

The Einstein Challenge: Poverty Reduction, Mentoring, and Economic Development



Image courtesy of Genesys Works



TXP, Inc.
1310 South 1st Street #105
Austin, Texas 78704
www.txp.com

Overview

As the Austin area economy continues to grow, the increasing prosperity experienced by many residents is not equally seen in all parts of the community. Over the past few years, the median household income has risen and unemployment rate has returned to pre-recession levels. At the same time, the poverty rate has also increased. Poverty, and its related social costs, is detrimental not only to the people who experience it but also to the continued competitiveness of the entire Austin economy.

The Einstein Challenge is an economic development initiative focused on raising the standard of living in Austin through the creation of a highly skilled workforce that is prepared to meet the challenges of the modern economy. Specifically, The Einstein Challenge is aimed at providing mentoring services to disadvantaged primary and secondary school students expanding their educational and employment opportunities. Its methodology is both an attempt to leverage local private sector strengths for poverty alleviation as well as a recognition that economic and human development increasingly are intertwined. Seen through this lens, the Einstein Challenge programs should be evaluated as investments, with an expected return, rather than simply costs.

The principal purpose of this report is to illustrate the potential benefits of the Einstein Challenge programs, and to calculate the implied rate of return that these initiatives could generate. Viewed in this light, growth in The Einstein Challenge and other similar programs is not simply an expansion of the local social safety net. Rather, it is a prudent – and highly rewarding – investment in creating additional economic opportunities for Austin residents. This kind of “win-win” opportunity is rare in most public policy and finance settings, and should be seized.

In the study that follows, TXP will document the relationship between education levels, income, and social services spending, and will allow an estimate of the impacts of increasing educational attainment on both enhancing income and reducing social safety net requirements. The study will also describe the programs to fall under the Einstein Challenge umbrella. Additionally, it will quantify the consequences of substantially reducing poverty in terms of increased local income and municipal tax revenues, as well as reduced local means-tested social services program spending. Beyond these “first-order” measurements, there are additional local, regional, and national “second order” impacts which will be discussed. Finally, the study will present conclusions and recommendations.

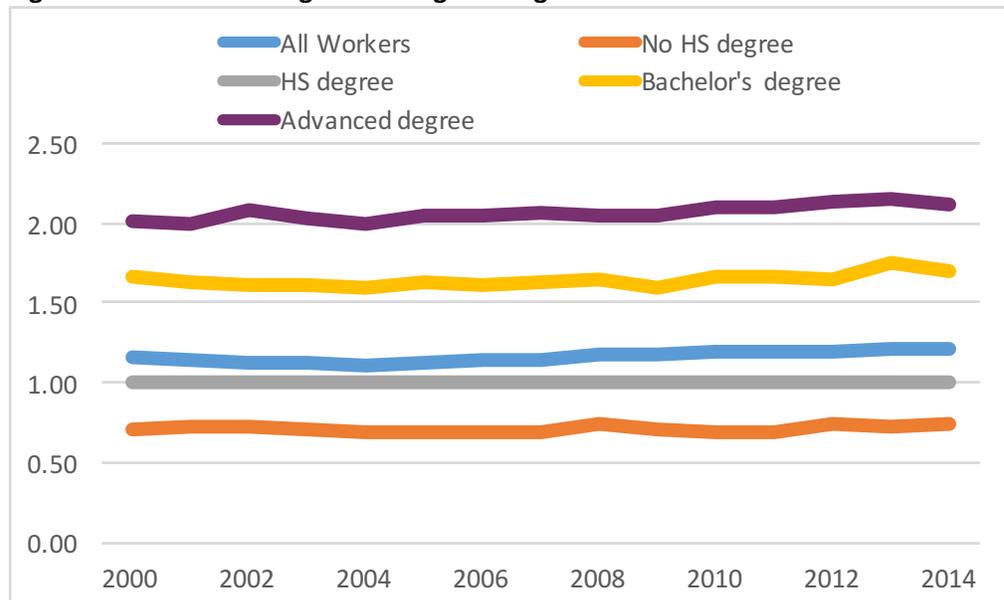
Education, Income, and Race in the Modern Economy

Over the past 50 years, the skillsets and degree requirements in demand by employers has shifted dramatically. Individuals without a college degree, are increasingly at a disadvantage when seeking employment. The Bureau of Labor Statistics calculated that individuals without a college degree earn 25 percent less per week than those with a bachelor's degree. Furthermore, Georgetown University's Center on Education and the Workforce estimates that approximately 60 percent of the 55 million job openings anticipated in the economy by 2020 will require skills beyond a high school education. In an increasingly interconnected economy, the skills gap of individuals at the low end of the educational attainment spectrum is detrimental to the nation's ability to compete in the global economy.

