ALLIANCE FOR CHOICE IN EDUCATION

Value of a High School Diploma

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Executive Summary

This report provides key findings from ACE participants and their families, but also provides critical research conducted, focusing on the impact of having, or not having a high school diploma. These impacts are not limited to the economic benefits of attaining a high school diploma. Other factors include physical health, community involvement, and the cost to society of not having a diploma.

Key findings for ACE and ACE participants include:

- ACE students graduate at a higher rate than low income peers approximately 93.1% of ACE scholars graduated from high school which is 25.3 to 36.4 points higher than all low income and Title I students in both Denver Public Schools and Colorado.
- ACE students go to college at a higher rate than all students ACE students are twice as likely as low income students to go to college.
- A higher rate of ACE students directly enroll into college each year, a higher proportion of ACE scholars enroll into college the Fall immediately following their graduation from high school.
- ACE families receive fewer sources of relief/assistance than Colorado families although a higher proportion of ACE parents do not have a high school diploma, but they receive \$123 less than Colorado families from federal or state assistance.
- ACE saves society money without ACE, it is likely 42.4% of their students would not graduate from high school, costing society \$13 million (for the recent high school graduates only) to \$459 million (if all ACE scholars graduate at the same rate as the 2016 cohort) in costs associated for individuals without a high school diploma.

The significant findings of not having a high school diploma include:

- **High school dropouts in ACE states will cost \$215 Billion** based on research, it costs society \$292,000 for each high school dropout. The current cohort of young dropouts (aged 18 to 24) will cost society \$215 Billion over their lifetimes.
- Individuals without a diploma cannot take care of themselves a higher proportion of high school dropouts have difficulty living independently and caring for themselves than any other level of education. Further, 76% of high school dropouts do not have health literacy to know when to take prescribed medication.
- Higher educational attainments result in more stable families the higher one's education, the more likely they will eat together as a family. Approximately 54.1% of families without a high school diploma eat dinner together, and those without a high school diploma and with children are more likely to be divorced or married more than once.
- Lower educational attainment results in weaker civic engagement those without a high school diploma are less likely to vote, discuss politics, or have an interest in helping neighbors or their neighborhoods.



Current Graduation Rates

Today, high schools in the United States are judged mainly by their ability to graduate their students and get those students into college. As such, the main benefit of attending a quality high school may be the increased likelihood of obtaining all of the benefits that accompany graduating from college.

Perhaps as a result of this perception, there are few studies in the academic literature that isolate the benefits of attending a quality high school from the benefits of going to college or earning a diploma more generally. This should not be surprising. As important as high school education still is, the modern knowledge-based economy places a much higher demand on a college education, and so the literature seems to mainly view high school as a stepping stone to college, rather than a key pinnacle of achievement. Better high schools are valued mainly for their ability to get their students into college so that they can enjoy the benefits of earning a degree.

Moreover, it is not entirely clear how to define what a quality high school looks like. While there is plenty of literature to support the premise that private school students outperform students in public schools, there are also a number of studies that call into question just how much that has to do with the schools themselves compared to other factors in the students' lives. For the purposes of this report, a quality high school education is defined as having a high graduation rate, with students who score well on any college entrance exam, who take a rigorous field of coursework, and who matriculate to college.

However, what is clear is that obtaining an education is still the best path toward prosperity for most people. For the purposes of this paper, and given its limitation, it may be best to think of a quality school simply as one that maximizes graduation rates and thereby gives its students the best chance to leave with a diploma and then pursue a college degree. The myriad of benefits of earning a diploma are discussed.



2016 High School Graduation Rates

Not all low-income (economically disadvantaged students), attend Title 1 schools; however, the graduation rates are similar. They are also similar for ACE students compared to the school where they attend. It's all

about expectations and performance.





Again, low income schools produce poor results for their low-income students. ACE students actually outperform their peers at a higher level nationwide. ACT scores (above) show that ACE students outperform their Colorado peers, low income students, etc., in every subject, while earning comparable scores to all students (low income and high income alike).



While ACE students still lag behind their private school counterparts, they are nearly twice as likely to go to college compared to low-income students or youth attending a Title I school.





8.0

7.0

6.0

5.0

4.0

3.0

2.0

1.0

0.0

Performance at college has a lot to do with high school rigor. Recent research indicates that rigor and lack of preparation –especially in Math classes -- and not having taken AP courses, are the primary reasons that low income students are not able to cope in college. Academics and

being able to navigate the college terrain are critical first-steps toward employment (Flores, Park & Baker, 2017). Using data from the HS Class of both 2009 and 2010 (National Student Clearinghouse), the longer the child remains in a private school, the higher the degree

ACE K-12 Tenure - 2009 & 2010



they will earn. (Note: Only two years of data are available and do not indicate a trend, merely a correlation).



The better the student is in high school, the more likely they will earn an advanced degree. A strong majority of students (4-year rolling average of 88%) attend college, and of those who went to college, 52.3% graduated on-time with either a 2-year or a 4-year

degree. An additional 38.6% are currently attending college (2010 cohort).



Power of a Diploma

Introduction

There are two main schools of thought when it comes to the benefits of obtaining an education: (1) human capital theory and (2) signaling theory. In a 2014 study titled, "The Signaling Value of a High School Diploma," Clark and Mortorell explain that while human capital theory posits that individuals pursue education to increase their wages by way of improved productivity, signaling theory suggests that a diploma is primarily useful as a means of signaling productivity, since employers rarely have perfect knowledge about worker productivity. The researchers also note the difficulty of separating the two theories in practice, writing: "The reason is that most types of education (e.g., years of schooling, school quality) could increase wages by improving productivity or by acting as productivity signals," (p. 283).

Clark & Mortorell's study looks at students in Texas who barely passed or barely failed lastchance exit exams necessary to graduate from high school. They chose this group of students as a way to control for productivity, noting that the two groups should be very similar in ability. While the researchers did find a strong link between the exam scores and earnings overall, they do not find any significant difference in earnings between the barely pass and barely fail groups, prompting them to conclude that a diploma carries little or no signaling value (at least for their sample of students) (Clark & Mortorell, 2014).

