# *The Economic Burden of High School Dropouts and School Suspensions in Florida*

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## *Summary*

In this paper, we calculate two economic consequences of Florida public school students dropping out of high school—the social consequences for the state economy and well being, and the fiscal consequences for the federal, state, and local governments.

Approximately one in five Florida students—more than 50,000 in each age cohort—will not graduate from high school. Over their lifetimes, these dropouts will have lower incomes, contribute less in taxes, rely more heavily on government health and welfare programs, and impose higher costs on the criminal justice system.

Using evidence from research studies and Florida-specific databases, we model the social and fiscal gains that would accrue if more dropouts became high school graduates. The model yields separate results by sex and race.

The social gains—which include earnings, health, crime, welfare, and productivity spillovers—are calculated at $354,000-$476,000 for each additional high school graduate. This amount is the value at the time of graduation.

The fiscal gains for Florida are calculated separately for the state/local government and the federal government. The direct state/local fiscal gain per additional high school graduate is $57,000-$63,000, whereas the fiscal impact on federal spending in the state is $59,000-$89,000. The full fiscal gain per new high school graduate is therefore $116,000-$152,000.

The model is based on conservative parameter values and assumptions regarding the benefits of educational attainment. Based on sensitivity testing, we show that, even making highly restrictive assumptions, the social and fiscal gains are economically meaningful.

Evidence shows that school suspensions adversely impact high school graduation rates and that the dropout rate would be much lower if there were fewer suspensions. Using a new economic model, we can calculate the economic losses under different scenarios.

**Table S1**: **Aggregate Burden of High School Dropout and Suspension Policies for Florida**

| | Status quo policy | Total impact of suspensions on HS graduation | If suspension rate were reduced by 5 percentage points |
|---|---|---|---|
| Suspension rate | 27% | 27% | 22% |
| Suspended students per cohort | 48,850 | 48,850 | 39,750 |
| Reduction in high school dropouts | -- | 3,220 | 600 |
| Social Loss averted ($ m) | -- | $1,531 | $285 |
| Fiscal Loss averted ($ m) | -- | $488 | $91 |

Across the student population in Florida, 27% students in each ninth-grade cohort will be suspended. Current school suspension policies and practices reduced high school graduation rates by six percentage points, resulting in 3,220 fewer high school graduates. This produces a total social loss of $1.5 billion and a total fiscal loss of $0.5 billion for each cohort of ninth-grade students.

Schools and districts could simply reduce their high school suspension rates, which would have an indirect effect on the dropout rate. For example, if the suspension rate fell by five percentage points (from 27% to 22%), the number of high school dropouts would fall by 600. This would avert social losses of $285 million and fiscal losses of $91 million.

## *Contents*

## *1. Introduction*

There is an immense amount of evidence on the economic and social value of educational attainment (Belfield and Levin, 2007; Lochner, 2011; Oreopoulos and Salvanes, 2011). The impact education has on earnings is well established. There is also extensive literature on the health advantages of having more education, and evidence on the social benefits of having a better educated population. One important and often overlooked benefit is that the gains from education are greater for minority and disadvantaged students; thus, education has the potential to narrow gaps in economic well-being (Hoxby and Turner, 2012). Many youth without a high school diploma will face a precarious economic future (Fernandes-Alcantara, 2012).

Despite this evidence, many students do not complete high school. Nationally, graduation rates have remained static over recent decades, with one-fifth to one-quarter of students failing to graduate on time. Moreover, high school graduation rates are much lower for minority students and low-income students, and for male students (Knapp et al., 2011, Table 7). Many high school graduates do not go to college—only two-fifths of 18-24-year-olds are in college—and many college students fail to complete a degree: the U.S. college graduation rate for four-year college students is just over one-half; at two-year colleges, the graduation rate is one-third (NCES Digest, 2012, Table 213). As with high school, college enrollment and completion rates are significantly lower for minority students and low-income students. These low rates are partly a result of students not being adequately prepared for college when they finish high school.

Hence, there is a strong economic case for increased investments to improve school quality and to ensure that students graduate from high school. This is especially true for disadvantaged students, many of many of whom are dealing with family disadvantages and other barriers that undermine their ability to complete high school. For these students, school policies and practices can be especially influential,

One such policy is school suspensions. Schools can and do suspend students for a number of reasons, from criminal behavior, such as bringing a weapon to school, to more minor offenses, such as swearing or “willful defiance” of teachers or

administrators (Fabelo et al., 2011). School personnel have a lot of discretion in terms of how to manage student behavior, and they do have options preferable to out-of-school suspensions, such as in-school suspensions or mandatory intervention programs, such as Restorative Justice.[1] Nevertheless, many students end up under the jurisdiction of the Department for Juvenile Justice.[2]

In this paper, we calculate the economic consequences of high school suspensions in Florida. We do this by first estimating the economic losses resulting from high school dropouts in Florida and then by estimating the impact suspensions have on those dropouts. It is important to understand the full economic consequences of students failing to complete high school. There are fiscal consequences: tax revenues are lower and government spending is higher for dropouts; and there are social consequences: the state economy is adversely impacted by dropouts' lower productivity and other negative factors, such as crime and poor health. We calculate both the fiscal and social impacts using a conventional lifecycle economic model. The initial step is to map the distribution of educational attainment across cohorts of Florida youth and government spending across the state. We then describe the economic model and how key components of the model are derived. The results of the model are expressed as the net gain to Florida taxpayers and Florida residents if high school dropouts instead completed high school. It is then possible to simulate the gains that would accrue if education policies and high school suspension practices were more effective and the high school completion rate in Florida were higher.

## *2. Educational Attainment in Florida*

Each age grade in the Florida public school system includes approximately 210,000 children; 41% of the students are white, 30% Hispanic/Latino, 23% black, and 6% other race/ethnicity.[3] However, by 12$^{th}$ grade, only 160,000 of those students remain in school and complete their high school diploma (including certificates but not GED). Accounting for mobility, the high school completion rate for the Florida public school system is 76%,

[1] See restorativejustice.org.
[2] See http://www.djj.state.fl.us/docs/research2/2010-11-delinquency-in-schools-analysis.pdf?sfvrsn=0.
[3] All education data is from www.fldoe.org/eias/eiaspubs/pubstudent.asp; www.fldoe.org/fcs/colleges.asp and www.flbog.edu/resources/ditr/.

which means that one-in-four students does not graduate on time. This rate is close to the national average.[4]

There are important racial differences in high school completion rates in Florida, which are significantly lower for minority students: the rate is 88% for whites, 72% for other racial groups, 71% for blacks, and 65% for Hispanic students. There also are significant gender differences: the graduation rate for female students is five percentage points higher than for male students. These rates are similar to the differences found nationally.

High school attainment in large part drives college enrollment rates. One-third of all Florida high school graduates will attend a two-year Florida public college, and one-quarter will attend a four-year Florida public college. (One in ten college-bound students will either attend a private college or go to college out of state). Again, there are significant differences by racial group and by gender.

The distribution of educational attainment for the most recent cohort of high school graduates in Florida is given in Figures 1F and 1M. Overall, of the 210,000 students in each Florida cohort, 52,900 will not graduate from high school. This group is disproportionately male and minority. Of those who do graduate, the majority (98,200) will not go on to attend a postsecondary school; one-third will attend college, but approximately half of those will not complete a four-year degree (34,900); the remaining half will complete at least a bachelor's degree (34,600).