Relationship between Earnings and Skills

Human capital theory describes the roles of education and on-the-job training in the development of job skills, and the corresponding relationship between skills and earnings. Firms pay higher wages to more educated and experienced workers, all else being equal, because their additional skills raise their productivity compared to workers with less education and experience. At the same time, individuals invest in education and training, both by paying the direct costs and by incurring the opportunity costs, in the expectation that they will earn a higher wage in the future. Figure 1 shows the ratio of the average weekly income for individuals with college degrees to that of individuals with only a high school diploma.

Figure 1: Ratio of Earnings for College vs. High School Graduates



Source: Current Population Survey, Bureau of Labor Statistics; TXP, Inc.

As the data shows, over the past fifteen years, college graduates have earned more than one and a half times the wages earned by high school graduates. At the same time, workers without a high school diploma continue to make less than three-quarters of the wage rate earned by high school graduates. In 2014, the average weekly wage was \$1,131 for workers with a Bachelor's degree, \$664 for high school graduates, and only \$491 for workers who did not graduate high school. As a national average, this data includes workers of different experience levels and industries.

The Increasing Importance of Access to Post-Secondary Education

One of the principle determinants of economic success in a modern economy is the ability to acquire, process, and apply knowledge. Educational attainment levels are a proxy for this ability and for economic well-being more generally. Those who are better educated tend to have a greater incidence of knowledge-related skills and abilities, and, as a result, have more employment opportunities and are better compensated.

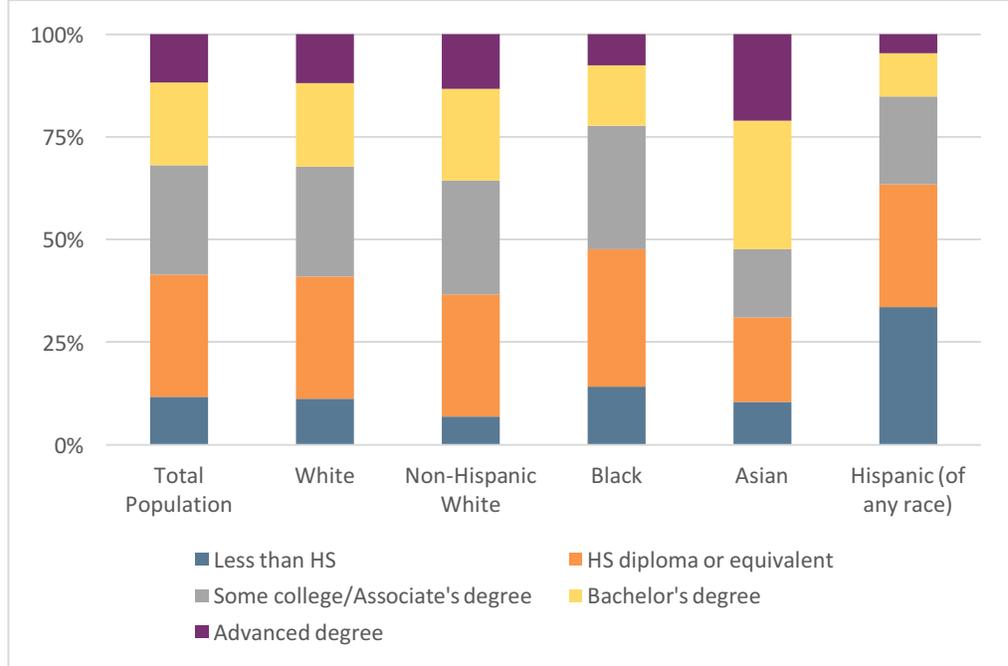
The National Educational Attainment Network estimates that the US loses \$192 billion in GDP in combined income and tax revenue with each cohort of 18-year olds who never complete high school. Annual losses exceed \$50 billion in federal and state income taxes for all 23 million of the nation's high school dropouts of working age.