The implication of this is that while a diploma may not hold much signaling value, students who are better educated (and thus capable of greater productivity) do tend to earn more than their less-educated peers. In other words, the education itself may be much more valuable than the diploma, at least at the high school level. Of course, the researchers did note that their conclusion contradicts previous studies which found a connection between earning a diploma and wage increases, but they suggest that those studies did not adequately control for productivity differences among employees that had earned or failed to earn their diplomas (Clark & Mortorell, 2014).

In any case, obtaining a quality education is almost certainly the best way to ensure greater financial success later in life. And according to a Sass et al. (2016) study, charter schools may offer a clearer path to greater earnings than some of the alternatives, largely as a result of higher rates of college attendance by charter school graduates. They write:

"While measuring charter schools' impact on test scores is important, it may not capture the full scope of the impact schools have on students. In fact, non-test score outcomes such as high school graduation, college enrollment and persistence, and earnings may be of greater consequence than test scores. For instance, the financial advantage associated with a college education has long been recognized (Day & Newburger, 2002) and in recent years, its value has become increasingly apparent as manufacturing jobs have vanished and the



wages of high school educated workers have stagnated. Even as the cost of higher education has increased substantially, the value of a degree has continued to grow," (Sass et al., 2016, p. 684).



ACE Family Characteristics

Income and educational attainment have a strong correlation with each other, according to Chevalier (2013), and it is apparent ACE families are not exempt from this rule. The chart above shows 25% of ACE families in 2016 did not have a high school diploma, while 31% attained only a high school diploma – indicating a mere 44% attained any higher education (Certificate Program, Some College, Bachelor's, etc.). A lower proportion of ACE families do not have their high school diploma, than Colorado and Denver low income families, and a higher rate of ACE families have advanced degrees (Current Population Survey, 2016; American Community Survey, 2017).





Coursework & Earnings

Sass et al.'s 2016 study builds on their earlier work showing that attending a charter high school is positively linked with the likelihood of graduating from high school and then attending college (Booker et al., 2011). Utilizing the same group of students from that earlier study, the researchers reaffirm their earlier findings regarding graduation and college attendance, and find additional evidence that charter school students are more likely to stay in college for a minimum of two years. They also find a significant increase in earnings related to charter school attendance. They write:

"More importantly, we also examine data on the subsequent earnings of students in our analytic sample, at a point after they could have earned college degrees. In our primary analysis, charter high school attendance is associated with an increase in maximum annual earnings for students between ages 23 and 25 of \$2,318—or about 12 percent higher earnings than for comparable students who attended a charter middle school but matriculated to a traditional high school," (Sass et al., 2016, p. 700-701).

Recent research centering on academic rigor at the high school level concludes that students taking higher levels of math in high school –regardless of the grade –outperform their peers in college, and go on to earn more than \$35,000 per annum five years after graduating college (Altonji, 1995). Additional studies find that taking Algebra II is a causal factor in college matriculation, college persistence, and stronger earnings in the post-college careers (Gaertner, et al., 2013).



ACE Seniors' Highest Math Class Taken

Schools that keep students in a rigorous course load are building a stronger future for their students. As seen in the chart on the previous page, approximately one-third of ACE students have taken Algebra II (25%) or Pre-Calculus (8.3%). Direct comparison cannot be made with Colorado public students as *Integrated Math* courses comprise the bulk of high school mathematics participation (Colorado Department of Education, 2017.



Furthermore, most seniors take Biology, Physics and Chemistry by the time they graduate. Only 5.5% of ACE seniors had not completed those courses. These three science courses are listed as basic courses to be completed as preparation for college science (ACE, 2016).

Improved chances of gaining admission to an elite university may be the most significant benefit of attending a selective private school—particularly for girls and students from low-income homes.

"Estimates imply that enrollees at the elite private school subsequently attend colleges and universities whose students have SAT scores that are 20 points higher on average...Importantly, recent estimates suggest that the economic gains to attending more selective universities can be significant. For example, Hoekstra (2009) reports that attending the flagship university increases earnings by 20% relative to attending college elsewhere," (Berkowitz & Hoekstra, 2011, p. 281).

Earnings Comparison



Average Colorado Household Income

Higher educational attainment, regardless of age, result in higher incomes. Within the state of Colorado, the average household income increased with higher educational attainment. It is notable households without a high school diploma earn approximately \$11,000 to \$16,000 less than households who only have a high school diploma, and the pay gap increases with a college degree (either Associate's or Bachelor's) (American Community Survey, 2017).



ACE Parents' Educational Attainment	ACE Family Income	Per Capita
No HS Diploma	\$29570	\$7372
HS Diploma	\$29009	\$7556
Some College	\$30678	\$7984
Certificate/Associates Program	\$31307	\$7691
Bachelors	\$39296	\$7663
Graduate	\$39422	\$8007

ACE families are not exempt from this rule, as ACE parents with a Bachelor's or Graduate Degree earn approximately \$10,000 more than their counterparts without a high school diploma – reaffirming Chevalier's (2013) findings (table above). Nationally, these incomes show a wide discrepancy, for the chart below provides a comparison of ACE families' average incomes to the income levels found across the nation where ACE has a presence.¹ It is apparent family incomes increase with education, as a non-ACE individual with a Bachelor's degree earns more than \$40,000 more than someone who has not earned a high school diploma, while an individual with a graduate degree has an average salary \$64,000 higher than a high school dropout (Current Population Survey, 2017).



Income Differences

¹ While these ACE families are situated in Colorado, comparisons are made to families with children in states where ACE has a presence (Colorado, Kansas, Louisiana, Texas, Wyoming, and Montana).



Economic Impact



per month, or slightly more than \$44,000 per year. It is estimated the weekly earnings for those without a diploma are slightly higher than \$25,000 per annum. In

addition, higher

educational



attainment results in a lower probability of being unemployed, as the average unemployment rate was 4% for all workers. Those without a high school diploma usually had an unemployment rate 3.4 points higher than the national average (7.4%).



When compared to Denver and Colorado, ACE parents are disproportionally undereducated, making it likely ACE adults experienced a higher rate of unemployment and lower pay. Measuring pay-scale gaps, under-educated



ACE household have lower incomes than Denver and Colorado households. The only educational level where ACE parents earn more are those with an Associate's Degree – where they out-earn their peers by \$4,000 to nearly \$7,000 (Current Population Survey, 2017).