Many factors influence educational attainment, in particular the large number of high school dropouts. One of the most influential factors is likely school practices, which also may be the most malleable from a policy perspective (Rotermund, 2008).

The focus here is on school suspension practices. As described in detail in Losen and Gillespie (2012) and Losen and Martinez (2013), millions of K-12 students are suspended from school for some time each school year; the suspension rates have grown dramatically over the last two decades. The incidence is much higher for black students: one in six black students is suspended from school at least once during the

[4] The state's average freshman graduation rate, at 71%, is actually below the national average of 78% (Stillwell and Sable, 2013, Table 1). See also Chapman et al. (2011).

school year, which is more than double the average rate.[5] Importantly, suspension policies are often at the discretion of school personnel and are not determined simply by student behaviors; suspension rates therefore differ substantially across schools, districts, and states (Fabelo et al., 2011).

Aggregate data on suspension rates within the Florida K-12 system are difficult to estimate, but the most recent estimate is that 27% of students are suspended while in high school (Losen and Gillespie, 2012). Student-level analysis shows that suspension has a very adverse effect on high school completion (Fabelo et al., 2011). Based on evidence from Balfanz et al. (2014), ninth-grade students in Florida who are suspended graduate from high school at rates that are 6.6-7.3 percentage points lower than students who are not suspended. Therefore, if school suspension practices were changed—through enhanced resources to avoid the need for suspension and/or more effective supports for students who are suspended—high school graduation rates should increase significantly. We calculate the economic gains higher graduation rates would generate for the state of Florida and for its taxpayers.[6]

## *3. Modeling the Economic Value of Educational Attainment*

The basic framework for an economic model to value educational attainment is described in detail in Belfield and Levin (2007). There have been numerous applications of this model at the national, state, and local level, as well as for subgroups of youth.[7] Thus far, the model has not been applied at the state level in Florida.

The details of the model are given in Appendix Box 1. The model operates through differences in educational attainment at the high school level, which then have implications for changes in educational attainment at the postsecondary level. Students who fail to complete high school are classed as dropouts. Students whose education ends with high school are classed as high school graduates. The third group are

[5] Disciplinary referrals to law enforcement vary significantly across racial groups: minority students represent almost 60% of all students in Florida, but they account for 66%-69% of all law enforcement referrals within the school system (Civil Rights Data, 2009).

[6] From this economic perspective, it does not matter what has caused the suspension (Wright et al., 2014). Also, the model does not include any spillover effects on other students (Kinsler, 2011). At issue are the economic consequences of suspending each student from school.

[7] For example, Trostel (2009); Sum et al. (2009); Baum et al. (2010); Gottlob (2007); Carroll and Erkut (2009); Belfield and Levin (2009); Bush School of Government and Public Service (2009).

"expected high school graduates," who follow the typical path of a low-income high school graduate—that is, one-third go on to college and one-sixth complete a bachelor's degree.[8] As the distribution of students in each group changes, there are private, fiscal, and social consequences, which include changes in earnings and productivity, as well as other changes that are translated into monetary terms. The focus of this analysis is the separate fiscal consequences for state/local government in Florida, and the aggregate social consequences for the state.

The economic metrics created from the model are the individual and aggregate present value of benefits associated with different levels of educational attainment. All economic calculations are based on the most recent social science evidence disaggregated by sex and race (white, black, Hispanic, and other racial groups). Where available, educational and labor market data for Florida are used; government expenditure data are taken from Florida state departments.

All money amounts are expressed in present values for students at age 18, using a discount rate of 3.5% (Moore et al., 2013). All figures are in 2014 dollars, weighted to the prices in Florida. The dollar amounts generated by the model represent lump sum values when a student is age 18. These values can therefore be considered equivalent to a bank deposit made at that date.

## *4. Economic Benefits by Attainment Level*

### *4.1 Earnings and Tax Payments*

More education leads to higher lifetime earnings; the association holds strongly, even accounting for differences in student ability and motivation. Consequently, more educated people contribute more in federal, state, and local taxes. These effects hold across all levels of education, and there is some evidence that they are especially large for minority students.[9]

For this model, lifetime earnings and tax payment profiles are calculated for four pathways: high school dropouts, high school graduates, people with some college, and

[8] Gender- and race-specific college progression and completion rates for Florida students are applied in the model.
[9] Belfield and Bailey (2011); Altonji et al. (2012); Avery and Turner (2012); and Dale and Krueger (2011).

those with a four-year degree. The last three pathways are then combined to create the pathway for an "expected high school graduate," based on rates of college enrollment and completion. Separate profiles are created by gender and racial groupings. The pathways can then be compared in terms of the differences in lifetime earnings and tax payments.

Two data sources are used for earnings and the average profile is applied. The first dataset is merged March Supplements of the Current Population Survey (CPS) for the years 2009-2013. The CPS includes data on gross earnings for 40,530 Florida residents age 18-65. The second dataset is the Public Use Micro Sample of the American Community Survey (ACS) for the five-year period 2006-2010. The ACS includes data on personal incomes for 930,180 Florida adults. Although the CPS is devised to calculate earnings with the most precision, the ACS has the advantage of larger samples for subgroup analysis within a single state.[10]

Earnings profiles reflect gross earnings plus health benefits, adjusted for labor force participation rates and productivity growth.[11] The profiles of groups with more education are also adjusted for ability/motivation.[12] For each dataset, earnings are collapsed into education levels and five-year age bands. From these age bands, each full lifetime earnings profile is extrapolated to age 65 and then discounted back to a present value at age 18.

Table 1 shows the present-value lifetime earnings for a Florida high school student by sex and racial group. Male [female] high school dropouts are predicted to earn $406,430 [$206,750]. By contrast, high school graduates are predicted to earn $623,770 [$397,410], a gain of approximately $200,000 over dropping out. An expected high school graduate (where the probability of going to college is accounted for) will earn $760,110 [$493,960]. This amounts to a gain of $353,680 [$287,210] over a

[10] Results from the CPS and ACS are within +/-10% for each gender-race profile.
[11] These benefits also vary with education levels. Based on the CPS, workplace health insurance rates for female [male] workers are 11% [19%] for dropouts, 29% [39%] for HS graduates, and 39% [51%] for the expected HS group (CPS data). Based on the Medical Expenditure Panel Survey, private-sector health insurance plans are $5,340 per annum; see http://meps.ahrq.gov/mepsweb/data_stats/summ_tables/~insr/national/series_1/2012/tic1.htm.
[12] Typically, studies find that adjusting for ability and student motivation has little effect on the gains to college (Carneiro et al., 2011; Rouse, 2007). Conservatively, a downward adjustment (alpha factor) of 0.1 is applied.

Florida high school dropout. Although the gaps by education level differ by sex and race, they are all substantial.[13]

A separate approach is followed for tax payments. Federal incomes taxes are calculated in three approaches and then averaged. The first approach uses declared after-tax federal income tax payments made by respondents to the CPS (adjusted for labor force participation, productivity growth, and ability). The second approach uses gross earnings data (derived as above from the CPS and ACS) and applies the NBER TAXSIM calculator. Finally, federal income taxes are calculated as a flat proportion of gross earnings based on simple marginal tax rates.[14]

State/local tax payments are calculated in a similar way. Florida has no state income tax; state tax revenues come primarily from sales taxes, with property taxes levied at the county level (see Appendix Table 1). State taxes are calculated in two ways. The first uses the CPS data to derived after-tax state tax payments and property tax payments. The second way is to calculate state sales taxes as a proportion of gross earnings (from CPS and ACS data); the tax proportions are based on current state and county sales tax rates (adjusted for exemptions). The results from these approaches are averaged to create lifetime state/local tax profiles.

