3 percentage points lower than students who are not suspended. National data from the Education Longitudinal Study 2002 show that 10% of tenth-grade students have been suspended and 14% have been either suspended, transferred, or put on probation. Controlling for student and school characteristics (including test scores), suspension reduces the probability of high school completion by between 6% and 13% (details available from author).

The practice of suspension varies widely across districts and schools. Thus, many students may be unnecessarily suspended and their graduation prospects adversely affected (Fabelo et al., 2011). If practices related to school suspensions were changed—for example, through programs that reduce the need for suspensions or by providing more effective supports for students who are suspended—high school graduation rates should increase significantly. This would in turn bring economic benefits to the state of California and its taxpayers. Importantly, this economic logic holds regardless of why a student is suspended (Kinsler, 2011; Wright et al., 2014).

2.2 Government Spending in California

The pattern of government spending in California reveals some of the consequences of inadequate state investment in education. Details on state and local revenues and expenditures are given in Appendix Table 2 (see Table Notes for sources).

Almost half of state revenues come from individual state incomes taxes and one-third comes from sales taxes. At the county level, revenues come primarily from property taxes. (Although most of the state's spending is funded from state revenues, federal spending in California is also considerable).

The California government spends a large amount on health care, on the criminal justice system, and on welfare programs that ensure basic living standards. Total state expenditures in fiscal year 2012 were $320 billion. Of this amount, $68 billion was spent by the Health and Human Services Department (more than half on Medicaid), and an additional $43 billion was allocated for crime (corrections, police protection, fire protection, and judicial and legal services). Notably, county-level governments in California devote a large fraction of their spending to crime and welfare; over two-thirds of county-level spending was for public protection and public assistance (e.g., welfare or social services), but less than 1% was spent on education. In short, a significant amount and substantial proportion of state spending is on the amelioration of social ills or for social supports.

3. Economic Model of the Burden of School Dropout

The economic model applied here follows the one employed in Belfield and Levin (2007), Sum et al. (2009), Baum et al. (2010), and Hout (2012). The model adopts the perspective of a high school student who is on the brink of becoming either a high school dropout or a high school graduate. The model traces the economic consequences of each choice over the student's life course; the difference between the two profiles demonstrates the incremental benefit of being a high school graduate. Importantly, a student who graduates high school has the opportunity to attend college, an opportunity that also should be factored into the comparison. Therefore, this model produces life-course profiles for individuals whose terminal education is high school and for those who are classified as "expected high school graduates"—that is, graduates who probabilistically enroll in and complete college.[1] The economic consequences are measured from the social perspective and the fiscal (taxpayer) perspective, with separate estimates for federal and state/local governments.

[1] The rate of college enrollment of high school graduates is based on the rates for those in the lowest quartile of reading. The progression rates are for termination after high school, after "some college" and after a BA and respectively for males are 80/12/8 (White), 75/17/8 (African American), and 77/18/5 (Hispanic). The progression rates for females are 81/14/5 (White), 83/11/6 (African American), and 85/11/4 (Hispanic). See Brady et al. (2005) and Belfield and Levin (2007b).

These differences are expressed in present values at age 18 (using a discount rate of 3.5%, as recommended by Moore et al., 2013). All figures are in 2014 dollars, weighted to California prices. Thus, all amounts are comparable and are equivalent to a lump-sum deposit for a California high school student at age 18.

All economic calculations are derived from the best available evidence on the causal impact of human capital. All calculations are performed separately by sex/racial groups and then pooled according to California demographics. Where available, state-specific data is applied. (Details of the equations and supplemental national data sources are given in Belfield, 2014, Appendix I).

This economic model updates research on California by Brady et al. (2005), Belfield and Levin (2007b), and Stuit and Springer (2010). These studies showed significant economic benefits from completing high school and provide an important context for this analysis (see also Karoly and Bigelow, 2005). We use evidence from these prior analyses and additional evidence from the most recent data available for California. Our estimates are calculated in a slightly different way to reflect new evidence that allows for more accurate modeling of the associations between education and life outcomes, and new data on California's economy. Moreover, it is important to re-calculate these economic burdens in light of the Great Recession and other important recent changes in California policy (such as Public Safety Realignment and the Medi-Cal and CalWorks implications of the Affordable Care Act; see Taylor, 2013a,b). This analysis also undertakes a series of new sensitivity tests and includes new evidence, in particular from the California Dropout Research Project series. Finally, these results are provided separately by sex because of important gender differences in suspension rates and the burden of being a high school graduate.

The economic calculations of the burden of dropping out of high school are aggregate amounts. They do not presume that high school dropout can be completely eliminated or provide information on what suspension (or other) policies should be implemented. The calculations show instead what resources are typically lost when students, for whatever reason, do not complete high school. If students could be helped to graduate at a cost that is less than these financial burdens, taxpayers and society would be better off. If policies were introduced that appreciably increased the high school completion rate, these economic values would indicate the gains to the taxpayer and to society. The model shows the economic benefits of reducing suspension rates.

4. Calculations of the Economic Burden

4.1 Impact on Income and Taxes

People with a higher level of education earn more and hence pay more in taxes. The association is substantive, even after controlling for differences in background and ability, and applies across years of schooling and college (Altonji et al., 2012; Avery and Turner, 2012; Belfield and Bailey, 2011; Oreopoulos and Petronijevic, 2013). The income-education gradient appears especially steep for minority students (Hoxby and Turner, 2012). Consequently, high school dropouts can cause the state to lose income and tax revenues.

To calculate these losses for California, we use several datasets to create income and tax payment profiles over the working life. These profiles (by sex/race) are for high school dropouts, high school graduates, those with some college, and those with at least a bachelor's degree. The last three profiles are combined to derive the profile for an expected high school graduate.

For incomes, we take the average across two datasets. One is the sample of California residents drawn from the March Supplements of the Current Population Survey (CPS) for the years 2009 to 2013. This merged dataset includes 100,080 working adults across the state and includes both incomes and federal, state, and local tax payments over the period since the Great Recession. The CPS is devised to estimate earnings with precision, although it most likely under-samples those with less education and shows a downward bias on the returns to education (Belfield and Levin, 2007b). The second dataset is the Public Use Micro Sample of the American Community Survey (ACS) for the years 2006 to 2010. This merged dataset includes information on 1.75 million California residents and their reported earnings during the Great Recession. This large sample allows for more precise subgroup analysis by sex/race.