Median Household Income - 2015

	ACE Households	Colorado Households	Denver Households
No HS Diploma	\$20,570	\$22,602	\$22,079
HS Diploma	\$29,009	\$30,366	\$27,464
Associate's	\$39,422	\$35,124	\$32,473
Bachelor's	\$39,296	\$48,901	\$49,784

Over a lifetime (~30 years) of working, those without a HS diploma can expect to earn about 75% of what someone with a high school diploma might earn, and less than half (46.2%) of the potential



Colorado and Denver households. Further, ACE households with a high school diploma earn 141% more than their counterparts without a degree, while those with any type of higher education earn at least 191% more than ACE households without a high school diploma. This trend is similar across all households in Denver and the state of Colorado (Current Population Survey, 2017).





Individuals with more education stay on their jobs longer. For the 25 to 34-year-old age group, job tenure is short because graduate degrees are often earned during this age span (Bureau of Labor Statistics, 2017).



High school graduates' job tenure is six months longer than the average tenure of someone without this degree. Those with a Master's Degree have the highest gap (14.4 months), and those with a Bachelor's Degree have the lowest gap (2.4 months) (Bureau of Labor Statistics, 2017).



Impact of Dropping Out

Recent Graduation Rates

State/Region	Year	Non-High School Completers
Colorado	2016	12,456
Montana	2015	1,421
Wyoming	2016	1,406
Kansas	2016	4,959
Louisiana	2015	8,958
Texas	2015	21,357
Houston, TX	2015	1,435 ²
Total (States)		50,557

The chart above shows the most recent year data on the number of public school students who did not graduate from high school are available, specifically in the states and regions where ACE has a presence. These figures include students who are considered dropouts, and those who merely did not graduate from high school. Students not included in these findings are those continuing with high school, graduated, or attained their GED (Colorado Department of Education, 2017; Montana Office of Public Instruction, 2017; Wyoming Department of Education, 2017; Kansas Department of Education, 2017; Louisiana Department of Education, 2017; Texas Education Agency, 2017).

State/Region	Non-High School Completers	Cost to Society (\$292,000)	Individual Cost (\$1,180,460)
Colorado	12,456	\$3,637,152,000.00	\$14,703,809,760.00
Montana	1,421	\$414,932,000.00	\$1,677,433,660.00
Wyoming	1,406	\$410,552,000.00	\$1,659,726,760.00
Kansas	4,959	\$1,448,028,000.00	\$5,853,901,140.00
Louisiana	8,958	\$2,615,736,000.00	\$10,574,560,680.00
Texas	21,357	\$6,236,244,000.00	\$25,211,084,220.00
Houston, TX	1,435 ²	\$419,020,000.00 ²	\$1,693,960,100.00 ²
Total (States)	50,557	\$14,762,644,000.00	\$59,680,516,220.00

² Figures from and regarding Houston, TX, are included with Texas findings (Texas Education Agency, 2017).



There are two dollar amounts that can be used to quantify the monetary impact of not graduating from high school. Notably, what a high school graduate costs to society and the individual costs, which emphasizes lost wages over a thirty-period and includes the lifetime costs attributed to society. To clarify, the costs to society include what society pays for a high school dropout, specifically the costs of incarceration and lower tax rates – as these individuals without a diploma do not have strong earning power, and therefore will not contribute as much to tax revenues. While it was not explicitly stated, the cost to society may also include the benefits these individuals receive, either federal or state, due to health problems, lower incomes, and higher rates of unemployment (Breslow, 2012; Bureau of Labor Statistics, 2017; Centers for Disease Control and Prevention, 2017; Current Population Survey, 2017).

These figures can be applied to these recent high school non-graduates – and if they chose not to get their diploma, they will cost society approximately \$14.7 Billion over their lifetimes. In addition, they individually will cost themselves and society \$59.7 Billion, (with an estimated \$888,460 in lost wages per person, or \$44.9 Billion, over a thirty-year period) (Breslow, 2012; Bureau of Labor Statistics, 2017; Colorado Department of Education, 2017; Montana Office of Public Instruction, 2017; Wyoming Department of Education, 2017; Kansas Department of Education, 2017; Louisiana Department of Education, 2017; Texas Education Agency, 2017).

Young Dropouts

This section provides data from the American Community Survey (2017) on the number of individuals 18 to 24 years old who have not completed a high school diploma in these regions, and the economic impact they will have, if they choose not to complete a high school diploma. This population was targeted because they are beginning to enter the workforce, and these results are more predictive of what they will cost society and themselves.

State/Region	Number of HS Dropouts 18 to 24 Years Old	Population 18 to 24 Years Old
Colorado	74,219	516,873
Montana	14,857	99,861
Wyoming	7,601	57,674
Kansas	38,244	299,772
Louisiana	89,504	470,616
Texas	463,866	2,714,461
Houston, TX ²	48,352	234,600
Total (States)	688,291	4,159,257





Proportion of High School Dropouts 18 to 24 Years Old

Somewhere between 12.76% and 20.61% of young people (16.55% of all young people) in these areas, do not have a high school diploma (American Community Survey, 2017). The table below shows the societal and individual costs attained by these young people (American Community Survey, 2017; Bureau of Labor Statistics, 2017; Breslow, 2012).

State/Region	Cost to Society	Individual Cost
Colorado	\$21,671,948,000.00	\$87,612,560,740.00
Montana	\$4,338,244,000.00	\$17,538,094,220.00
Wyoming	\$2,219,492,000.00	\$8,972,676,460.00
Kansas	\$11,167,248,000.00	\$45,145,512,240.00
Louisiana	\$26,135,168,000.00	\$105,655,891,840.00
Texas	\$135,448,872,000.00	\$547,575,258,360.00
Houston, TX ²	\$14,118,784,000.00	\$57,077,601,920.00
Total (States)	\$215,099,756,000.00	\$812,499,993,860.00

Based off these estimates, it is predicted the cost to society of these dropouts (if they do not complete a high school diploma) throughout their lifetimes will be more than \$215 Billion. It is predicted the cumulative costs for these individuals will be more than \$812 Billion (American Community Survey, 2017; Bureau of Labor Statistics, 2017; Breslow, 2012).