Table 2 shows present value tax payments by education level and level of government by sex and race. Tax payments are increasing with each education level. At the state level, a high school dropout will pay in $49,700 [$45,430], a high school graduate $72,800 [$61,350], and an expected graduate $82,650 [$70,090]. The net effects of education are payments approximately $20,000-$30,000 higher than those of dropouts. Again, these education gaps are present across all groups. However, they are somewhat lower than in other states because of the Florida tax structure and, notably, the absence (along with six other states) of a state income tax.

In addition to state/local taxes, Florida residents pay federal incomes taxes, which are increasing with education levels. The present-value lifetime profiles of federal

[13] Accounting for ability adjustments and Florida-specific prices, these estimates accord with national estimates by Oreopoulos and Petronijevic (2013) and Avery and Turner (2012).
[14] Based on 2013 marginal tax rates, incomes above $40,000 are assumed taxed at 25% and incomes below $40,000 at 15% (www.irs.gov). FICA contributions are excluded.

income taxes are given in the bottom panel of Table 2. Relative to a high school dropout, each high school graduate contributes $41,290 [$28,370] more in federal taxes and each expected high school graduate contributes $70,240 [$47,410].

## *4.2 Other Fiscal and Social Benefits*

Education conveys additional benefits over the lifetime, which has both fiscal and social impacts. The fiscal impacts are divided according to whether the financing is at the state/local or federal government level, shown in Table 3. The social benefits are shown in Table 4.

Educational attainment is strongly positively associated with healthier behaviors and thus with better health. For example, college graduates exercise more regularly and report lower rates of diabetes and obesity.[15] Individuals with more education also have jobs that provide private health insurance. These health behaviors and health status associations hold even after controlling for income, and they are found across all increments of education and almost all health conditions. They also hold across years of high school and extra years of college education.

Improved health status is both socially valuable—it is desirable to have healthy citizens—and fiscally valuable—government spending on health is lower for a higher level of health. Differences in health status affect government health expenditures.

The social value of improved health is calculated using Quality Adjusted Life Years (QALYs) —that is, years of life relative to years in full health. Schoeni et al. (2011) estimate annual differences in health-related quality of life across individuals with different education levels: conservatively, each year of education adds 0.008 QALYs annually during adulthood.[16] The value of a QALY is assumed at $100,000 (Cutler and Lleras-Muney, 2010). Hence, each year of education yields a "health annuity" of at least $800. Extrapolated over a lifetime, this represents a significant social benefit.

[15] On obesity, see Rosenblum (2012). On education-health gradients, see Cutler and Lleras-Muney (2010), Kimbro et al. (2008), Oreopoulos and Salvanes (2011). On the health effect of selective colleges, see Fletcher and Frisvold (2011).

[16] An alternative study yields higher estimates of the social value of health. Using MEPS and NHIS data from 1997-2002, Muennig et al. (2010) calculated the remaining QALYs of persons reaching adulthood. At age 16, persons with more education have many more QALYs ahead of them: high school graduates are expected to have 1.5-2.4 more QALYs over their lifetime than dropouts. To be conservative, this study is not applied in the economic model.

The fiscal health burden across education levels is calculated as the average of two methods, using national surveys. The first method is based on Medicaid/Medicare enrollment rates by education level from the ACS; these are multiplied by average per-enrollee spending in Florida through adulthood (Sum et al., 2009). The second method is based on national estimates that include Medicaid/Medicare and Social Security Disability payments up to age 65 plus direct state-level medical spending (Muennig, 2007).

Calculated in this way, these social and fiscal health gains are conservatively estimated. They do not account for the steepening health-education gradient—that is, the fact that education is becoming a more important determinant of health (Adler and Stewart, 2010). Also, no adjustment is made for increases in healthcare costs, which are anticipated to exceed inflation (in part because of the Affordable Care Act).

Criminal activity is also strongly correlated with education levels (Lochner, 2011; Lochner and Moretti, 2004; Oreopoulos and Salvanes, 2011). There is a direct behavioral association—for a variety of reasons, more education may reduce criminal activity—and an indirect income effect—education raises incomes and so increases the opportunity cost of crime.[17] Lower crime is a social good, leading to improvements in quality of life and fewer burdens on victims. It is also fiscally valuable: where crime is lower, spending on policing, the criminal justice system, and incarceration is reduced.

The benefits education has on criminal activity are derived in two steps. First, the lifetime fiscal and social crime burden is calculated per non-offender, per general offender, and per chronic offender. Second, the probabilities of being in each category are modeled according to education levels.[18]

[17] As shown in Appendix Table 2, Florida is not a low-crime state; overall, the violent crime rate in Florida is higher than the national rate by more than one-quarter (26%). Specifically, rates of aggravated assault, burglary, and larceny theft are all significantly higher than the national average. Also, the property crime rate exceeds the national average by 15%.

[18] Non-offenders (about 80% of the population) impose zero crime burden. General offenders (15%) commit about half of all crimes. Chronic offenders (5% of the population) commit the remaining half of all crimes (Farrington and Welsh, 2007). Hence, chronic offenders impose the largest burden. The lifetime fiscal and social consequences of being either a general or chronic offender are taken from DeLisi et al. (2010) and Cohen and Piquero (2009), adjusted for federal and state rates of probation, parole, and incarceration (SCCJSO, 2012)). The social burden of crime can also be estimated as a proportion of the fiscal burden (Miller et al., 1996). The relative crime probabilities are from Lochner and Moretti (2004).

These crime estimates do not count some important costs for which accurate data are not yet available. Specifically, the psychic costs to victims' families are unknown, as are the long-term effects of being a victim of crime; also, no reliable estimates exist of the loss in property values (and property taxes) for high-crime neighborhoods. As with health, more recent calculations suggest that the burden per crime is increasing faster than inflation.

There are many other economic benefits from educational attainment. Three of these are included, as there is sufficient evidence to estimate their monetary value.

First, higher levels of education are associated with lower welfare expenditures (partly because welfare is means-tested). In Florida, more than 90% of adult TANF recipients are high school dropouts (DHHS, 2012, Table 10:25); for high school graduates and college graduates, respectively, housing assistance gaps are 1% and 35%, while food stamps gaps are 19% and 54% (Barrett and Poikolainen, 2006; Waldfogel et al., 2007). Based on caseload expenditures and these education-welfare gradients, significant fiscal savings result from higher education levels.[19] These fiscal savings are split between the federal government and state/local governments as a function of their relative burden of support across all welfare programs. From the state's perspective, however, federal expenditures are tied to maintenance-of-effort agreements: savings to the federal government are therefore also valuable for state governments. Fiscal savings are calculated as the total expenditures on social services programs, but from a social perspective, welfare spending is a transfer from taxpayers to welfare recipients and so has neutral resource effects (albeit distributional implications). Social savings are therefore counted as the administrative resources needed to effect welfare transfers.