The earnings profiles include gross earnings plus health benefits, adjusted for labor-force participation rates (including time in college), and productivity growth. For those with more education, the profiles are adjusted to account for ability with an alpha factor of 10%. (The profiles include those with zero earnings, who are assumed to have opportunity costs equivalent to participation in the labor market.) For the two datasets, average earnings for each age-year-education are collapsed into five-year bands and then extrapolated across the working life from age 18 to 65.

Income profiles by education level and sex/race are shown in Table 2. Over the lifetime, a female [male] high school dropout in California will earn approximately $220k [$410k]. By contrast, a graduate will earn $420k [$670k]—that is, almost one-quarter of a million dollars more. Gaps for those with a college education are extremely large: those with a bachelor's degree or more will earn $960k [$1.44m] —that is, four times as much as a high school dropout. The amounts differ by sex/race, but the gaps are substantial for all subgroups. Taking the weighted average adjusted for population demographics, the gaps with a high school dropout are $236k per graduate, $376k per college enrollee, and $833k per college graduate. Accounting for differences in estimation approaches and price indices, these gaps are similar to those in Belfield and Levin (2007b) and Oreopoulos and Petronijevic (2013).

The income gains for graduates are used to estimate the amount of extra federal and state/local taxes they pay. Three approaches are used for federal taxes and then averaged. One approach is to use declared after-tax federal income tax payments by those in the CPS (adjusted as per the model for incomes). Another approach is to run all earnings data (from the CPS and ACS) through the National Bureau of Economic Research TAXSIM9 program, which simulates an individual's income taxes (see Rouse, 2007, for a discussion of this approach). A third approach is to apply two flat rates to incomes based on prevailing marginal tax rates (of 10%/25% for incomes below/above $40,000). State/local taxes are calculated based on the average of two approaches. As per the first approach for federal taxes, we use declared after-tax state/local income tax payments by those in the CPS dataset; sales and property taxes are then applied proportionately to their revenue collection rates in California. The second approach uses the gross earnings from the CPS and ACS datasets and applies the state/local tax rates (adjusted for exemptions).

Tax payments for California residents by education pathway and by sex/race are shown in Table 3 (see Table Notes for details). The top panel shows the state/local taxes paid by dropouts, graduates, and expected high school graduates. Female [male] California high school graduates contribute $37k [$45k] more than dropouts in state/local taxes; adjusting for attending college, high school graduation leads to paying $65 [$72k] more in state/local taxes than dropouts. As shown in the bottom panel of Table 3, there are sizeable federal gaps between pathways. California graduates pay $28k [$60k] more in federal taxes than dropouts, and expected graduates contribute $43k [$85k] more, respectively. Again,

the amount of taxes paid differs by sex/race, but the gaps are maintained for each subgroup.

4.2 Impact on Health, Crime, and Other Social Circumstances

Having more education is associated with an array of other behavioral and circumstantial changes over the life course, all of which have social and fiscal consequences.

Fiscal Consequences: Health

Having more education leads to improved health behaviors and better health, for both the individual and their family members (Cutler and Lleras-Muney, 2010; Kimbro et al., 2008; Rosenblum, 2012). From a social perspective, improved health status is valuable in itself, but higher education levels should also reduce the fiscal pressure on government-supported health programs and care. In California, the programs for those who qualify for social security disability income are Medi-Cal and Medicare. Indeed, as Medi-Cal is means tested, having more education reduces eligibility through its effect on increasing earnings, even where there are no behavioral changes or improved health status. Considering that more than 2.5 million people are enrolled in Medi-Cal and the absolute amount of spending on health care is more than 10% of Gross State Product, even small incremental improvements in education levels have the potential to generate large savings.

National figures show that Medicaid enrollment rates are significantly lower for those with more education (Belfield and Levin, 2007b; Muennig, 2007): for White males, 15% of high school dropouts are enrolled in Medicaid (the national equivalent of Medi-Cal), 5% of high school graduates, 3% of those with some college, and less than 1% of college graduates. The effects are even stronger for groups that enroll at high rates; for example, over half of African American female dropouts are on Medi-Cal, compared to one-quarter of high school graduates and 3% of college graduates. Medicare coverage rates for SSDI are similarly stratified by education level. Rates of Medi-Cal and Medicare/SSDI enrollments are 49%-69% lower for high school graduates than for dropouts (Muennig, 2007).

Raising the high school graduation rate should reduce public spending on health programs. Using data on Medi-Cal expenditures and the health-education gradients given above, estimated taxpayer savings are shown in the top row of each panel in Table 4. These savings are split between state/local and federal governments, in accordance with their

relative responsibility for funding health care in California (Kaiser Health Facts, 2013). At both levels of government, public spending on high school dropouts is considerably higher than that on high school graduates.

Fiscal Consequences: Crime

Criminal activity is much higher among high school dropouts than graduates (Lochner and Moretti, 2004). This leads to their increased involvement in the criminal justice system and higher rates of incarceration.

Criminal activity in California is reported in Appendix Table 2. There are almost 2,800 property crimes each year per 100,000 California residents—a rate comparable to the rest of the nation—and 420 violent crimes—a rate 10% higher than the national average. This criminal activity means that a high number of people are under the supervision of the California Department of Corrections (CDC). In 2012, almost 600,000 people were institutionalized (see Appendix Table 3). Driven primarily by new rules on prison overcrowding (and the move to direct community supervision at the county level), the California prison population has been declining (by 9% in 2011; Carson and Sabol, 2012), and it is expected to decline further over the next five years (Taylor, 2013b, Figure 18).