Social/Emotional

While there is a well-documented positive connection between social and emotional development and academic success, there has been little research on the subject of how various school types can influence this. Social and emotional intelligence is mostly viewed as a precursor to academic success, rather than an outcome. Studies have shown that emotional intelligence is negatively associated with behaviors like skipping school or being expelled (Petrides et al., 2004) as well as alcohol or tobacco use (Trinidad & Johnson, 2002). Emotional intelligence has also been found to moderate differences in cognitive ability and academic achievement (Petrides, Frederickson, and Furnham, 2004).

In a 2004 study, Parker et al. examine how emotional intelligence influences academic achievement in students making the transition from high school to college. They found that it is a vital component of successfully making this leap. The researchers look at a wide range of factors within the dimensions of intrapersonal, interpersonal, adaptability, and stress management. They write:

"Results of the present study suggest quite strongly that intrapersonal, adaptability, and stress management abilities are important factors in the successful transition from high school to university. The intrapersonal dimension involves the ability to distinguish among and label feelings, as well as the ability to use information about feelings to understand and guide behavior (Bar-On, 1997, 2000, 2002; Taylor et al., 1997). The adaptability dimension involves skills related to change management. Managing change involves the ability to identify potential problems, as well as the use of realistic and flexible coping strategies (Bar-On, 1997, 2000, 2002). The stress management dimension involves the ability to manage stressful situations in a relatively calm and proactive manner. Individuals who score high on this dimension are rarely impulsive and work well under pressure (Bar-On, 1997, 2000, 2002)," (Parker et al., 2004, p. 170).

The findings support another Parker et al. (2006) study, which finds that students' emotional intelligence is linked with staying in school rather than dropping out before their second year of college. The researchers find that students who stay in school have greater emotional intelligence and social skills than the students who drop out.

Given the influence of emotional intelligence as well as the importance that high schools place on preparing their students for college, it could be said that a high quality high school is one that develops its students emotionally as well as academically. However, in a review of the academic literature on emotional intelligence in elementary and high school curricula, Opengart (2007) suggests that while businesses have discovered the importance of developing emotional intelligence, schools have only recently caught on to the importance of teaching these skills. This may partially explain why little research has been devoted to discovering the impact that high school quality could make on emotional and social development. This may



change in the future though, as schools are beginning to put emotional intelligence programs into place. Opengart writes:

"There are emotional intelligence programs in place in innovative school systems. These are most often referred to as SEL, social and emotional learning programs. They are developed based on local needs and therefore differ greatly from one another. They are still infantile in any potential large-scale national effort to implement a school-to-work emotional intelligence program," (Opengart, 2007, p. 443).

Opengart (2007) points out there is strong evidence supporting the theory that social and emotional intelligence can be taught effectively in schools (citing Payton et al., 2000), that schools can produce positive social and emotional adjustment (citing Lopes & Salovey, 2004), and that these kinds of programs can improve academic achievement (citing Barchard, 2003; Fleming et al., 2005; Gumora & Arsenio, 2002; and Linares et al., 2005). Opengart later writes:

"Empirical evidence seems to suggest that SEL programs can improve children's success in school and in life. The effective programs have approaches that are comprehensive and multiyear. They include many components that are based on theory and research; teach children to apply SEL skills; build connections to school, parents, and communities; provide instruction that is developmentally and culturally appropriate; are integrated into the curriculum; and involve high-quality teacher development and support," (2007, p. 453).

Schools that have the resources and ability to innovate with social-emotional development programs may ultimately be able to offer benefits to students that other schools cannot, given the link between social-emotional intelligence and academic success. However, it may be a mistake to assume that any particular category of school is currently ahead when it comes to social-emotional development. As an example of why any such assumption might be off-base is a West et al. (2016) study titled "Promise and Paradox: Measuring Students' Non-Cognitive Skills and the Impact of Schooling." West et al. note that schools have recently become more interested in developing their students' non-cognitive abilities and—citing Lake et al. (2012)— who highlight charter school management organizations that have put "comprehensive discipline systems aimed at molding student behavior in and out of school in pro-social and pro-academic directions" in place. Among these charter school management organizations is the Knowledge is Power Program (KIPP), which issues a "Character Growth Card" to students to monitor their non-cognitive skill development (West et al., 2016, p. 149).

Curiously though, West et al. find that while factors like self-control, growth-mindset, conscientiousness, and grit correlate with desired behavioral outcomes in students, these factors do not seem to relate to gains in test scores at the school level. In fact, they find that while charter school attendance produces positive results in academic achievement, it is also linked to negative impact on non-cognitive skills. They write:

"Our results highlight both the potential value of these factors in explaining proacademic behavior and achievement and a challenging paradox that may be inherent to many available measures of non-cognitive skills. The promise is illustrated by the fact that our measures of noncognitive skills are positively correlated with student attendance and behavior, state test scores, and testscore gains from fourth grade to eighth grade. The paradox is that schools in which students on average report higher levels of conscientiousness, selfcontrol, and grit do not have higher average test-score gains than do other schools. In other words, the positive student level relationships between these self-reported measures of non-cognitive skills and improvements in academic achievement dissipate when the measures are aggregated to the school level," (West et al., 2016, p. 150).

Highlighting one of the difficulties inherent in the social sciences, West et al. attribute their unexpected findings to reference bias, writing that "students attending academically and behaviorally demanding charter schools may redefine upward their notion of what it means to demonstrate conscientiousness, self-control, and grit—and thus rate themselves more critically. In theory, such reference bias could be severe enough to distort the magnitude of any changes in the underlying traits and even to invert their sign," (2016, p. 165).

Put another way, the students may have been moving the goal posts. Attending a demanding charter school may have led students to change the standard that they were judging themselves by when self-reporting their non-cognitive development. It is difficult, then, to take away anything conclusive from this study, as it may indicate either (1) that students in charter schools do fare poorly in non-cognitive development or (2) that they simply learn to hold themselves to a higher standard and thus did not report gains that accurately reflected their true non-cognitive development during this study.



on studies (in school and doing homework), in addition to more time doing chores around home than the average high school student in the United States. The biggest discrepancy is volunteering, where ACE scholars volunteered 33.6 times higher than the average high school student (American Time Use Survey, 2015).