Inadequate educational opportunities are a very real threat to low income communities as the best jobs in the current economy require higher levels of skill and knowledge than ever before. However, the highest levels of education are not currently attained at an equal rate across all segments of society. In 2014, nearly a third of all Whites had a bachelor's degree or higher level of education. At the same time only 22 percent of Blacks and 15 percent of Hispanics had the same level of education. As advanced skills and higher education are increasingly important for competition in the modern economy's high-skilled workforce, it is necessary to support the opportunity for all individuals, regardless of their racial and ethnic background, to reach these higher levels of educational attainment.

More troubling, the median wage for individuals of different races with the same educational background can vary widely. The overall difference in median wages is greatest between educational levels, with workers who earned less than a high school diploma earning a median wage of \$488 per week compared to workers with a bachelor's degree who earned a median wage of \$1,101 per week. However, at every level of educational attainment, Blacks earn a median wage that between 10 and 20 percent below that of the median for the overall population. Hispanics similarly earn between 5 and 15 percent below the national median wage at each level of educational

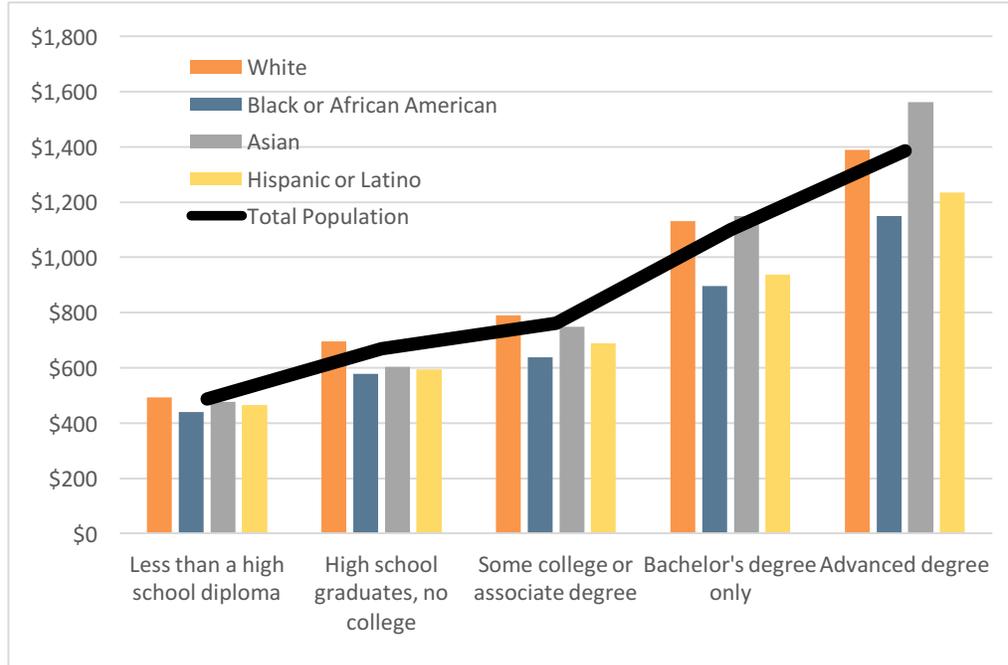
attainment. Even so, across all racial and ethnic backgrounds, increased educational attainment leads to a higher median wage.

Figure 2: Educational Attainment by Race/Ethnicity (2014)



Source: Current Population Survey, US Census Bureau; TXP, Inc.

Figure 3: Median Weekly Earnings, by Educational Attainment and Race/Ethnicity



Source: Bureau of Labor Statistics; TXP, Inc.

Race and Poverty in Austin

While there are several methods used to measure and identify poverty, one of the most widely used is the US Census Bureau's poverty threshold which uses a combination of income, household size, age of householder, and number of children in the household. Using this data, the Department of Health and Human Services determines the poverty guideline or "federal poverty level", an administrative tool which used to determine eligibility for federal assistance programs. In 2014, a family of 4 making \$24,250 or less per year was determined to be poor. By comparison, the national median household income (regardless of household size) was estimated at \$51,759 in 2014.