A second benefit is from labor productivity spillovers (Monaco and Yamarik, 2013). Educated workers are more productive when working with other skilled workers, in part because they can learn from each other. As the proportion of college graduates in a population increases, so do average earnings and gross state product. These

[19] Rates of welfare reliance and amounts are from the American Community Survey (Tables ACSBR/09-13 and ACSBR/09-8) and from the Department of Health and Human Services, Administration for Children and Families (Table_b1_2009.htm, 2012, 10:25). The economic burden of welfare includes TANF, SNAP, housing vouchers, and state welfare programs (excluding Social Security payments).

spillovers are conservatively estimated at 6% of individual earnings (Abel et al., 2010; McMahon, 2006).

The third benefit accrues from savings to tax collection and from reductions in the distortionary effect of taxation.[20] This "marginal excess tax burden" (METB) is calculated for all fiscal savings (and costs) arising from higher educational attainment. The METB has been found to be substantial. A conservative estimate is 13%—that is, for each dollar saved in 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.

Finally, the additional costs of college education are included. Attending college generates additional costs along with the benefits itemized above, and these costs should be included in the cost-benefit calculations. College costs—tuition and government subsidies—are calculated separately for two-year colleges, four-year public colleges, and four-year private colleges in Florida. The costs are then apportioned across students in the expected high school graduate group, based on their respective enrollment patterns in each sector.[21]

The top panel of Table 3 shows the consequences for state/local fiscal expenditures. Expressed as a present value at age 18, the net effect per high school graduate is $58,990 [$15,430] and per expected graduate is $57,250 [$11,050] more than a high school dropout's present value. This net figure counts government expenditures on health, crime, welfare, and taxable METB, and accounts for additional college costs. The bottom panel of Table 3 shows significant federal fiscal expenditure effects in addition to state/local fiscal expenditures. Federal savings per high school graduate are $25,930 [$25,960] and $30,650 [$34,400]. Here, the fiscal consequences are greater for state/local governments, as they are the primary funding source for Florida's criminal justice system and welfare system.

[20] For example, the income tax "distorts" activity toward non-work: individuals would prefer to work but do not because the tax rate is too high.

[21] Census (2012, p20-566.pdf); www.fldoe.org/arm/; http://controller.vpfa.fsu.edu/Student-Financial-Services/SFS-For-Students/Tuition-Rates; and Johnson (2009). 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).

Table 4 shows the other social benefits and costs by education levels (separate from the earnings and tax effects). College costs are higher for expected graduates, but there are significant benefits from improved health status and reduced criminal activity. Finally, there are productivity gains from having a more educated workforce. These differences are substantial and apply across all groups of Florida students.

## *5. The Economic Burden of High School Dropout in Florida*

### *5.1 Lifetime Burdens of High School Dropouts*

The calculation of benefits by attainment level can be merged with data on the differences in the proportions of students reaching each education level (as per Figures 1F and 1M). The total individual lifetime burden per high school dropout is given in Tables 5 and 6.

The social benefit for the state of Florida per high school graduate is extremely large (Table 5). Including earnings gains, improved health status and reduced government health spending, reduced crime and reduced criminal justice system expenditures and victim costs, and the other benefits, the social gain per graduate over a dropout is valued at $444,380 [$263,040] per male [female] student. On average, the social gain is $353,730 per new high school graduate. Thus, if the state could ensure that high school dropouts did graduate from high school, this amount would be the expected benefit. The full social benefit is even greater, because some high school graduates enroll in postsecondary education. Even assuming a very low rate of college enrollment, a more accurate valuation of high school graduation is on average $475,570. A large proportion of this benefit is generated by graduates' higher earnings, but there are important gains to the healthcare system, the criminal justice system, and across the Florida economy. These gains hold for both genders and racial groups.

There are also sizeable fiscal benefits when school dropout is averted. These benefits are split between the state/local government and the federal government, even as most educational spending is sourced by the former. Disaggregated federal benefits are reported in Appendix Table 3. At the state/local level, the fiscal benefits per individual are sizeable (see Table 6). From a narrow Florida taxpayer perspective, this

amount is what is being wasted when a student drops out instead of completing high school. Net of college costs subsidized by the state, there are fiscal gains to healthcare provision, the criminal justice system, and welfare programs, as well as extra tax contributions. Per high school graduate, these gains are valued at $56,720; per expected graduate, the gains are $62,950.

A more accurate accounting of the waste to the Florida taxpayer, however, would include most of the consequences for the federal government. First, more than 95% of all federal government dollars that are paid in by Florida residents are reallocated within Florida. Therefore, any federal government saving is valuable to the state. Second, much federal government funding is subject to maintenance-of-effort requirements (especially in the health and welfare sectors). If federal government spending in Florida changes, there are implications for Florida state/local government spending. The federal impacts are greater than the state impacts.

Overall, the total fiscal burden per high school dropout is $115,680 when compared to a high school graduate or $151,560 when compared to an expected graduate. These amounts include the cost of college but not any additional amounts needed to ensure that high school dropouts become graduates. By contrast, the average annual wage in Florida is $41,000 and per-capita annual general revenue for state/local government is $6,000 (Census, 2012). By age 18, total spending per Florida public school student from kindergarten to 12$^{th}$ grade will have been $167,000; the benefits of high school graduation are almost as large as the entire amount spent on schooling.

In aggregate, the present value burden of high school dropouts across each cohort of Florida students is $19.1-$25.6 billion for the state. From the Florida taxpayer perspective, the burden is $6.3-$8.2 billion. These are annual burdens, in the sense that a sizeable group of Florida students will fail to complete high school each year. By comparison, the gross state product of Florida is $780 billion across its 11.3 million working-age population.[22] Each year, approximately 1 percent of the state fiscal product is being lost by the failure to ensure that all students complete high school. Gross

[22] Bureau of Economic Analysis, regional data web portal, working-age population, http://edr.state.fl.us/Content/population-demographics/data/Pop_Census_Day.pdf.

state/local revenues are $180 annually and federal spending is $176 billion, so the fiscal burden is valued at 3%-4% of what the state or federal government spends. It is equivalent to or exceeds the state's entire annual spending on policing, health, or the criminal justice system (Appendix Table 1).

## *5.2 Sensitivity Analysis*

These calculations of the economic value of education for Florida rely on many datasets, research studies, and modeling relationships. These datasets are the best available, cover recent cohorts, and, where available, are specific to the education system and the labor market in Florida. Moreover, where possible, conservative assumptions have been applied. It bears noting that this economic calculation looks only at the monetized benefits of high school graduation. No account is taken of the psychological impact of suspending students from school or the implications for families. Nevertheless, it is necessary to see how sensitive these economic calculations are to alternative assumptions.

When other factors are considered, it is likely that the returns to educational attainment in Florida are substantially above those presented above. First, some important benefits of education have not been included in these calculations. These include the enjoyment students get from going to college and the option value for taking an advanced degree or professional training, as well as the value of employer-provided pension plans. The earnings profiles do not fully account for the higher probability of being employed or accurately price out non-labor market time or account for difference in work-life expectancies. Second, the economic model is extrapolated using current associations. However, recent historical evidence suggests that the benefits of education are growing—the earnings, health, and crime "education gradients" have become steeper over recent decades—and so the returns to education will be greater in the future. For example, the earnings gap between high school graduates and college graduates has tripled since the 1960s (Oreopoulos and Petronijovic, 2012).