Civic Engagement



Percent of Population who Volunteer

The chart above shows more education results in greater the rates of volunteerism. Slightly more than eight percent of individuals without a high school diploma reported volunteering in 2015 (Bureau of Labor Statistics, 2016).



Rate of Volunteerism

It is important to understand that when they enter the program all ACE students qualify for the Federal Free & Reduced Lunch program, a proxy variable for poverty. While social mobility factors will be examined in a future ACE study, it is evident from examining the volunteer patterns and behaviors, ACE parents more resemble middle class individuals than those from the lower economic strata. When parents first enter the program, their volunteer habits mirror those above (chart) by education strata. However, by the time their child has been in the program for three years, their volunteer behaviors have changed considerably.



ACE Volunteer Attitudes



ACE Parent Volunteer Attitudes and Habits

Based on the ACE 2015-16 Parent Survey, parents of ACE scholarship recipients have very strong attitudes towards parent volunteering. Approximately 92.3% of ACE parents are involved with their child's education, and 76.2% state they volunteer at their child's school – slighlty lower than the 84.2% of parents who believe all parents should be regular volunteers (above). Despite this discrepancy, these results show strong parental attitudes towards volunteering and participating in the education of their child/children. The chart below highlights the proportion of ACE families, as broken down by K-8 and High School, who volunteer at their child's school. ACE parents volunteer rates are 27 to almost 45 points higher than the national rate of parents who volunteer at their child's school (National Center for Education Statistics, 2017). These findings show ACE families, regardless of their educational attainment, have a strong social/emotional intelligence, in addition to a strong desire to be involved with their child's education.



Volunteer at Child's School



Voting Habits

Discussing politics is a proxy variable for keeping up-to-date with the news and showing interest in the future of one's community. Those without a high school diploma do not discuss politics to another person (in person, by phone, letter, etc.,) as often as individuals with higher educational levels (Smith, 2013).



This lack of interest plays out in voting behaviors. The chart below shows how even a high school diploma influences voting patterns. It is evident higher educational attainment results in higher voting rates (Current Population Survey, 2015).

Vote in November 2014







Voter Registration

Voter registration in both presidential and non-presidential, off-year elections is a strong indicator of overall voter behavior. The two charts on this page show that educational attainment is a strong predictor of voting behavior. In fact, research on peer-group influences on voting behaviors is a stronger predictor of election results than national polls (Caldas & Blankston, 2001). On both of these charts, individuals without a high school diploma are less likely to be registered voters (above), and more likely not to vote in these mainstream elections (below) (U.S. Census Bureau, 2017; U.S. Census Bureau, 2015).



Proportion who Voted



ACE Denver Metro Voter Registration

ACE families seem to reflect the trends associated with voting patterns associated with educational attainment. The chart above from the 2015 ACE Evaluation report shows how ACE parents align with the Republican and Democratic political parties, in addition to those who are registered independents (based on the ACE Parent Survey).³ However, 46.9% of ACE parents are not registered voters. While this is nearly five points lower than the non-registered rate of voters in metro Denver, these findings reaffirm the low voter registration exhibited by the under-educated (Current Population Survey, 2015).



Community Activities

Visiting the public library is another metric that simultaneously measures community engagement and staying well-informed. Again, those with the least amount of education are least likely to visit their local libraries (Pew Research Center, 2010).

³ Comparisons to Denver are based on the Current Population Survey from November, 2014 for voter registration among parents of school aged children who earn less than \$35,000 per year.





Community engagement moves beyond voting and volunteerism. Getting to know your neighbors and performing the odd-job or personal favor is a proxy variable for neighborhood stability. Knowledge of neighbors also translates into reduced crime in the area, and demonstrates integration within the neighborhood, loyalty to place, and even resistance to crime. Again, this is strongly influenced by education – as few individuals without a high school diploma did favors for their neighbors (above), or helped to fix or improve something in their neighborhood (below) (Current Population Survey, 2013).⁴



Fixed or Improved Something

⁴ Estimates from the Current Population Survey with 0.0% or 0.1% usually indicates the population is <.1%.



Family Status



Stability in the family is another variable to assess social and emotional stability. Those with higher levels of education are more likely to remain married and live as a couple with their school-age children. Married couples with

higher educational attainment have stronger marriages, as it is more likely for an undereducated individual to be divorced with children, or to be married twice with school-aged children (below) (Pew Research Center, 2016).



Family Stability



attainments. ACE families have the largest family sizes (Current Population Survey, 2017).





Eating dinner together as a family on a regular (daily) basis is a proxy variable for family cohesion and emotional stability. In his recent book, Robert

Putnam uses this variable as a way to measure how parents and children interact with one another (Putnam, 2015). Data from the Current Population Survey (2013) is for all of Colorado.

Another proxy for measuring family cohesion are attitudes towards education – which are strong for ACE families. The findings on the chart below show strong family interactions, as a majority of ACE parents are aware of their child's attitudes towards school, and are attuned to the educational habits of their children. While they have a low educational attainment, they represent strong family cohesion. Overall, ACE families report strong interaction, as they are aware their child likes school and their child talks about school at home – in these cases, more ACE parents are aware of their child's attitudes than the national average (National Center for Education Statistics, 2017).⁵



Parent Awareness

⁵ The national comparison for their child's friends do well in school come from the National Educational Longitudinal Survey, but was asked of students. It is presumed if there is a good relationship, then the parents will be aware of their child's friends attitudes towards good grades (National Center for Education Statistics, 2017).



ACE College Expectations & Preparation



College Expectations

Berkowitz and Hoekstra (2011) also note numerous studies supporting this benefit. Dale & Krueger (2002) find that students from low-income homes who attend more selective universities earn more; Brewer et al. (1999) report increases in earnings for all students who attend elite private universities; and Behrman et al. (1996) find significant benefits of attending a private, Ph.D. awarding university with a highly-paid faculty.



College Intentions & Preparation

Compared to their US peers, ACE students have stronger expectations to attending college, are better prepared not only academically, but in the sense that they have toured a college campus, completed a FAFSA, applied for at least one scholarship, and have considered a career.