Figure 4: Federal Poverty Level in 2015

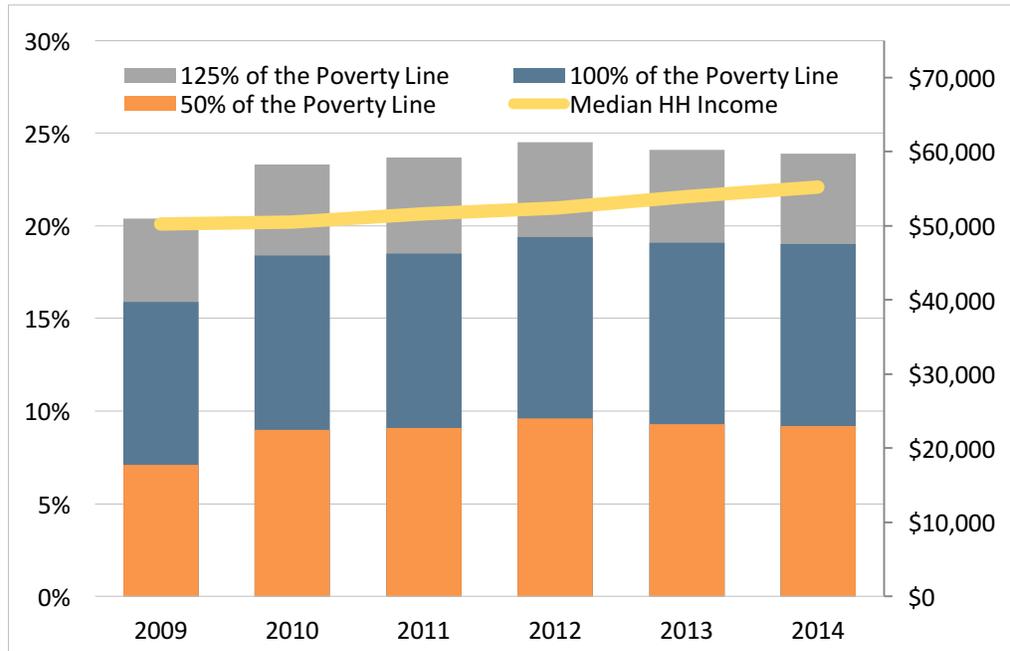
Persons in Family/Household	Income Limit
1	\$11,770
2	\$15,930
3	\$20,090
4	\$24,250
5	\$28,410
6	\$32,570
7	\$36,730
8	\$40,890

Source: Department of Health and Human Services; TXP, Inc.

Using the federal poverty figures figures, the Census Bureau determined that, in 2014, 19 percent of the population of the City of Austin, or 160,532 individuals, lived below the poverty line. In public policy, individuals and households are discussed at different income segmentations with respect to the federal poverty line, that is, what proportion of the population has an income at or below a specific percentage of the poverty line income. The graph that follows (Figure 5) shows the poverty rate for individuals at 50 percent, 100 percent, and 125 percent of the federal poverty rate for the past five years. These groups can be thought of as the "very poor", "poor", and "near poor," respectively.

The proportion of poor residents (or 100 percent of the poverty line) in the City of Austin grew from 16 of the city's population in 2009 to 19 percent in 2014. Over this same period, the median household income for Austin residents grew 9 percent, from just over \$50,000 per year in 2009 to more than \$55,000 in 2014. This indicates that while prosperity in Austin has grown over the past few years, it is not being experienced equally by all groups. This can be seen in both the poverty rate among different racial and ethnic groups in Austin as well as the poverty level in different neighbor hoods.