High rates of crime and incarceration impose a significant fiscal burden.[2] As shown in Appendix Tables 1 and 4, California spending on crime is very high ($15 billion on police protection, $14 billion on corrections, and $9 billion on judicial/legal systems). It is spread across all levels of government, with local government paying for almost all police protection services. The annual cost to incarcerate an inmate in a California prison is more than $52,000; for an offender in a juvenile justice facility the annual cost is more than $200,000 (Taylor, 2012). Moreover, California spends much more on crime than the national average as a proportion of total general fund expenditures (9% versus 6.8%; NASBO, 2012, Table 34). Unlike the trend for the number of institutionalized people, however, the trend for spending is upward. California county spending increased by 31% in the previous decade (Taylor, 2012, p. 41), and spending on corrections has grown four times faster than spending in any other sector over the last three decades (CBP, 2011; PSP, 2006). It is

[2] Taxpayers incur burdens related to the criminal justice system, corrections, crime prevention, restitution for victims, and for publicly provided medical care. Tax revenues are lost when victims are out of work and when criminals are not participating in the formal labor market (Holzer et al., 2004).

unlikely that this spending will be reduced in the future; California's Prison Realignment introduced in 2011 is only predicted to yield net operational savings of $300 million annually. Of course, this spending is based on current arrest rates; only 40% all violent crimes and 15% of property crimes are ever turned over for prosecution. More importantly, this represents only public spending, not the total impact on social resources (Anderson, 2011; Ludwig, 2006).

The association between education and crime is very strong: more than half of all prison and jail inmates are dropouts. African American male dropouts are more likely than not to be arrested before they are age 35, and minorities are almost 60% of the prison population (Pettit and Western, 2004; Raphael, 2004; Wolf Harlow, 2003). Furthermore, most crimes are committed by young people.[3] Using U.S. Census and FBI data, Lochner and Moretti (2004) identify the causal effect of graduating high school: it reduces murder, rape, and violent crime rates by 20%, property crime by 11%, and drugs-related offenses by 12%. These reductions generate corresponding effects on months of incarceration and months of parole.

Using these measures of impact, California crime rates, and California spending on crimes, arrests, and incarcerations, we determine the fiscal consequences of having more high school graduates (see Belfield and Levin, 2007b). These consequences are reported in the second row of each panel in Table 4, which are split according to level of government and weighted according to crime rates by sex/race from the California Department of Corrections and Rehabilitation.

Fiscal Consequences: Welfare, College, and Tax Distortions

Three other areas are important for calculating the economic burden of high school dropouts.

One affected area is welfare receipts and expenditures. Education directly influences factors that raise welfare eligibility (e.g., single motherhood), and graduates are less likely to

[3] Drug use rates are three times as high for people age 18-25 as for those age 26+ (Taylor, 2012, 18). Juveniles represented just under 10% of all felony arrests and just over 10% of all misdemeanors in 2011, as well as all status offenses (Taylor, 2012, p. 22). Males commit the bulk of crimes; only 5% [11%] of violent [property] crimes are committed by females.

be on public assistance. Because it also increases earnings, education reduces an individual's eligibility for means-tested programs (Jayakody et al., 2000).[4]

Large numbers of California residents receive some form of welfare: there were 568,000 TANF recipient families in 2013; 1.4 million households are currently receiving CalFresh food stamps; and the state provides housing assistance through the Department of Housing and Community Development. In addition, state-funded welfare programs such as CalWorks support more than one million adults annually. All these figures are substantially higher now than before the Great Recession.[5]

These programs absorb a significant amount of taxpayer dollars. California spends $7.8 billion annually on public assistance (NASBO, 2012, Table 18); this spending is split between the federal and state governments. For example, federal TANF expenditures in California are $2.14 billion, while the state's maintenance of effort spending is $2.09 billion (U.S. DHSS, 2012, Tables 1:2). The federal government provides 58% of overall state expenditures on public assistance, and one-third of California's county expenditures are on public assistance. Annual CalFresh funding per beneficiary household is $3,900 (U.S. DHHS, 2012).

Evidence on the benefits of education has been identified for TANF cash assistance, housing assistance, and food stamps (Grogger, 2004). More than half of all TANF recipients and two-thirds of all food stamp recipients are high school dropouts (Rank and Hirschl, 2005), whereas college graduates use these programs at very low rates: less than 4% of TANF recipients and less than 2% of housing assistance welfare recipients have some college education (DHSS, 2004; Barrett and Poikolainen, 2006). Controlling for confounding factors, TANF rates are lower by 40% and food stamp (Calfresh) rates are lower by 19% for graduates over dropouts (Waldfogel et al., 2007). Applying these relationships to patterns of spending on welfare programs in California yields the fiscal impact of education, which is reported in the third row of each panel in Table 4.

A further consideration is spending on postsecondary education. Having more high school graduates attend college (by assumption) requires additional public spending on college subsidies. These incremental subsidies can be calculated based on existing

[4] Although immigrants may face barriers to receiving welfare, rates for immigrants are only 10% lower and the rates for non-citizens and 20% lower than the national average (Ratcliffe et al., 2007).
[5] See, respectively, www.fas.org/sgp/crs/misc/RL32760.pdf, Table B-5; CalFresh Household Survey, www.dss.cahwnet.gov/cdssweb/entres/q51804/publications/pdf/CalFreshHouseholdSurveyFFY2010.pdf.

enrollment patterns at public and private colleges, and current public spending in California.[6] These additional amounts are reported in each panel of Table 4 (only for expected high school graduates who attend college).

A final fiscal consequence is the change in the distortion imposed by changes in government expenditure. Raising government revenues through taxes causes a distortion of individual economic activity. Absent an income tax, individuals would likely work more hours, but the tax "distorts" their behavior. This distortion is referred to as the marginal excess tax burden (METB) and should be calculated for all fiscal savings (and costs) arising from higher educational attainment. In practice, the METB has been found to be large, conservatively estimated at 13%—that is, for each dollar saved in government expenditure, the full social gain is at least $1.13 (Allgood and Snow, 1998). The rate is probably higher for state/local taxes, which are imposed on goods with inelastic demand. From a fiscal perspective, the METB is important because taxes would be collected on the distorted economic activity. Hence, based on the changes in tax revenue and fiscal spending reported above, there is a positive METB value for both federal and state/local government. Using Allgood and Snow's (1998) coefficient, the respective METB values are given in the final row of each panel of Table 4.

Social Consequences

The impact of education on health, crime, college, and economic activity can also be measured from a social perspective. The social consequences across education levels are given in Table 5.