Health Habits

When it comes to high school quality and long-term health, at least one group of researchers claims to have found a clear, positive relationship. In a 2016 study, Dudovitz et al. look at school quality and its connection to three health factors: self-rated overall health, depression, and obesity. After controlling for additional factors like baseline health, access to health insurance, academic performance, and socio-demographics, they find that their school-quality factors predict at least one of the given health outcomes. Students who go to schools with low average attendance are more likely to rate their overall health as lower and also more likely to be diagnosed with depression. High parental involvement in schools is also linked to reduced chances of adult obesity. The only unexpected outcome was a negative relationship between school promotion rate and self-rated health.

Dudovitz et al. do mention some caveats for their findings, however, writing:

"With respect to obesity, although the school quality validation analyses suggest that some schools with extremely high levels of parental involvement may be schools requiring more parental oversight, parental involvement may nevertheless signify greater overall parent engagement in school, which might result in healthier nutrition and physical activity patterns. The relationship between promotion rate and health, however, appears more complex. A higher school-level promotion rate was associated with low self-rated health in adulthood. It is unclear what underlies this finding. It is possible, for instance, that high promotion rates in the absence of other essential aspects of individual academic achievement or school quality ("social promotion") might not significantly benefit adult health," (2016, p. 5-6).

However school quality is measured, it is clear that there is a positive relationship with acquiring a good education and overall health. In a 2012 study titled "Degrees of health disparities: health status disparities between young adults with high school diplomas, sub-baccalaureate degrees, and baccalaureate degrees," Rosenbaum notes that her study is just one in a long line showing the positive relationship between education and health. Reviewing the literature to date, Rosenbaum writes:

"Educational attainment has been widely recognized as a root of health disparities (Woolf & Braveman, 2011). People with higher levels of education have better health status by almost every health measure: obesity and waist circumference (Hermann et al., 2011; Cutler & Lleras-Muney, 2010), smoking (Cutler & Lleras-Muney, 2010), heavy drinking (Cutler & Lleras-Muney, 2010), oral health (Bernabe[´] et al., 2011), cardiovascular disease and its risk factors (Kavanagh et al., 2010; Fiscella & Franks, 2004; Ernstsen et al., 2010) cancer mortality (Sprague et al., 2011), diet quality (Azagba & Sharaf, 2011; Aggarwal et al., 2011), and greater success quitting smoking in response to health problems (King et al., 2007). The health status of the US population has improved across



most educational levels between 1971 and 2002, but educational disparities widened for pre-mature adult mortality (Reither et al., 2006), smoking, and diabetes (Kanjilal et al., 2006). Education-linked health and longevity disparities between US adults with and without BAs have been estimated to have an economic value of \$1 trillion (Schoeni et al., 2011) and to be responsible for about 40 percent of premature adult cancer deaths (Siegel et al., 2011)."

Rosenbaum's study primarily aims to see where two-year college programs (associate degrees and certificates) figure into this. Not surprisingly, given the long track record of studies showing a link between education and health, Rosenbaum finds that individuals who earn subbaccalaureate degrees are slightly better off than those with only a high school diploma and somewhat worse off than those who earn a baccalaureate degree. Individuals with sub-BA degrees are 16 percent less likely to smoke daily when compared to their peers with just a high school diploma. Individuals with four-year degrees, on the other hand, are 60 percent less likely to smoke than sub-BAs, 14 percent less likely to be obese, and 38 percent less likely to have been diagnosed with depression (2012).

Rosenbaum hypothesizes that the significant difference in health outcomes between individuals with two-year degrees and four-year degrees compared with the relatively small differences for those with a two-year degree and a high school diploma may be the greater availability of two-year degrees for high school graduates. Compared to a four-year degree, two-year degrees are relatively easy to obtain for high school graduates because their academic background is less of a factor.

High school dropouts are at the greatest risk of developing health problems later in life. For example, Kaplan, Damphousse, and Kaplan (1994) find that failure to finish high school is linked to an increased likelihood of psychological dysfunction later in life. Their results echo an earlier study by Alexander, Natriello, & Pallas (1985) which finds that dropping out of high school has a significant negative impact on cognitive performance, especially among Hispanic students and students with low socioeconomic status. Kaplan et al. also point to a Fine (1986) study which finds that even if an individual drops out of school with some financial or psychological advantage over their peers, that advantage tends to dissipate by the time the individual turns twenty-five.

Kaplan et al.'s study looks only at individuals who did not go to college, so as to isolate the impact of finishing or not finishing high school from the influence of college attendance. It also controls for psychological dysfunction prior to dropping out as well as gender, race, and socioeconomic status. As a potential explanation for why dropping out seems to impair psychological functioning, Kaplan et al. write, citing Wehage & Rutter (1986):

"Some have argued that the act of rejecting an institution as fundamental to the society as school is must also be accompanied by the belief that the institution has in turn rejected the person in question," (1994, p. 107).



Government Assistance



Have Government Medical Assistance

Although the study does not link this effect to school quality, it may speak to it, at least in the sense that students who drop out may feel that their high schools did not do enough to help them succeed. While in some cases that perception may be more about diverting blame, for those who honestly believe that they might not have dropped out if their school had done more to help them, it does imply that they might have been better off if they had been given the option to attend a better high school (Current Population Survey, 2017).



701.45

571.65

723.48

512.11

SSI

SNAP

Monthly Government Assistance



The chart on the previous page shows the various types of assistance ACE families receive, and how they are compared to the average monthly benefit for a member of Colorado. The various types of aid provided to these families include:

- Medicaid
- Supplemental Nutrition Assistance Program (SNAP)
- Housing Assistance
- Supplemental Security Income (SSI)
- Temporary Assistance for Needy Families (TANF)
- General Assistance (GA).



of the people using these safety nets are under educated.

"Lower educational attainment [i]s associated with higher program participation rates. During an average month of 2012, 37.3 percent of people who did not graduate from high school received ... benefits." Irving & Loveless (2015).

In 2015, families receiving TANF assistance averaged about \$420.00 each month for a family of two, for an annual benefit of \$5040.00 (Falk, 2014). It is evident most individuals who are in need of assistance do not have a high school diploma. It is likely the need for assistance can be contributed to the low wages earned by high school non-completers, in addition to a higher rate of unemployment high school non-completers experience (7.4%) than the general population (4%) (Bureau of Labor Statistics, 2017).