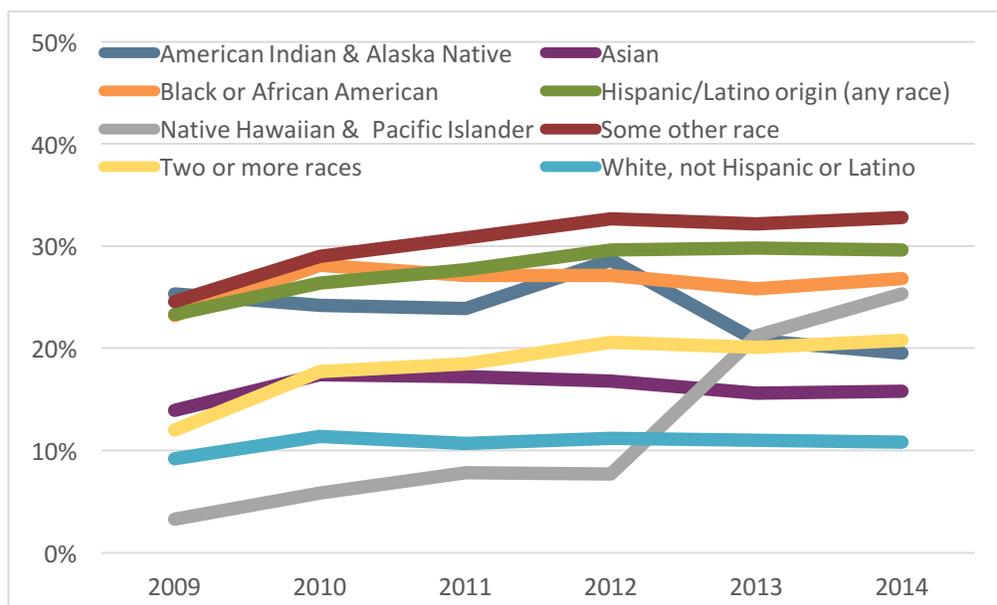
Figure 5: Poverty Rate in the City of Austin (2009 to 2014)



Source: American Community Survey, US Census Bureau; TXP, Inc.

The rising poverty rate in the City of Austin has not impacted all racial and ethnic groups in the same way. For most racial and ethnic groups, the poverty rate has held steady with a slight increase between 2009 and 2014, mirroring overall trends in Austin. Blacks and Hispanics tend to have the highest rates of poverty, with both groups reaching nearly 30 percent in poverty in 2014.

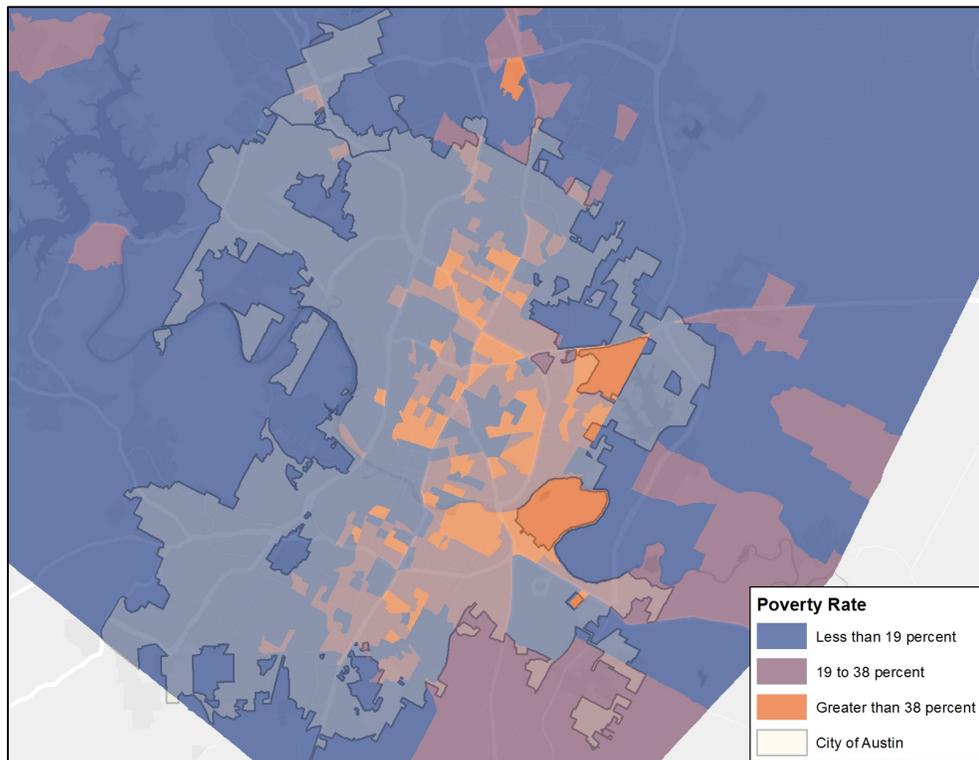
Figure 6: Poverty by Race/Ethnicity in the City of Austin (2009 to 2014)



Source: American Community Survey, US Census Bureau; TXP, Inc.