The returns are unlikely to be reduced by endogenous shifts to the labor market. One such change would be that, if the pool of skilled workers grows, wages might be expected to fall. However, most labor market studies find that the returns to education

rise when there is a larger pool of educated workers; this effect is due to skill-biased technological change (Carnevale et al., 2010). Therefore, increasing the number of college graduates should not decrease their wages. Another possible shift might be driven by migration, although this too is unlikely. During the period from 2005 to 2009, more than 500,000 people moved from Florida to other states across the U.S. (ACS 5-Year Estimates, 2013, Table 3). Potentially, therefore, Florida might be losing many skilled workers to other states. However, over the same period, 600,000 people moved into Florida from other states. Thus, despites substantial year-on-year mobility, the net effect on the state population level is small. Moreover, for migration to affect the model results, the education levels of the in-migrants would have to be dramatically different from the education levels of the out-migrants. In fact, among adults age 22-39, in-migration raised the stock of human capital in Florida, as in-migrants had higher education levels.[23]

To illustrate worst-case results, we perform a series of separate sensitivity tests and recalculate the total social burden and state/local fiscal burden per student. We can use these sensitivity tests to place lower boundaries around the returns to high school completion.

The results for these tests, along with the baseline estimates, are given in Table 7. In the first test (S1), we apply the lowest estimates of state tax revenue from the three methods described above. Relative to a high school graduate [expected graduate], the state fiscal burden per dropout is estimated at $51,090 [$53,940], which is 90% [86%] of the baseline estimate. (The social burden, which includes gross earnings not taxes, is unchanged). The second test (S2) uses a discount rate of 10% instead of 3.5%; with this test, the future impact (earnings gains for high school graduates) is given a lower weight. This 10% rate is significantly above the conventional rate and above the highest rates used in cost-benefit analysis of social investments. This assumption sharply reduces the benefits of high school completion by more than one-half. However, the fiscal benefits of high school completion are still non-trivial at $28,750 [27,190], and the social benefits are still large at $156,840 [$180,530]. The third test (S3) assumes that 30% of any monetary gains associated with education are instead attributable to

[23] NCHEMS Information Center, retrieved March 10, 2014, higheredinfo.org.

unmeasured ability or motivation. This assumption is very conservative: only a handful of studies have found ability bias to be this high. Under this test, the social and fiscal benefits are reduced by 10%-15%. Nevertheless, the economic benefits of high school graduation are still strongly positive. Our final sensitivity test (S4) assumes there are only benefits up to ten years after age 18: after that age, any economic differences are assumed to be caused by other factors. Given that college completion typically takes 4-6 years, this assumption is particularly strict. However, even under this worst-case assumption there are still clear and substantial benefits from high school graduation. The social gains of high school are $129,060 [$124,460], and the state/local fiscal benefits are $36,250 [$37,020]. Therefore, highly restrictive assumptions still show a large burden when students fail to complete high school.

## *5.3 The Economic Burden of High School Suspensions*

Using the model, we can calculate the economic losses from school suspensions. We know that school suspensions lead to higher dropout rates and that a higher dropout rate has significant economic consequences. These consequences are shown in Table 8 for a range of new policies or practices regarding suspension.

The economic consequences for a single ninth-grade cohort are calculated as follows. Across the student population of ninth graders in 2000, 48,850 (27%) were suspended. We assume a similar number of suspensions in more recent cohorts. These students are much less likely to graduate from high school. As noted above, high school students who were suspended graduate at rates that are 6.6 percentage points lower than students who are not suspended, even after controlling for factors that influence both suspension rates and graduation rates (Balfanz et al., 2014).[24]

Thus, current school suspension policies and practices lead to 3,220 more high school dropouts (Table 8, column 2). The social loss per dropout is $475,570, thus the

[24] A slightly higher estimate is 7.3 percentage points. These estimates control for whether student was new to Florida Public Schools (mobility); Ethnicity; Overage for grade status; Free/Reduced Price Lunch program eligibility; LEP status; Special Education Status; ninth-grade Attendance rate; ninth-grade course failures; and ninth-grade FCAT Scale Score for Math (for details see Balfanz et al., 2014). Results are not separated by gender. Associations are based on the OSS and extended definition of a diploma. An alternative estimate of the association between suspension and high school graduation is calculated by Balfanz (2013): for students who are not suspended, the high school dropout rate is half that of suspended students.

total social loss to the state of Florida is $1.5 billion. The fiscal loss per dropout is $151,560, thus the total fiscal loss to the state for each cohort is $488 million.

Alternatively, schools and districts might simply reduce the suspension rate. That would have an indirect effect on the high school dropout rate. The last three columns of Table 8 show the economic consequences when the suspension rate is reduced by 1, 5, or 10 percentage points, respectively. For example, if the suspension rate fell by 5 percentage points (from 27% to 22%) then the number of high school dropouts would fall by 600 (Table 8, column 4). This would avert social losses of $285 million and fiscal losses of $91 million.

## *6. Conclusions*

Increasing educational attainment generates strong economic returns. Conservatively, graduating from high school yields returns in excess of $350,000 for the state and $115,000 from a fiscal perspective. These returns are spread across students, taxpayers, and state residents, and they are robust to gender and race categorizations. They are economically substantial when compared against median income, government spending, or gross state product. When so many Florida students fail to graduate from high school, the state is failing to make optimal investments in the future.

This finding holds for Florida and across the nation. In some respects, the need for investments in Florida's K-12 education is especially pressing. As noted above, the state's high school graduation is lower than the national average by at least five percentage points, and gender and racial disparities in schooling, college, and labor market prospects are as significant in Florida as they are in other states (Census, 2012). Moreover, the crime rate in Florida substantially exceeds the national average (Appendix Table 2). Finally, state investment in education is relatively low: across the U.S., state spending on education is 30% of total state government spending; in Florida, it is 26%. The difference represents more than $1 billion annually in state spending that is not prioritized to education (NASBO, 2012, Table 5).

Arguments that Florida is a special case—and so would not benefit from increased spending on education—have little merit. Patterns of migration and student mobility in Florida are not influential; given the in-migration of educated workers, recent

trends may even strengthen the case for investment. Even as Florida does not have a state income tax, this does little to influence the findings. The fact that Florida relies almost completely on (more regressive) property and sales taxes has little effect on an economic model of high school dropouts (as opposed to very high income earners). Across the U.S., the average state collects only one-third of its revenues from income taxes; most rely on sales taxes for the bulk of their revenues. A final consideration is that Florida, like all states, receives intergovernmental transfers and direct within-state spending from the federal government. The fiscal source and incidence of the tax therefore do not materially affect the model results.

Given the burden of high school dropouts, there is an important economic case for investing in school practices that would ameliorate high school failure. One approach would be to improve school suspension policies—current policies, besides varying widely across states and with potentially disparate impact across student groups, do not appear to be effective in helping students complete high school. If school practices could be improved, it would most likely be the case that—net of the resources required to effect them—these improvements would be very efficient from both fiscal and social perspectives. Our estimates show that, for Florida, redressing the adverse impact of suspensions on high school graduation rates would generate economic value of $1.5 billion socially and $0.5 billion from a fiscal perspective. Reducing the suspension rate—which in turn would reduce the dropout rate—would also generate substantial savings. Simply on the grounds of efficiency, there is a compelling case for improving school disciplinary practices.