The median income of high school non-completers (approximately \$25,200 per year), does not meet the required living wage for most types of families, as calculated by the Massachusetts Institute of Technology (2017) (chart on next page). The only scenario where this specific salary meets, or comes close to meeting, is the standard of living in the Denver Metropolitan Region and Colorado, is for an adult living by themselves without any children.





Living Wage Before Taxes

Those who drop out of high school are more likely to need assistance, and if they are on assistance, they are likely to remain on assistance longer than their peers who have at least a high school diploma or one year of college. If earners of these degrees require assistance, they are less likely to spend time on assistance than individuals without this degree. To clarify, participating for "one or more months" emphasizes short-term assistance, which is more prevalent, then participating 36 to 48 months. This, in addition to the living wages calculated by MIT (2017), shows higher educational attainment provides the means to live independently, without aid (Current Population Survey, 2017).



Data from the Massachusetts Institute of Technology (2017).



Medical Costs



Lack Health Insurance

According to the Current Population Survey (2017), those with lower educations lack health insurance, and more younger individuals do not have health insurance. One likely reason for this is the high cost of health insurance. In the Denver Metropolitan Region, it costs one adult approximately \$2,119 per annum to provide for medical expenses, while two adults with at least one child require \$14,724 per year (MIT, 2017).



Medical Costs by Group in Denver

Data from Massachusetts Institute of Technology (2017).



If these costs are taken into account, along with the presumed income for someone without a high school diploma, then the amount individuals without a high school diploma spend on medical-related expenses in the Denver Metropolitan Region accounts for

Medical Expenses as Percent of Income (No High School Diploma)



8.4% to 58.4% of all of their pretax income (Bureau of Labor Statistics, 2017; MIT, 2017).

Disability Factors



National obesity rates are linked to education level. Earning a 4-year degree will pay-off in reduced medical expenses (Centers for Disease Control and Prevention, 2017). Cost estimates for being obese range from \$1267 to \$2085 per year. Applications for Social Security Disability

payments have skyrocketed since 2004 (SSDI, 2016). In Denver County, applications for disability payments increased 21% over the last decade. Research points to socio-emotional factors such as depression over loss of employment opportunities (McCoy, 2017).



(Centers for Disease Control and Prevention, 2017).





Rates for Type II **Diabetes have** almost doubled for the undereducated since 1994 increasing from 6.7% of this group to 12.9% by 2014. According to the Centers for Disease Control and Prevention (2017), Type 2 Diabetes is the seventh leading cause of

death in the United States, and can cause multiple health complications, which include blindness, kidney failure, heart disease, and amputations of lower-extremities. Type II diabetes is associated with obesity, and the best form of treatments combine healthy habits specifically healthy eating and physical activities – with blood glucose testing. In essence, these rates show not only who has diabetes, but also how they fail to take care of themselves.



Independent Living Difficulty

Individuals with less education are disproportionality disabled, as a higher proportion of these individuals find it difficult to live by themselves independently. Specifically, this means they are unable to run errands, such as visiting a doctor or getting groceries.

0.5%

1.2%

1.1%





A higher

of high school

proportion

dropouts do

not have the

take care of

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i.e., it is
 difficult for

them to

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(American

ability to

18 to 30 Years Old | 31 to 64 Years Old | 18 to 64 Years Old 12th grade - no diploma 4.7% 3.4% 3.9% Regular high school diploma 0.8% 1.9% 1.6% Associate's degree 0.5% 1.4% 1.2% Bachelor's degree 0.2% 0.6% 0.6%

Community Survey, 2017; U.S. Census Bureau, 2014).



Health Literacy

According to the U.S. Department of Health & Human Services (2003), the under-educated are also less likely to be proficient in health literacy. This is defined as the ability to process, obtain, and understand basic information and services regarding health in order to make the right decisions. The survey conducted in 2003 defined four levels of health literacy (next page):



Level	Tasks Done	National Rates
Below Basic	Read a short set of instructions Identify what is permissible to drink before a medical test.	14%
Basic	After reading a pamphlet, give two reasons to a person who does not have any symptoms why they should be tested for a disease.	21%
Intermediate	Read instructions on a prescription label and determine when a person can take that medication.	53%
Proficient	Be able to calculate an employee's annual portion of health insurance costs.	12%

Slightly less than half of all individuals with less than a high school diploma could complete the Below Basic tasks, while only 24% of these individuals could do the two most advanced tasks. In essence, approximately 76% of individuals without a high school diploma surveyed could not determine when they should take medication from a prescription (U.S. Department of Health & Human Services, 2003).





The chart above emphasizes the amount of time ACE High School students spend exercising and on their mobile devices – providing the best indicators of healthy behaviors. ACE high school students spend nearly 29 minutes more exercising than their peers. ACE students also devote nearly 80 fewer minutes on mobile devices than Colorado teenagers, which indicates ACE students spend less time sitting down or staying still (American Time Use Survey, 2015).



Contributions by ACE Scholarships

This section presents a hypothetical situation based upon if ACE Scholarships did not exist. To present this argument, several functions are held constant for the most recent high school graduates (93%), and presuming this rate will be maintained for all future cohorts. Further, the same costs to society (\$292,000) and lifetime costs of not having a diploma (\$1,180,460), are held constant as well for all future cohorts (Breslow, 2012; Bureau of Labor Statistics, 2017). In this scenario, we examine what the societal and individual costs would be for the 129 ACE graduates in 2016, and the 4,444 students enrolled in ACE – presuming all stay with ACE, comparing their projected futures with ACE and without ACE.

Without ACE	Number	Not Graduate from High School (42.4%) ⁶	Cost to Society	Lifetime Costs
Total Scholars	4,444	1884	\$550,202,752.00	\$2,224,288,837.76
Senior Students	129	55	\$15,971,232.00	\$64,566,440.16

The table above shows what the probable scenario would be for students who did not graduate from high school, both the total ACE scholars and the senior students. The table below shows what the cost to society will be for the ACE students, because of the involvement of ACE Scholarships. The differences are striking.

With ACE	Number	Not Graduate from High School (7%)	Cost to Society	Lifetime Costs
Total Scholars	4,444	311	\$90,835,360.00	\$367,217,496.80
Senior Students	129	9	\$2,636,760.00	\$10,659,553.80

The table below shows what the presence and contribution of ACE Scholarships saved both society, and the wage gains these individuals made, all because they graduated from high school.