Poverty in Austin, as in many communities nationwide, has a geographic component. Much of the City and areas to the north and west have poverty rates below that of the City's average. However, neighborhoods along the I-35 corridor, tend to have a poverty rate more than twice the average for the City as a whole. This geographic concentration of poverty can make existing inequality more persistent and poverty reduction efforts more challenging.

Figure 7: Poverty rate in Census Block Groups in the Austin Area (2014)



Source: American Community Survey, US Census Bureau; TXP, Inc.

Mentoring Programs and Workforce Development

The Einstein Challenge is a public-private partnership designed by the City of Austin that incentivizes local companies in the science and technology industries to work with low income students throughout the City. This incentivized educational service will focus on teaching, mentoring, and raising awareness of STEM-related job fields with low income primary and secondary school students in the Austin area. An essential component of the Einstein Challenge's methodology is a ten-year longitudinal study of the return on investment and performance assessment of its outcomes conducted by the University of Texas at Austin's Ray Marshall Center. The funding mechanism for this program will utilize the City of Austin's existing property tax incentive agreement structure. This will help both ensure private sector participation and predictable city government financing.

The Einstein Challenge is designed to leverage the knowledge base of the scientific and technology community in Austin to prepare the least advantaged children to compete for the most in-demand future employment. Through grade level tailored activities such as workplace visits and internships, the Einstein Challenge will provide hands-on training and industry familiarization to inspire and engage low income students who might otherwise not consider a future STEM-related career path. Through its mentoring, tutoring, and familiarizing programs, the Einstein Challenge will help close the social support and opportunity gap between low income Austin students and their more affluent counterparts. The desired outcome is a partnership which will create a generation of children who are leaders in Austin's innovation economy, generating a positive return on investment for the city and its residents. unity

There are a number of organizations working in this space already in Austin. However, the City of Austin has the opportunity with the Einstein Challenge to systematize these efforts to serve the broader Austin-area low income community. In this way, it can act as a catalyst to extend the reach of tested interventions to all impoverished Austin-area young people.

An Existing Example: Genesys Works

An example of a proven program to support the increased education and skill attainment of children in poverty is Genesys Works. With a mission "to enable economically-disadvantaged high school students to enter and thrive in the economic mainstream by providing them the knowledge and work experience required to succeed as professionals," Genesys Works seeks to change students lives by changing their school culture via positive role models, mentoring, and real-world work experience. Their programs focus on changing the mindset of low-income students and providing them with a vision of an alternative educational and career path that they

otherwise may not have even considered. As higher income students tend to be immersed in a supportive environment of purpose, support, and empowerment the Genesys Works model seeks to provide the same for low-income students.

Currently with operations in the Bay Area, Chicago, Houston, and the Twin Cities, Genesys Works has demonstrated that by enabling students to experience life as professionals, by setting high expectations and offering the support structure to achieve them, by making students accountable for their actions and rewarding them for good behavior, by making their studies relevant to their future, and by introducing healthy adult mentoring relationships, students change their behavior and perspective of life. Throughout the program, students realize first-hand that they can thrive in a corporate environment and that pursuing a professional career can help them achieve a much higher standard of living than they are accustomed to. With this knowledge and continuous guidance from the Genesys Works staff, they significantly redefine their long-term goals and set plans to pursue them. In fact, over 95 percent of Genesys Works graduates enroll in college immediately after high school. Most are the first in their family to do so. Moreover, the median income of program alumni working full-time after completing college is \$50,000, which is higher than the national median this educational attainment and age group (25-34 year olds with a Bachelor's degree).

Public-Sector Benefits of Poverty Reduction

The implications of poverty extend across virtually all areas of social activity, including the public sector. It is possible to quantify the consequences of substantially reducing poverty in terms of increased local income and municipal tax revenues, as well as reduced local social services program spending that is means-tested. These impacts are separated into two distinct groups: first order benefits, which would occur immediately upon a decrease in the poverty rate, and second order benefits, or public sector expenditures less directly impacted by poverty rates. The impacts of these programs would accrue at the local, regional, and national level.

First Order Benefits: Income, Tax Revenue, and Means-Tested Social Programs

As has been shown above, the incidence of poverty is not equally distributed demographically, as non-White (Asians, Blacks, and Hispanics) have local poverty rates well above that of Whites. As a result, if the Non-White poverty rate were reduced to equal that of Whites in Austin, 69,491 people (or 41,187 households) would be moved out of poverty.