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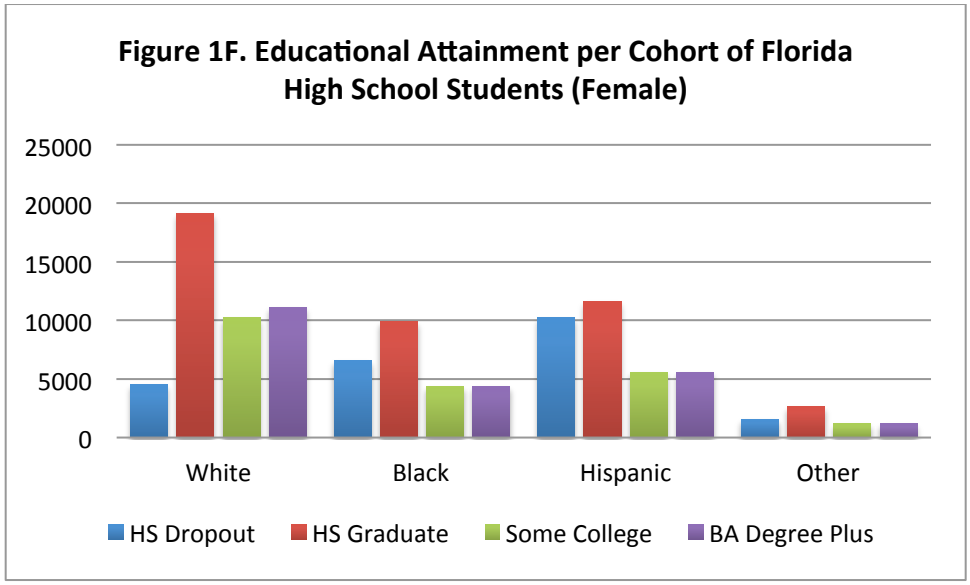
Figure 1F. Educational Attainment per Cohort of Florida High School Students (Female)
25000
20000
15000
10000
5000
0
White
Black
Hispanic
Other
HS Dropout
HS Graduate
Some College
BA Degree Plus

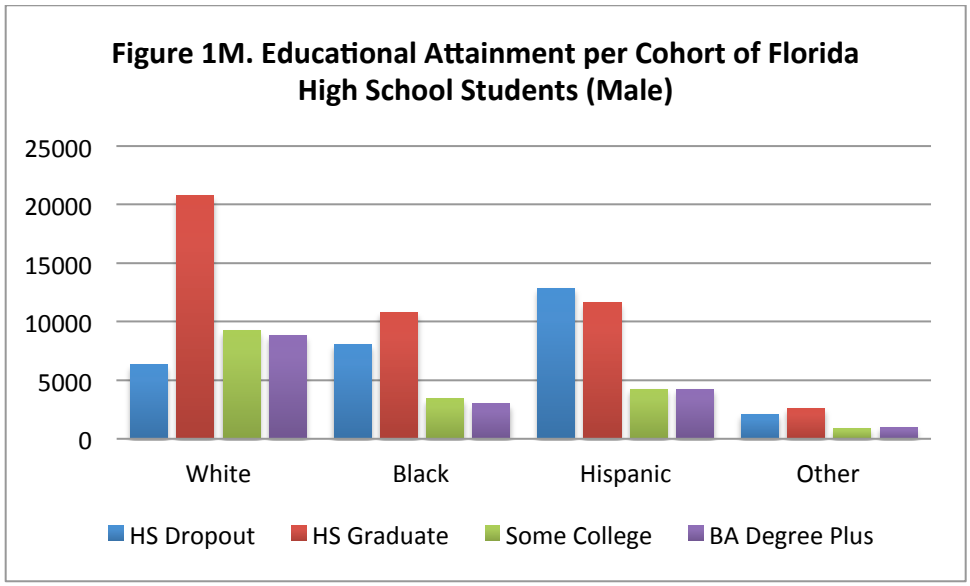
Figure 1M. Educational Attainment per Cohort of Florida High School Students (Male)
25000
20000
15000
10000
5000
0
White
Black
Hispanic
Other
HS Dropout
HS Graduate
Some College
BA Degree Plus

**Table 1: Lifetime Individual Earnings by Education Level (Present Value at Age 18)**

| Earnings | *Female* | | | *Male* | | |
|---|---|---|---|---|---|---|
| | **HS Dropout** | **HS Graduate** | **Expected HS Graduate** | **HS Dropout** | **HS Graduate** | **Expected HS Graduate** |
| White | $197,890 | $419,120 | $528,220 | $430,340 | $672,090 | $841,450 |
| Black | $208,140 | $367,100 | $453,990 | $313,330 | $513,940 | $595,170 |
| Hispanic | $207,390 | $384,320 | $462,580 | $452,550 | $604,470 | $708,360 |
| Other | $222,030 | $394,310 | $508,300 | $410,720 | $713,830 | $921,470 |
| **Average** | **$206,750** | **$397,410** | **$493,960** | **$406,430** | **$623,770** | **$760,110** |
| **Difference over HS Dropout** | | **+ $190,660** | **+ $287,210** | | **+ $217,340** | **+ $353,680** |

*Sources:* CPS data 2009-2013; ACS data 2006-2010. *Notes:* Dollar amounts in present values at age 18 (d=0.035) in 2013 prices. Average and difference weighted according to sex-specific and race-specific education distributions in Florida. Expected HS graduation rates weighted by sex and race. See Appendix I for adjustments for labor force participation, health benefits, ability, and productivity growth.

**Table 2: Lifetime Individual Tax Payments by Education Level (Present Value at Age 18)**

| Taxes | *Female* | | | *Male* | | |
|---|---|---|---|---|---|---|
| | **HS Dropout** | **HS Graduate** | **Expected HS Graduate** | **HS Dropout** | **HS Graduate** | **Expected HS Graduate** |
| ***State/Local:*** | | | | | | |
| White | $55,800 | $67,850 | $76,620 | $59,050 | $76,840 | $88,410 |
| Black | $43,720 | $44,280 | $56,350 | $42,950 | $61,150 | $65,180 |
| Hispanic | $41,750 | $61,050 | $69,580 | $48,570 | $72,570 | $82,750 |
| Other | $46,750 | $73,870 | $70,950 | $54,560 | $83,630 | $99,330 |
| **Average** | **$45,430** | **$61,350** | **$70,090** | **$49,700** | **$72,800** | **$82,650** |
| **Difference over HS Dropout** | | **+ $15,920** | **+ $24,660** | | **+ $23,100** | **+ $32,950** |
| ***Federal:*** | | | | | | |
| White | $24,860 | $55,950 | $78,760 | $51,780 | $98,520 | $134,930 |
| Black | $22,770 | $43,340 | $61,270 | $34,570 | $68,150 | $83,990 |
| Hispanic | $22,160 | $43,320 | $58,970 | $47,740 | $76,370 | $100,360 |
| Other | $21,030 | $77,160 | $85,180 | $43,850 | $89,210 | $126,240 |
| **Average** | **$22,790** | **$51,160** | **$70,200** | **$44,700** | **$85,990** | **$114,940** |
| **Difference over HS Dropout** | | **+ $28,370** | **+ $47,410** | | **+ $41,290** | **+ $70,240** |

*Sources:* CPS data 2009-2013; Florida 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 Florida. Taxes are income tax (federal); state/county sales and property tax (state). See Appendix Box 1 for details.