Improvements in health are valuable not simply because they entail lower spending by the government but because individual valuations of personal health are very high (more than $100,000 for a year lived in perfect health). Using evidence from Schoeni et al. (2011), we estimate health-related quality of life differences at 0.008 quality-adjusted life years (QALYs) annually during adulthood, and apply monetary values per QALY from Cutler and Lleras-Muney (2010).[7] Crime reduction is similarly valuable, but not just because it reduces

[6] Data from nces.ed.gov/programs/digest/d12/tables/dt12_292.asp; College Board Annual Survey of Colleges; and deltacostproject.org/resources/pdf/Delta-Subsidy-Trends-Production.pdf. Costs are inflated using the HECA index. To account for the lengthening time to degree, two-year [four-year] degrees are assumed to require three [five] years of full-time study (Hoxby and Avery, 2013, Table 1).
[7] An alternative study yields higher estimates of the social value of health (Muennig et al., 2010).

spending on the criminal justice system—indeed, the social value of crime avoidance is much greater than the fiscal consequences.[8]

From the social perspective, all resources expended on college are counted. These costs include tuition fees and public subsidies for all high school graduates who go on to attend college. Finally, there is a productivity "spillover" from having a more educated workforce (Monaco and Yamarik, 2013). Workers are more productive when working with other skilled workers because they can learn from each other, and when firms have access to more trained workers they are more likely to invest in the locality. Many studies have found that, as the proportion of college graduates in the population increases, so do average earnings and Gross State Product.[9]

5. The Economic Burden per Cohort of High School Dropouts

5.1 Individual and Aggregate Burdens

The total social and fiscal economic consequences of dropping out of high school are reported in Tables 6 and 7. These consequences are the net differences in lifetime profiles for dropouts versus high school graduates and versus expected high school graduates.

The social gains for a high school graduate over a dropout are shown in Table 6. These gains are weighted by sex and racial groups. The average lifetime difference in earnings for a high school graduate over a dropout is $236k. There are also substantial government savings on health care, crime, and welfare, as well as productivity gains and METB savings. The overall economic gain per high school graduate over a high school dropout is $381k. The gain over the comparison group for expected high school graduates is $580k. These amounts are almost certainly conservative estimates of the social burden resulting from high school dropout.

Table 7 shows the per-student fiscal savings to the state/local government in California. High school graduates produce savings through reduced spending on health care, crime, and welfare; there are also revenue increases due to higher tax contributions and a

[8] Victims bear the largest cost in terms of lost property and impaired quality of life, and all citizens incur costs to avoid being the victim of a crime (Anderson, 2011; SCCJSO, 2012). Ludwig (2006) estimates that these social costs are 4.5 times larger than the fiscal costs; data reported by Miller et al. (1996) and McCollister et al. (2012) yield a factor that is closer to 2.5. Following convention, the more conservative ratio is applied here.
[9] Conservatively, these spillovers are estimated at 6% of individual earnings (Abel et al., 2010; McMahon, 2006).

lower marginal excess tax burden. The overall effect is a fiscal saving of $73k per high school graduate over a dropout, and a fiscal saving of $97k per expected high school graduate. (As discussed above, the 'expected high school graduate' group includes some college enrollees).

These are substantial amounts, but they reflect only the impact on state/local government agencies' direct spending; the impact on federal spending should also be counted. In California, more than three-quarters (78%) of all federal dollars contributed by the state are spent within the state (see Appendix Table 1 showing $76 billion in federal transfers in 2011).[10] The fiscal consequences for the federal government of high school dropout are reported in Appendix Table 5. The savings to the federal government are $57k per student for each new high school graduate and $101k for each new expected high school graduate. Almost all of these federal savings would be recouped by the state of California, which when added to the state/local savings yields even greater gains from education. Table 7 shows the overall fiscal saving of $118k per high school graduate and $175k per expected high school graduate. These amounts may be thought of as the total money government agencies could invest in the education of a high school student and still break even.

The aggregate consequences of high school failure are determined by these individual amounts, multiplied by the number of high school dropouts. There are 96,210 dropouts in each cohort of California high school students (Table 1), therefore the aggregate burden of dropouts compared to graduates is $37 billion from the social perspective and $11 billion from the fiscal perspective; when compared to expected graduates, the amounts are $56 billion and $18 billion, respectively. These amounts are present values over the lifetime of each cohort of students; they are annual burdens in the sense that there is a new cohort of high school students in California each year. As a point of comparison, annual state/local spending is $321 billion across all government sectors; spending on education is $102 billion (Appendix Table 1).

On a per-student basis, these social and fiscal burdens are more than 10% higher than those reported in Belfield and Levin (2007, Tables 16, 17). The economic burden in each domain is growing: the education gradients for earnings, health, and crime are all

[10] Tax Foundation Special Report No. 158, "Federal Tax Burdens and Spending by State," and U.S. Census Bureau's Consolidated Federal Funds Report for 2005.

getting steeper, such that education is becoming a more important driver of economic well-being; per-unit costs are also growing rapidly for some other domains (e.g., spending per incarcerated person). However, the number of dropouts is slightly lower in the 2010s than in the early 2000s, so the aggregate burden is similar.

5.2 Sensitivity Testing

The above model applies multiple datasets and research studies to yield parameter values for analysis. It is therefore useful to see how the results might change under alternative sensitivity tests.

Generally, conservative assumptions regarding benefits have been applied, and important impacts—such as the burdens on families (e.g., if a parent is not economically independent or a relative is incarcerated) and the burdens on schools during the juvenile years (e.g., the costs of disciplinary policy)—have not been included in the model. The enjoyment students get from going to college and the "option value"—that is, the value of having a chance to go to college—were also omitted. Moreover, the earnings profiles are almost certainly conservative predictions of the monetary returns.[11] Lastly, these results are based on current evidence, even as most trends suggest that the returns to education are going to increase over time (on the tripling of earning gaps, see Oreopoulos and Petronijevic, 2012).

Immigration patterns are unlikely to influence these estimates by a significant amount. Many California residents are foreign-born or have parents who were foreign-born, and immigrants do disproportionately rely on public education, are disproportionately involved in the criminal justice system, and have wages that are one-quarter to one-third lower than native Californians (Bratsberg et al., 2006). Patterns of immigration only influence the model in that the returns to education might be lower for immigrants; however, most evidence suggests that the returns to education are equivalent for immigrants and non-immigrants (Chowdhury and Pedace, 2007).[12] In fact, net migration patterns are similar

[11] The estimates only partially adjust for employment probabilities, do not fully price out non-labor market time, and do not account for differences in work-life expectancy.