The City of Austin administers a range of means-tested social services programs that in some way address poverty. A total of 35 programs with FY 2015-16 annual budgets totaling \$16.5 million in client service spending were identified. The activities of these

programs were broadly related to workforce development, transitional housing, victim services/violence prevention, childcare, and financial literacy. Only direct program spending is considered in this \$16.5 million figure; no administrative or labor costs were included.

The majority of the clients served by these programs are below the poverty line. As would be expected, as household income rises, the share of overall the client base declines across all programs. The assumption is that rising incomes will decrease demand/need proportionate to current patterns of usage by household income. In other words, the share of program participants declines sharply as household income increases.

Based on current estimates of poverty levels and derived estimates of average household size for those in poverty, 100% of the poverty level in Austin for a household of 1.7 (the average size for a household in poverty) is \$14,342, with those actually in poverty having an average income of \$7,218, creating a deficit of \$7,124. The table below (Figure 8) outlines the increase in annual income required to reach different milestones above the poverty level. All figures are multiplied against the 41,187 figure above to generate the estimates of additional total income. Average per capita income in Austin is \$32,672. With an average household in poverty size of 1.7, that translates into average household income of \$55,125, a potential increase of just over \$48,000 in income. The City of Austin realizes the equivalent of \$0.0156 in General Revenue for every dollar of income in Austin. The Avoided Program Costs (for means-tested social services) reflect the first-order program savings outlined above. Net annual gain is derived from adding General Revenue to Avoided Program Costs.

Figure 8: City of Austin Gains from Reduced Poverty

Poverty Level	Per Household Income gain	Total Additional income	COA General Fund	Avoided COA Program Costs	Net COA Annual gain
up to 100%	\$7,124	\$293,413,545	\$4,568,266	\$4,354,002	\$8,922,268
125%	\$10,709	\$441,083,563	\$6,867,396	\$5,650,462	\$12,517,858
150%	\$14,295	\$588,753,580	\$9,166,526	\$6,129,603	\$15,296,129
175%	\$17,880	\$736,423,598	\$11,465,656	\$6,608,744	\$18,074,400
200%	\$21,466	\$884,093,615	\$13,764,786	\$6,921,880	\$20,686,666
To Reach HH Avg.	\$48,001	\$1,976,982,851	\$30,780,390	\$7,235,015	\$38,015,405

Note: all figures are expressed in \$2015

To sum up, if the poverty rate experienced by people of color in Austin was reduced to be equivalent to that of the White residents, and those who moved out of poverty earned the average wage, the more than 41,000 individuals who would benefit could realize as much as \$2 billion (\$2015) in additional annual income, contributing to a net gain (via increased tax revenue and reduced means-tested social services program costs) of over \$38 million to the City of Austin each year.

Second Order Benefits: Health, Public Safety, Criminal Justice, and Civic Participation

Beyond the loss of personal income, economic activity, and generated taxes, poverty can have other costs. Individuals in poverty are more likely to be arrested, use drugs, experience violence, and require public assistance. Furthermore, there is wide consensus that the effects of childhood poverty continue throughout adulthood. The National Poverty Center estimates that the cost of childhood poverty, in the term of foregone earnings and productivity, higher crime rates, and lower health outcomes, imposes a social cost equivalent to nearly \$500 billion per year or approximately 3.8 percent of GDP.

These are not the only possible costs to poverty, but they are likely to be the largest and are those that are not easily captured by the metric of lost wages. Poor health and increased criminal behavior impose large social costs, beyond that of the lost earnings of a sick, disabled, or incarcerated individual. Each of these social costs has a wide variety of causes, beyond a person's income level, which makes it difficult to specify exactly how mitigated these costs would be by an overall reduction in poverty.

Healthcare Impact

People in poor communities are both more likely to be less healthy and have less access to medical care than their more affluent neighbors. These can be mutually reinforcing, as decreased access to quality medical care can lead to delaying treatment until a minor health complaint becomes a medical emergency. Without regular preventative care or adequate follow-up care, these individuals are both more expensive to treat and more likely to be readmitted for future complications once they have been seen in a hospital. High school dropouts have higher rates of cardiovascular illnesses, diabetes, and other ailments which require an average of \$35,000 in annual healthcare costs. At the same time, college graduates require approximately \$15,000 worth of annual healthcare. On average, a 65-year-old person with a high school diploma has a better health status than a 45-year-old person who dropped out in the 10th grade. The National Poverty Center estimates that poverty raises direct expenditures on health care by about \$22 billion each year.