**Table 3: Lifetime Fiscal Impacts by Education Level (Present Value at Age 18)**

| | *Female* | | | *Male* | | |
|---|---|---|---|---|---|---|
| | **HS Dropout** | **HS Graduate** | **Expected HS Graduate** | **HS Dropout** | **HS Graduate** | **Expected HS Graduate** |
| ***State/Local Fiscal Expenditure:*** | | | | | | |
| Health | $20,850 | $10,890 | $7,920 | $10,440 | $5,440 | $4,100 |
| Crime | $5,740 | $2,230 | $1,750 | $71,940 | $21,000 | $16,840 |
| Welfare | $4,390 | $3,010 | $2,350 | $2,610 | $1,770 | $1,420 |
| College | $- | $- | $8,330 | $- | $- | $7,520 |
| METB tax | $1,210 | $630 | $790 | $3,310 | $1,100 | $1,170 |
| **Total** | **$32,190** | **$16,760** | **$21,140** | **$88,300** | **$29,310** | **$31,050** |
| **Difference over HS Dropout** | | **$15,430** | **$11,050** | | **$58,990** | **$57,250** |
| ***Federal Fiscal Expenditure:*** | | | | | | |
| Health | $33,340 | $17,550 | $12,770 | $16,670 | $8,770 | $6,620 |
| Crime | $1,350 | $520 | $410 | $16,870 | $4,920 | $3,950 |
| Welfare | $26,600 | $18,230 | $14,230 | $15,840 | $10,740 | $8,620 |
| College | $- | $- | $770 | $- | $- | $690 |
| METB tax | $2,390 | $1,420 | $1,100 | $1,930 | $950 | $780 |
| **Total** | **$63,680** | **$37,720** | **$29,280** | **$51,310** | **$25,380** | **$20,660** |
| **Difference over HS Dropout** | | **$25,960** | **$34,400** | | **$25,930** | **$30,650** |

*Sources:* CPS data 2009-2013; Florida 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 Florida. METB tax based on earnings as per Table 1. See Appendix Box 1 for details on split between state/local and federal government in spending.

**Table 4: Lifetime Other Social Benefits and Costs by Education Level (Present Value at Age 18)**

| | *Female* | | | *Male* | | |
|---|---|---|---|---|---|---|
| | **HS Dropout** | **HS Graduate** | **Expected HS Graduate** | **HS Dropout** | **HS Graduate** | **Expected HS Graduate** |
| **Other Social Benefits and Costs:** | | | | | | |
| College Costs | $- | $- | $24,100 | $- | $- | $21,740 |
| Health gains (net) | $- | $16,630 | $23,880 | $- | $16,630 | $23,170 |
| Crime burden | $(12,390) | $(4,810) | $(3,790) | $(155,420) | $(45,360) | $(36,380) |
| Productivity gains | $12,400 | $23,850 | $29,630 | $24,380 | $37,430 | $45,610 |
| **Total** | **$10** | **$35,670** | **$73,820** | **$(131,040)** | **$8,700** | **$54,140** |
| **Difference over HS Dropout** | | **$35,660** | **$73,810** | | **$139,740** | **$185,180** |

*Sources:* CPS data 2009-2013; Florida tax code; www.flboe.org. *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 Florida. College costs net of tuition. Health gains net of health status of HS dropouts. Crime burden includes fiscal and victim costs. Productivity gains based on earnings as per Table 1. See Appendix Box 1 for details on split between state/local and federal government in spending.

**Table 5**: **Lifetime Total Social Benefits per Person by Education Level (Present Value at Age 18)**

| | *Difference over HS Dropout* | | | | | |
|---|---|---|---|---|---|---|
| | **Female** | | **Male** | | **Average** | |
| | **HS Graduate** | **Expected HS Graduate** | **HS Graduate** | **Expected HS Graduate** | **HS Graduate** | **Expected HS Graduate** |
| College Costs | $- | $(24,100) | $- | $(21,740) | $- | $(22,920) |
| Earnings | $190,660 | $287,210 | $217,350 | $353,680 | $204,010 | $320,450 |
| Health Savings | $42,390 | $57,380 | $29,530 | $39,560 | $35,960 | $48,470 |
| Crime Savings | $11,910 | $13,520 | $172,940 | $187,050 | $92,430 | $100,290 |
| Welfare Savings | $1,460 | $2,160 | $890 | $1,260 | $1,180 | $1,710 |
| Productivity Gains | $11,440 | $17,230 | $13,050 | $21,220 | $12,250 | $19,230 |
| METB Savings | $5,180 | $5,680 | $10,620 | $11,000 | $7,900 | $8,340 |
| **Total gain over HS Dropout** | **$263,040** | **$359,080** | **$444,380** | **$592,030** | **$353,730** | **$475,570** |

*Sources:* Tables 1-4. *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 Florida.

**Table 6**: **Lifetime State and Local Fiscal Savings per Person by Education Level (Present Value at Age 18)**

| | *Difference over HS Dropout* | | | | | |
|---|---|---|---|---|---|---|
| | **Female** | | **Male** | | **Average** | |
| | **HS Graduate** | **Expected HS Graduate** | **HS Graduate** | **Expected HS Graduate** | **HS Graduate** | **Expected HS Graduate** |
| **State and Local Fiscal Impacts:** | | | | | | |
| College Costs | $- | $(8,330) | $- | $(7,520) | $- | $(7,930) |
| Health Fiscal Gains | $9,960 | $12,930 | $5,000 | $6,340 | $7,480 | $9,640 |
| Crime Fiscal Gains | $3,510 | $3,980 | $50,940 | $55,100 | $27,220 | $29,540 |
| Welfare Fiscal Gains | $1,380 | $2,040 | $840 | $1,190 | $1,110 | $1,620 |
| Tax Contributions | $15,920 | $24,660 | $23,100 | $32,940 | $19,510 | $28,800 |
| METB | $580 | $410 | $2,210 | $2,150 | $1,400 | $1,280 |
| **Total gain over HS Dropout** | **$31,350** | **$35,690** | **$82,090** | **$90,200** | **$56,720** | **$62,950** |
| **Federal tax impacts in Florida** | $52,690 | $79,350 | $65,190 | $97,870 | $58,960 | $88,610 |
| **Total gain over HS Dropout (incl. federal tax impacts)** | **$84,040** | **$115,040** | **$147,280** | **$188,070** | **$115,680** | **$151,560** |

*Sources:* Tables 1-4, Appendix Table 3. *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 Florida.

**Table 7**: **Sensitivity Tests: Lifetime State and Local Fiscal Savings (Present Value at A**

| | HS Graduate | | Expected HS Graduate | |
|---|---|---|---|---|
| | **Net Gain over HS Dropout** | **% of baseline** | **Net Gain over HS Dropout** | **% of baselin** |
| **Social Benefits:** | | | | |
| Baseline estimate | $353,730 | | $475,570 | |
| S1: Lower bound for state taxes | $353,730 | 100% | $475,570 | 100% |
| S2: Discount rate of 10% | $156,840 | 44% | $180,530 | 38% |
| S3: Upper bound adjustment for ability | $305,740 | 86% | $399,670 | 84% |
| S4: Ten-year horizon for benefits | $129,060 | 36% | $124,460 | 26% |
| **State/local Government Savings:** | | | | |
| Baseline estimate | $56,720 | | $62,950 | |
| S1: Lower bound for state taxes | $51,090 | 90% | $53,940 | 86% |
| S2: Discount rate of 10% | $28,750 | 51% | $27,190 | 43% |
| S3: Upper bound adjustment for ability | $50,610 | 89% | $54,330 | 86% |
| S4: Ten-year horizon for benefits | $36,250 | 64% | $37,020 | 59% |

*Sources:* Baseline estimates from Tables 5 and 6. Lower bound for state taxes from CPS data 2009-2013; state sales tax. Ability adjustment of 30%. Ten-year horizon for incomes, taxes, and all government spending.