[12] Also, immigrants assimilate rapidly such that within two decades immigrant-native wage differentials are halved; and the children of immigrants accumulate more education than natives (Chiswick and DebBurman, 2004; Bratsberg et al., 2006).

by education level: across the population, 18% are high school dropouts; across the net migrant population, 22% are high school dropouts.[13]

These estimates are similarly unlikely to be affected by increases in the proportion of the labor force with a high school education. In theory, if the supply of educated people goes up, the returns to education should fall. However, over recent decades, the demand for educated persons has been rising even faster than the supply and the returns also have been rising (Carnevale et al., 2010). If many more people graduate high school, the economic returns to attainment should fall. However, the demand for skilled labor appears to be rising even faster than the supply. Nevertheless, the proposed changes in this economic model are only a very small faction of the total workforce in California, and these changes would play out over at least five years.

To illustrate the robustness of the conclusions, we perform a series of separate sensitivity tests to re-calculate the total social burden and state/local fiscal burden per student. These tests are mostly worst-case tests that put a lower boundary around the economic burden of high school dropouts. The results of these tests are summarized in Table 8.

The first sensitivity test (S1) applies the lowest estimate of state fiscal impacts from increased earnings by high school graduates (instead of the average estimate). S1 leaves the social burden unaffected but reduces the state fiscal impact by 12%-15%. The second test (S2) applies a discount rate of 10% (instead of 3.5%). S2 reduces the social and fiscal burden of high school failure by approximately one-third to one-half, such that the economic impact is now $172k-$212k and $64k-$79k per student, respectively. The third test (S3) assumes that 30% of the gains from education are attributable to unobserved ability (instead of 10%). S3 reduces the burdens by 11%-18%. The final test (S4) assumes that there is no educational impact more than ten years into the future (instead of up to age 65). Even under this highly restrictive assumption, there are still significant benefits from graduating high school.[14]

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[13] Annual net migration in California of citizens is 110,000 (600,000 exits and 490,000 entrants). American Community Survey 5-Year Estimates, 2005-2009, State-to-State Migration Flows (Table 3).

[14] Belfield and Levin (2007) also performed a series of sensitivity tests. In these earlier analyses, the state/local fiscal benefits were changed by +3% if juvenile crime and teenage pregnancy effects were included; or -10% if immigrant wages were assumed to be 30% lower than wages for native-born workers (see Table 19).

Each of the above sensitivity tests uses strict assumptions to derive worst-case lower boundaries. Nevertheless, these results still show significant economic consequences from dropping out of high school.

6. The Economic Consequences of High School Suspensions

The economic burden of high school dropouts is sufficiently large that it should encourage a profound reallocation of funding for and provision of education. Across each cohort of students, the social impact of high school dropouts is $37-$56 billion and the fiscal impact is $11-$17 billion. Certainly not all high school dropout can be eliminated, but even a small improvement in graduation rates would yield significant social and fiscal benefits. Importantly, this improvement could be produced by changes in policy. As noted above, being suspended from school strongly reduces a student's likelihood of graduating. Moreover, there is significant variation in suspension rates across racial groups and school districts, the result being that some students are much more likely to be suspended than others. Improving suspension policies (including ameliorating the consequences of suspension) should increase the graduation rate and thus yield social and fiscal savings.

By applying our model we can calculate the economic consequences of school suspensions. We do this by simulating changes in the dropout rate based on changes in suspensions and multiplying the result by the burden estimates to determine the economic consequences.

As discussed in Section 2.1, a sizeable proportion of California's students are suspended during high school, and there is clear evidence that suspensions increase dropout rates. However, as neither figure can be precisely estimated, we provide results across a range of estimates for the baseline proportion of suspensions and for the impact suspensions have on high school dropout.

These results are given in Table 9A, where the columns show the economic burden across different suspension rates. As the suspension rate increases, the number of suspensions goes up: 5% of the cohort suspended amounts to 26,140 students; 25% suspended amounts to 130,680 students. The top panel shows the effects if the association between suspension and high school dropout is modest; that is, if the graduation rates of suspended students are only three percentage points lower than those of students who were never suspended. The bottom panel shows the effects if the

association between suspension and high school dropout is stronger; that is, if suspended students drop out at rates that are seven percentage points higher.

If the baseline suspension rate is 15%, there are 78,410 suspended students. We can estimate the economic consequences if suspension had no adverse impact on high school completion. (This is not the same as having zero suspensions; it is the effect if suspensions do not matter for high school graduation.) Under modest assumptions (an initial adverse impact of 3 percentage points), this would yield 2,350 fewer dropouts. The social loss averted would therefore be $1.36 billion and the fiscal loss averted would be $412 million. Under stronger assumptions (an initial adverse impact of 7pp), there would be 5,490 fewer dropouts if suspension had no impact on high school completion. This would generate social savings of $3.18 billion and fiscal savings of $961 million. As shown in Table 9A, the economic consequences depend on two key variables: the suspension rate and the high school completion penalty imposed by suspensions. The lower boundary of social savings would be $452 million (5% suspension rate; suspensions with a 3pp impact). The upper bound of social savings would be $5.31 billion (25% suspension rate; suspensions with a 7pp impact). For fiscal savings, the boundaries are $137 million to $1.6 billion. As above, these are annual amounts, as there is a new cohort of California students each year.

An alternative perspective is to look at what happens if the suspension rate itself is changed rather than the association between suspension and graduation. Across different baseline suspension rates, we simulate the economic effects if that suspension rate is reduced by one, five, and ten percentage points. These results are given in Table 9B.

Even very small changes in the suspension rate yield significant savings. For example, if the baseline suspension rate falls by only one percentage point (e.g., from 15% to 14% or from 10% to 9%), there will be 160-370 fewer dropouts. This will avert an aggregate social loss of $93-$215 million and an aggregate fiscal loss of $28-$110 million. If the baseline suspension rate falls by ten percentage points, there will be a greater reduction in the number of dropouts—even if the adverse impact on high school graduation is constant. With a ten percentage point fall, the social loss averted will be $452-$1,061 million and the fiscal loss averted will be $137-$320 million.