Savings	Reduced Cost to Society	Wage Gains (30- Year Period)	Lifetime Gains
Total Students	\$459,367,392.00	\$1,397,703,948.96	\$1,857,071,340.96
Senior Students	\$13,334,472.00	\$40,572,414.36	\$53,906,886.36

⁶ The 2016 non-graduate rate for Title I students in Colorado (Colorado Department of Education, 2017).



Appendix A – Higher Education Difficulties



Very few students graduate from their respective programs and colleges on-time. The highest ontime graduation rates are from flagship colleges and universities (high research

institutions that are best known in each state, and typically have more resources). The table below highlights the average number of courses taken, compared to the standard number of credits required. In all cases, students graduate with more than the standard number of credits needed (Complete College America, 2014; Fernandez, 2017).

Degree	Required Credits	Credits Taken	Total Credits as Percent of Required
Certificate	30	64.9	216.3%
Associates	60	80.9	134.8%
Bachelor's (Flagship)	120	133.5	111.3%
Bachelor's (Non-Flagship)	120	134.6	112.2%



(Complete College America, 2014).



Degree	Cost of Attendance	Lost Wages	Total	Total Attendance Costs and Lost Wages with Time to Complete
Two-Year	\$15,933	\$35,000	\$50,933	\$81,492.80
Four-Year (Non-Flagship)	\$22,826	\$45,327	\$68,153	\$61,337.70
Four-Year (Flagship)	\$22,826	\$45,327	\$68,153	\$27,261.20

Staying in college longer than the standard time costs money to the student – money they lose due to the cost of attendance and lost wages. A student attending a two-year school loses more than \$81,000 in the additional 1.6 years they spend at a local school. A student trying to complete a four-year program, based on the type of university they attend, could lose as much as \$61,337.70 or \$27,261.20, because they do not graduate on-time (Complete College America, 2014).



Typically, students do not take enough credits to graduate on-time. Many select lighter course loads, putting them behind the necessary graduation requirements. Approximately half of four-year students and 29% of students at twoyear schools earn enough

credits to graduate on-time. The table below shows other significant issues that contribute to preventing students from graduating on-time (Complete College America, 2014).

Item	Hindrance to Graduation		
Advisors	One advisor is available to 400 students		
Remediation	 70% of community college students are referred to remedial math courses 1.7 million students are in remediation Approximately 10% (170,000) remedial students graduate 		
Excessive Degree Requirements	 Most four-year schools have degree requirements more than 120 credits Most two-year schools require more than 60 credits Certificate programs require more than 30 credits 		







Intended Career

A large portion of ACE students are interested in pursuing a STEM career (48.2%), followed by degrees within liberal arts (21.7%). A low proportion of ACE scholars selected a Business or Professional career (Policeman, Teacher, Lawyer, etc.)



ACE Life Preparation

Overall ACE students are prepared for college, but they are also prepared for life in general. High school seniors were asked about their understanding of banking, debt, credit cards, and budgeting. Well over half of ACE students indicated a solid understanding of finances (55.6%).



Appendix C – High School Non-Completers by State

State	18 to 24 Years Old Non-High School Completers	Individual Cost (\$1,180,460 per person)
Alabama	77,561	\$91,557,658,060.00
Alaska	13,013	\$15,361,325,980.00
Arizona	116,890	\$137,983,969,400.00
Arkansas	39,988	\$47,204,234,480.00
California	553,859	\$653,808,395,140.00
Colorado	74,219	\$87,612,560,740.00
Connecticut	42,255	\$49,880,337,300.00
Delaware	13,573	\$16,022,383,580.00
Florida	291,923	\$344,603,424,580.00
Georgia	178,505	\$210,718,012,300.00
Hawaii	11,030	\$13,020,473,800.00
Idaho	21,520	\$25,403,499,200.00
Illinois	169,425	\$199,999,435,500.00
Indiana	113,959	\$134,524,041,140.00
lowa	35,196	\$41,547,470,160.00
Kansas	38,244	\$45,145,512,240.00
Kentucky	60,163	\$71,020,014,980.00
Louisiana	89,504	\$105,655,891,840.00
Maine	13,119	\$15,486,454,740.00
Maryland	67,418	\$79,584,252,280.00
Massachusetts	74,293	\$87,699,914,780.00
Michigan	137,223	\$161,986,262,580.00
Minnesota	64,011	\$75,562,425,060.00
Mississippi	52,610	\$62,104,000,600.00
Missouri	80,340	\$94,838,156,400.00
Montana	14,857	\$17,538,094,220.00



State	18 to 24 Years Old Non-High School Completers	Cost
Nebraska	22,185	\$26,188,505,100.00
Nevada	49,936	\$58,947,450,560.00
New Hampshire	13,790	\$16,278,543,400.00
New Jersey	97,046	\$114,558,921,160.00
New Mexico	40,870	\$48,245,400,200.00
New York	257,748	\$304,261,204,080.00
North Carolina	149,504	\$176,483,491,840.00
North Dakota	8,338	\$9,842,675,480.00
Ohio	157,687	\$186,143,196,020.00
Oklahoma	65,260	\$77,036,819,600.00
Oregon	50,749	\$59,907,164,540.00
Pennsylvania	156,073	\$184,237,933,580.00
Rhode Island	12,711	\$15,004,827,060.00
South Carolina	74,179	\$87,565,342,340.00
South Dakota	13,008	\$15,355,423,680.00
Tennessee	79,014	\$93,272,866,440.00
Texas	463,866	\$547,575,258,360.00
Utah	41,896	\$49,456,552,160.00
Vermont	6,183	\$7,298,784,180.00
Virginia	90,470	\$106,796,216,200.00
Washington	101,432	\$119,736,418,720.00
West Virginia	23,412	\$27,636,929,520.00
Wisconsin	67,174	\$79,296,220,040.00
Wyoming	7,601	\$8,972,676,460.00
Total	4,503,448	\$5,316,140,226,080.00

Data from the American Community Survey (2017), and calculations compiled by Breslow (2012), and Bureau of Labor Statistics (2017).

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