**Table 8**: **Aggregate Burden of High School Failure and Suspension Policies for Florida**

| | Status Quo Policy | Total Impact of Suspensions on HS Graduation | Impact under New Policies/Practices If Suspension Rate Reduced by: | | |
|---|---|---|---|---|---|
| | | | 1 pp | 5 pp | 10 pp |
| Suspension rate | 27% | 27% | 26% | 22% | 17% |
| Number of suspended students per 9th grade cohort | 48,850 | 48,850 | 47,030 | 39,750 | 30,660 |
| Reduction in number of high school dropouts | | 3,220 | 120 | 600 | 1,200 |
| Social Loss averted ($ m) | | $1,531 | $57 | $285 | $571 |
| Fiscal Loss averted ($ m) | | $488 | $18 | $91 | $182 |

*Sources:* Figures 1FM; Appendix Tables 1 and 2; Tables 5 and 6. *Notes:* PP is percentage points. Suspension effect on graduation from Balfanz et al. (2014). 2013 prices.

# *Appendices*

## Appendix 1
## Model for Calculating the Social/Fiscal Burden of High School Failure

Burdens are calculated using research evidence on dropouts, high school graduates, college enrollees, and college completers.

Differences by gender-race are capitalized over the lifecycle *k*=18-65 and expressed as present values at age 18 (d=3.5%). All figures are in real 2013 dollars, adjusted for Florida price levels (*i*). Data sources are in parentheses.

**Social Burden (S):**

$S = Y_P + H_F + H_P + M_F + M_V + W_S + Y_G + m(t.(Y_P + Y_G) + H_F + C_F + W_S + T) - E_S - E_p$

*where*
- $Y_P$ Additional gross earnings
- $H_F$ Lower government health expenditures
- $H_P$ Private health gains
- $M_F$ Criminal Justice System expenditures
- $M_V$ Victim/social costs of crime
- $W_S$ Welfare and social service payments – non-transfer administrative costs
- $Y_G$ Lost productivity spillovers across the workforce
- $m$ Marginal Excess Tax Burden coefficient
- $t$ Tax rate on income
- $T$ Non-income tax amount payable
- $E_S$ Public support for college
- $E_P$ Tuition fees charged to student

**Fiscal Burden (F):**

$F = t.(Y_P + Y_G) + H_F + C_F + W_F + m(t.(Y_P + Y_G) + H_F + C_F + W_S + T) - E_S$

*where*
- $Y_P$ Additional gross earnings
- $H_F$ Lower government health expenditures
- $M_F$ Criminal Justice System expenditures
- $W_F$ Welfare and social service payments
- $Y_G$ Lost productivity spillovers across the workforce
- $m$ Marginal Excess Tax Burden coefficient
- $t$ Tax rate on income
- $T$ Non-income tax amount payable
- $E_S$ Public support for college

**Data sources for key parameters:**

$Y_P$, $Y_G$ : CPS, ACS, BLS, Abel et al. (2010), Carneiro et al. (2011); $H_F$ : MEPS, KFF; $H_P$ : Schoeni et al. (2011); $M_F$ : BJS, JEEES; $M_V$ : Miller et al. (1996); $W_S$ : BLS, Baum et al. (2010); *m:* Allgood and Snow (1998); $t$, $T$: CPS, IRS, www.taxfoundation.org, www.taxadmin.org, dor.myflorida.com/dor/taxes/sales_tax.html; $E_S$, $E_P$: NCES, www.deltacostproject.org, www.fldoe.org; $d$ : Moore et al. (2013); $i$ : CPI, HECA, BLS.

**Appendix Table 1**
**Government Revenues and Expenditures in Florida**

| | Annual Revenue and Spending ($ billions) | Percentage of Total (%) |
|---|---|---|
| **Revenue** | **$181.17** | |
| Intergovernmental federal revenue | $32.02 | 18% |
| Property tax revenue | $25.93 | 14% |
| Sales tax revenue | $32.38 | 18% |
| Other tax revenues | $3.12 | 2% |
| Other charges | $83.89 | 46% |
| **Direct Expenditure** | **$164.06** | |
| Education (all levels) | $38.69 | 24% |
| Public welfare | $23.54 | 14% |
| Hospitals | $8.37 | 5% |
| Police protection | $7.35 | 4% |
| Health | $4.92 | 3% |
| Correction | $4.29 | 3% |
| Fire protection | $3.31 | 2% |
| Housing and community development | $3.33 | 2% |
| Judicial and legal | $2.20 | 1% |
| Capital outlay | $15.21 | 9% |
| Other direct general expenditure | $26.76 | 16% |
| Other expenditure | $26.09 | 16% |

*Source:* U.S. Census Bureau, 2011 *Annual Surveys of State and Local Government Finances*. Table 1, tabulation date July 2013. www.nasbo.org. *Notes:* Other tax revenues are motor vehicle, corporate, and other. Other charges are miscellaneous general revenue, insurance trust revenue, utility revenue, and other charges. Direct expenditure is net of payments on borrowing.

**Appendix Table 2**
**Criminal Activity in Florida (2012)**

| | Number of Crimes | Florida Crime Rate (Crimes per 100,000 persons) | Percent Florida Crime Rate Exceeds National Average |
|---|---|---|---|
| Violent crime | 94,087 | 487 | 26% |
| Property crime | 632,988 | 3,277 | 15% |
| | | | |
| Aggravated assault | 63,929 | 331 | 37% |
| Burglary | 153,563 | 795 | 19% |
| Larceny-theft | 442,095 | 2,289 | 17% |
| Murder | 1,009 | 5 | 11% |
| Forcible rape | 5,260 | 27 | 1% |
| Robbery | 23,889 | 113 | -9% |
| Motor vehicle theft | 37,330 | 193 | -16% |

*Source:* FBI Uniform Crime Report (2012, Table 4)

**Appendix Table 3**
**Lifetime Federal Fiscal Savings per Person by Education Level (Present value at age 18)**

| | *Difference over HS Dropout* | | | | | |
|---|---|---|---|---|---|---|
| | **Female** | | **Male** | | **Average** | |
| | **HS Graduate** | **Expected HS Graduate** | **HS Graduate** | **Expected HS Graduate** | **HS Graduate** | **Expected HS Graduate** |
| **Federal Impacts:** | | | | | | |
| College costs | | $(770) | | $(690) | | $(730) |
| Health fiscal gains | $15,790 | $20,570 | $7,900 | $10,050 | $11,850 | $15,310 |
| Crime fiscal gains | $820 | $930 | $11,950 | $12,920 | $6,390 | $6,930 |
| Welfare fiscal gains | $8,370 | $12,370 | $5,100 | $7,220 | $6,740 | $9,790 |
| Tax contributions | $28,370 | $47,410 | $41,290 | $70,250 | $34,830 | $58,830 |
| METB | $970 | $1,290.00 | $970 | $1,150 | $970 | $1,220 |
| **Total gain over HS dropout** | **$54,320** | **$81,800** | **$67,210** | **$100,900** | **$60,780** | **$91,350** |