7. Conclusions

A growing body of evidence has established that dropping out of high school significantly jeopardizes economic well-being. This conclusion clearly holds for the state of California and nationally. From a social perspective, California is losing large amounts of resources by failing to invest sufficiently in education. Even from the narrower fiscal perspective, the resource loss is large both in absolute terms and compared to annual state/local government spending. Of course, this economic calculus does not address the substantial inequalities in education across racial groups. Policies that successfully reduce the high school dropout rate would therefore yield sizeable economic benefits. If suspension policies did not have an adverse impact on graduation, for example, the annual economic benefits would be at least $1.36 billion for California residents and $412 million for California taxpayers.

Changing suspension policies and making other productive investments to reduce the dropout rate will almost certainly require additional government spending. During the Great Recession, the opportunity for further borrowing was constrained, and state GDP fell by 5.1% in 2009. However, state GDP has grown each year since then and the growth rate in 2012 was 3.5% (BEA, 2013). In the last couple of years, the state's budget has improved significantly. With a short-term tax increase, the state's general fund revenues grew by 11% in 2013 (NASBO, 2013, Table 6). As of November 2013, the Legislative Analyst's Office of California (LAO) predicted reserves of $5.6 billion by the end of 2014-15, even with increased expenditures on schools and community colleges (Taylor, 2013). Moreover, the LAO anticipates that operating surpluses will increase further during the next five years if economic growth continues. Overall, the "state's budgetary condition is stronger than at any point in the past decade" (Taylor, 2013). Hence, the state should look toward making investments in human capital that will pay off in the future. As the economy grows, there should be a greater imperative for investment to ensure future growth for this generation of workers.

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Table 1
Enrollments and Dropouts in California Schools (2012)

	12th-Grade Enrollments	Dropouts	Dropout Rate
Female:			
Hispanic	118,280	22,580	19%
White/Asian	85,740	7,430	9%
African American	16,600	5,220	31%
Other racial group	15,860	2,880	18%
Public school total	*236,480*	*38,110*	*16%*
Private school total	*18,230*	*360*	*2%*
Male:			
Hispanic	123,560	33,750	27%
White/Asian	91,800	12,040	13%
African American	17,570	7,380	42%
Other racial group	16,860	4,020	24%
Public school total	*249,790*	*57,190*	*23%*
Private school total	*19,100*	*550*	*3%*
Total:			
Hispanic	241,840	56,330	23%
White/Asian	177,540	19,470	11%
African American	34,170	12,600	37%
Other racial group	32,720	6,900	21%
Public school total	*486,270*	*95,296*	*20%*
Private school total	*37,330*	*910*	*3%*
Age cohort total	***522,730***	***96,210***	***18%***

Sources: U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplement, 2013; cde.ca.gov/ds/sd/sd/fsdropouts.asp; Rumberger and Taylor (2013); Rumberger and Rotermund (2008); and Rotermund (2009); Snyder and Dillow (2012); Stillwell and Sable (2013). *Notes:* Includes late graduations and GED receipt.

Table 2: Adjusted Lifetime Income by Education Level

	Dropout	High School Graduate	Some College	BA or Above
Absolute totals:				
Female				
White	$207,800	$425,700	$576,100	$980,300
Black	$203,100	$393,100	$560,400	$925,300
Hispanic	$208,500	$397,500	$549,700	$898,800
Other race	$260,500	$464,700	$607,500	$1,026,300
Male				
White	$453,600	$756,800	$952,500	$1,597,100
Black	$315,000	$540,300	$748,800	$1,211,500
Hispanic	$465,400	$678,000	$869,200	$1,297,100
Other race	$410,700	$713,800	$919,100	$1,662,100
Gain over dropout:				
Female				
White	--	+$217,900	+$368,300	+$772,500
Black	--	+$190,000	+$357,300	+$722,200
Hispanic	--	+$189,000	+$341,200	+$690,300
Other race	--	+$204,200	+$347,000	+$765,800
Male				
White	--	+$303,200	+$498,900	+$1,143,500
Black	--	+$225,300	+$433,800	+$896,500
Hispanic	--	+$212,600	+$403,800	+$831,700
Other race	--	+$303,100	+$508,400	+$1,251,400
Average [a]	--	+$236,100	+$376,100	+$832,500

Sources: CPS data 2009-2013; ACS data 2006-2010. *Notes:* Average earnings across CPS and ACS, California subsamples. 2013 dollars. 3.5% discount rate; 1% productivity growth; 10% alpha factor; all persons adjusted for employment rate differences by education (www.bls.gov); and employment-related health benefit differences by education (MEPS). [a]Weighted average for sex-race proportions (Table 1).

Table 3: Lifetime Individual Tax Payments by Education Pathway

Taxes	Female			Male		
	HS Dropout	HS Graduate	Expected HS Graduate	HS Dropout	HS Graduate	Expected HS Graduate
State/Local:						
White	$58,810	$91,190	$121,240	$83,730	$129,670	$161,020
Black	$36,140	$64,450	$118,430	$53,840	$86,140	$103,480
Hispanic	$49,100	$83,850	$108,020	$74,460	$110,910	$132,530
Other	$62,620	$99,360	$132,110	$77,560	$123,600	$157,790
Average	$50,350	$87,700	$115,880	$74,000	$118,680	$145,940
Difference versus HS dropout [a]	--	+$37,350	+$65,530	--	+$44,680	+$71,940
Federal:						
White	$25,870	$56,620	$92,960	$53,810	$105,310	$154,890
Black	$19,380	$42,820	$70,370	$32,630	$69,610	$93,760
Hispanic	$20,810	$44,520	$71,090	$47,680	$80,340	$110,360
Other	$26,590	$54,210	$87,610	$43,000	$86,550	$130,720
Average	$22,080	$50,220	$81,780	$46,660	$90,150	$131,590
Difference versus HS dropout [a]	--	+$28,140	+$59,700	--	+$43,490	+$84,930

Sources: CPS data 2009-2013; California tax code; NBER TAXSIM9. *Notes:* Dollar amounts rounded in present values at age 18 (d=0.035) in 2013 prices. Average and difference weighted according to sex-race specific education distributions in California. Taxes are income tax (federal); state/county income, sales and property tax (state). Income tax payments are the average of tax liabilities assuming the person is the head of household and the person is single. [a] Weighted average for race proportions (Table 1).

Table 4: Lifetime Fiscal Impacts by Education Pathway

	Female			Male		
	HS Dropout	HS Graduate	Expected HS Graduate	HS Dropout	HS Graduate	Expected HS Graduate
State/Local:						
Health	$24,740	$13,340	$8,260	$12,340	$6,690	$4,460
Crime	$4,670	$1,810	$1,300	$58,120	$17,430	$12,980
Welfare	$2,610	$1,840	$1,280	$1,560	$1,070	$800
College	$-	$-	$11,510	$-	$-	$9,660
METB tax	$1,250	$660	$870	$2,810	$980	$1,090
Total	$33,270	$17,650	$23,220	$74,830	$26,170	$28,990
Difference versus HS dropout [a]		+$15,620	+$10,050		+$48,660	+$45,840
Federal:						
Health	$34,500	$18,160	$11,670	$17,250	$9,080	$6,300
Crime	$1,100	$430	$300	$13,630	$4,090	$3,040
Welfare	$13,990	$9,850	$6,870	$8,360	$5,760	$4,290
College	$-	$-	$1,070	$-	$-	$900
METB tax	$1,930	$1,110	$780	$1,530	$740	$570
Total	$51,520	$29,550	$20,690	$40,770	$19,670	$15,100
Difference versus HS dropout [a]		+$21,970	+$30,830		+$21,100	+$25,670

Sources: CPS data 2009-2013; California tax code. *Notes:* Dollar amounts rounded in present values at age 18 (d=0.035) in 2013 prices. Average and difference weighted according to sex-race specific education distributions in California. METB tax based on earnings as per Table 2. [a] Weighted average for race proportions (Table 1).

Table 5: Lifetime Other Social Benefits and Costs by Education Pathway

	Female			Male		
	HS Dropout	HS Graduate	Expected HS Graduate	HS Dropout	HS Graduate	Expected HS Graduate
College costs	$-	$-	$33,160	$-	$-	$27,920
Health gains (net)	$-	$28,420	$45,170	$-	$28,420	$42,500
Crime burden	$(10,100)	$(3,920)	$(2,800)	$(125,570)	$(37,660)	$(28,040)
Productivity gains	$12,720	$25,030	$35,190	$26,370	$42,390	$54,510
Total	$2,620	$49,530	$110,720	$(99,200)	$33,150	$96,890
Difference versus HS dropout [a]		+$46,910	+$108,100		+$132,350	+$196,090

Sources: CPS data 2009-2013; California tax code; www.cde.ca.gov. *Notes:* Dollar amounts rounded in present values at age 18 (d=0.035) in 2013 prices. Average and difference weighted according to sex-race specific education distributions (Table 1). College costs net of tuition. Health gains net of health status of dropouts. Crime burden includes fiscal and victim costs. Productivity gains based on earnings as per Table 2. [a] Weighted average for race proportions (Table 1).

Table 6: Lifetime Total Social Gain over HS Dropout

	Gain over HS Dropout					
	HS Graduate			Expected HS Graduate		
	Female	Male	Average	Female	Male	Average
College costs	$-	$-	$-	$(33,160)	$(27,920)	$(30,540)
Earnings	$205,100	$266,990	$236,050	$374,520	$469,000	$421,760
Health savings	$56,160	$42,250	$49,200	$84,480	$61,340	$72,910
Crime savings	$9,710	$138,150	$73,930	$11,470	$153,260	$82,370
Welfare savings	$740	$460	$600	$1,270	$720	$990
Productivity gains	$12,300	$16,020	$14,160	$22,470	$28,140	$25,300
METB savings	$4,700	$8,730	$6,720	$5,110	$8,950	$7,030
Total gain over HS dropout	$288,710	$472,600	$380,660	$466,160	$693,490	$579,820

Sources: Tables 2 and 4. *Notes:* Dollar amounts rounded in present values at age 18 (d=0.035) in 2013 prices. Averages and differences weighted according to sex-race specific education distributions in California.

Table 7: Lifetime State/Local Fiscal Savings Gain over HS Dropout

	Gain over HS Dropout					
	HS Graduate			Expected HS Graduate		
	Female	Male	Average	Female	Male	Average
College costs	$-	$-	$-	$(11,510)	$(9,660)	$(10,580)
Health fiscal gains	$11,390	$5,650	$8,520	$16,470	$7,880	$12,180
Crime fiscal gains	$2,860	$40,690	$21,780	$3,380	$45,140	$24,260
Welfare fiscal gains	$770	$480	$630	$1,330	$760	$1,040
Tax contributions	$37,340	$44,680	$41,010	$65,520	$71,930	$68,730
METB	$590	$1,830	$1,210	$380	$1,720	$1,050
Total gain over HS dropout	$52,950	$93,330	$73,150	$75,570	$117,770	$96,680
Federal tax impacts in state	$39,090	$50,370	$44,740	$70,610	$86,270	$78,440
Total gain over HS dropout (incl. federal tax impacts)	$92,040	$143,700	$117,890	$146,180	$204,040	$175,120

Sources: Tables 2, 3, and 5, Appendix Table 5. *Notes:* Dollar amounts rounded in present values at age 18 (d=0.035) in 2013 prices. In-state spending by federal government assumed at 78 cents per dollar (taxfoundation.org). Averages and differences weighted according to sex-race specific education distributions in California.

Table 8: Sensitivity Tests on Benefits of High School Graduation

	HS Graduate		Expected HS Graduate	
	Net Gain over HS Dropout	% of Baseline	Net Gain over HS Dropout	% of Baseline
Social Benefits:				
Baseline estimate (Table 6)	$380,660		$579,820	
S1: Lower bound for state taxes	$380,660	100%	$579,820	100%
S2: Discount rate of 10%	$172,060	45%	$212,210	37%
S3: Upper bound adjustment for ability	$320,900	84%	$476,030	82%
S4: Ten-year horizon for benefits	$131,330	35%	$168,150	29%
State/Local Government Savings:				
Baseline estimate (Table 7)	$117,890		$175,120	
S1: Lower bound for state taxes	$103,740	88%	$148,850	85%
S2: Discount rate of 10%	$63,660	54%	$78,800	45%
S3: Upper bound adjustment for ability	$104,570	89%	$143,600	82%
S4: Ten-year horizon for benefits	$39,020	33%	$48,330	28%

Sources: Lower bound for state taxes from CPS data 2009-2013; state income/sales tax. Ability adjustment of 30%. Ten-year horizon for incomes, taxes, and all government spending.

Table 9A: Aggregate Burden of Suspension Policies for California

	Baseline Suspension Rate				
	5%	10%	15%	20%	25%
Number of suspensions per cohort	26,140	52,270	78,410	104,550	130,680
If suspension falls from 3pp impact on HS graduation to zero					
Reduction in HS dropouts	780	1570	2350	3140	3920
Social loss averted ($m)	$452	$910	$1,363	$1,821	$2,273
Fiscal loss averted ($m)	$137	$275	$412	$550	$686
If suspension falls from 7pp impact on HS graduation to zero					
Reduction in HS dropouts	1830	3660	5490	7320	9150
Social loss averted ($m)	$1,061	$2,122	$3,183	$4,244	$5,305
Fiscal loss averted ($m)	$320	$641	$961	$1,282	$1,602

Sources: Tables 1, 6, and 7. *Notes:* pp percentage points. 2013 prices.

Table 9B: Aggregate Burden if Suspension Rates Vary

	If suspension rate falls by 1 pp	*If suspension rate falls by 5 pp*	*If suspension rate falls by 10 pp*
Reduction in suspensions	5,230	20.910	26,140
If suspension impact on HSG is 3pp			
Reduction in HS dropouts	160	630	780
Social loss averted ($m)	$93	$365	$452
Fiscal loss averted ($m)	$28	$110	$137
If suspension impact on HSG is 7pp			
Reduction in HS dropouts	370	1,460	1,830
Social loss averted ($m)	$215	$847	$1061
Fiscal loss averted ($m)	$65	$256	$320

Sources: Tables 1, 6, and 7. *Notes:* pp percentage points. HSG high school graduation. 2013 prices.

Appendix Table 1: Government Revenues and Expenditures in California

	Annual State and Local Revenue and Spending ($ billions)	Percentage of Total (%)
Revenue	**$344.10**	
Intergovernmental federal revenue	$75.88	22%
Property tax revenue	$53.51	16%
Sales tax revenue	$59.18	17%
Individual income tax revenue	$50.51	15%
Other tax revenues	$22.02	6%
Other charges	$83.01	24%
Current Operations Expenditure	**$320.59**	
Education (all levels)	$102.23	32%
Public welfare [a]	$67.67	21%
Hospitals	$21.09	7%
Police protection	$15.08	5%
Health	$12.09	4%
Correction [b]	$13.62	4%
Fire protection	$6.67	2%
Housing and community development	$10.19	3%
Judicial and legal	$8.89	3%
Other expenditures	$63.85	20%

Sources: U.S. Census Bureau, 2011 *Annual Surveys of State and Local Government Finances*, Table 1; NASBO (2012, 2013); and CA Office of State Comptroller Budgets. State of California Comprehensive Annual Fiscal Report 2013. www.sco.ca.gov/Files-ARD/CAFR/cafr12web.pdf. [a] www.dss.cahwnet.gov/cdssweb/entres/localassistanceest/jan14/DetailTables.pdf
[b] Taylor (2013b, Figure 15); www.cdcr.ca.gov/Budget/Budget_Overview.html. Amount includes Department of Corrections and Rehabilitation, Judicial Branch, Department of Justice, Board of State and Community Corrections, and other criminal justice programs. For tax rates, taxadmin.org/fta/rate/12taxdis.html. *Notes:* Other tax revenues are motor vehicle, corporate, and other. Other charges are miscellaneous general revenue, insurance trust revenue, utility revenue, and other charges.

Appendix Table 2: Criminal Activity in 2011-12 (CA and U.S.)

	Crimes per 100,000 Persons	
	California	U.S. Average
Property crime	2,758.7	2,859.2
Larceny-theft	1,669.5	1,959.3
Motor vehicle theft	443.2	229.7
Burglary	646.1	670.2
Violent crime	423.1	386.9
Aggravated assault	248.9	242.3
Murder	5.0	4.7
Forcible rape	20.6	26.9
Robbery	148.6	112.9

Source: FBI Uniform Crime Report (2011-12, Table 4).

Appendix Table 3: Institutional Population in 2012 (CA)

	Persons
Community supervision—probation	297,700
Community supervision—parole	89,300
Incarcerated—jail	78,700
Incarcerated—prison	132,900
Total	**598,600**

Source: Glaze and Herberman (2013, Table 6).

Appendix Table 4: Justice System Expenditures in California ($ millions)

	Police Protection	Judicial and Legal	Corrections	Total
State	$1.74	$4.66	$8.34	$14.73
Local	$15.16	$5.02	$5.62	$25.80
Total	$16.90	$9.68	$13.96	$40.53

Source: Justice Expenditure and Employment Extracts Program, Justice Expenditure and Employment Extracts 2010 - Preliminary, NCJ 242544. Fiscal year 2010, in 2013 dollars.

Appendix Table 5: Lifetime Federal Fiscal Savings Gain over HS Dropout

	Gain over HS Dropout					
	HS Graduate			Expected HS Graduate		
	Female	Male	Average	Female	Male	Average
College costs	$-	$-	$-	$(1,070)	$(900)	$(980)
Health fiscal gains	$16,340	$8,170	$12,260	$22,830	$10,950	$16,890
Crime fiscal gains	$670	$9,540	$5,110	$790	$10,590	$5,690
Welfare fiscal gains	$4,140	$2,600	$3,370	$7,110	$4,070	$5,590
Tax contributions	$28,140	$43,480	$35,810	$59,700	$84,930	$72,320
METB	$820	$790	$810	$1,160.00	$960	$1,060
Total gain over HS dropout	$50,110	$64,580	$57,360	$90,520	$110,600	$100,570

Sources: Tables 2-4. *Notes:* Dollar amounts rounded in present values at age 18 (d=0.035) in 2013 prices. Average and difference weighted according to sex-race specific education distributions in California.