More than the increased cost of health care, the impact of worsened health outcomes can be measure in quality of life as well as premature death. For example, The National Education Access Network estimates that high school dropouts have a life expectancy that is 9.2 years shorter than high school graduates. Similarly, health-related losses or the estimated 600,000 high school drop outs in 2004 totaled at least \$58 billion, or nearly \$100,000 per student. Further, a Centers for Disease Control and Prevention study conducted by University of Wisconsin researchers reviewed trends in premature death at the county level in the US. It found that the overall rate of death before the age of 75 was 417 deaths per 100,000. However, in low income counties, the average was 480 deaths per 100,00 while in higher income counties the premature death rate was 345 per 100,000.

The metric most typically used for this analysis is the “quality-adjusted life years” (QALYs), which are essentially a measurement of life expectancy adjusted for the effect of illness or disability on quality of health. In this way the QALY measurement captures both mortality and morbidity in a single metric. For example, the QALY measurement can capture the difference between living for 10 years as a healthy adult and those same 10 years in a coma. The National Poverty Center estimates that the “health capital” loss due to childhood poverty is \$149 billion per year. This represents approximately 1.1 percent of GDP and captures the economic value of lost quantity and quality of life, but does not include lost earnings.

Public Safety and Criminal Justice Impact

The United States has the highest rate of incarceration in the world, with more than 2.2 million prisoners or 730 prisoners for every 100,000 citizens. Public expenditures on corrections is the fastest-growing budget item or states behind Medicaid. A report by the Vera Institute of Justice found that the annual per prisoner cost of the criminal justice system ranged from approximately \$14,000 per prisoner to more than \$60,000 per prisoner, depending on the state. Unfortunately, the same report found that the cost per prisoner has little to do with cost efficiency, effectiveness, or return to the community. The most effective way to decrease the cost of the criminal justice system is to decrease the rate off criminal behavior.

The National Education Access Network estimates that a one-year increase in the average years of school for high school dropouts would have a significant reduction in violent crime. In a study comparing criminal activity before and after states enacted compulsory school laws, it was estimated that it would reduce murder and assault rates by almost 30 percent, motor vehicle theft by 20 percent, arson by 13 percent, and burglary and larceny by about 6 percent. Moreover, in a study of the economic costs of childhood poverty, researchers at the National Poverty Center found that low childhood

income doubles the likely hood that individuals commit and report costly crimes, relative to children growing up in families with incomes around twice the poverty line. This study further estimated the overall annual cost of crime in the US due to childhood poverty at approximately \$170 billion, or 1.3 percent of GDP.

The impact of criminal behavior goes beyond that of the cost of crime and victimization. Incarceration has long lasting effects on employability and average incomes. Not only is poverty a factor in criminal behavior, but incarceration further contributes to a person and community's impoverishment perpetuating a negative cycle of poverty and incarceration. A criminal record creates employment barriers, reduces earnings, impedes access to public benefits, and disrupts a community's social network.

Civic Participation Impact

Not only is increased educational attainment important for economic growth through the generation of human capital, it is essential for the creation of social capital as well. A person's overall enfranchisement, or their personal stake in society, closely mirrors their educational level. An individual with a college degree is more likely to be aware of current political issues, knowledgeable about those issues, and participate in elections and other political activities than a less educated individual.

Conclusions

Expenditures on poverty reduction and increasing educational attainment, such as those included in the Einstein Challenge, should be viewed as investments which generate first-order returns over time in the form of increased economic productivity, rising incomes, greater tax revenue, and reduced public expenditures on social programs. The quantitative analysis of these factors finds that aligning the Non-Anglo poverty rate in the Austin area with the Anglo rate would create billions of dollars in additional household income, generating a net gain of tens of millions of dollars for the City of Austin (via new tax revenue and avoided social services). For any given individual, these results could be conservative; with an average annual technology wage in Austin of approximately \$100,000, individuals who go on to STEM careers could double the associated tax revenue gain to Austin, as well as obviously no longer needing social services. These findings should not be viewed as a forecast of what will occur, but rather an illustration of the gains that could accrue at a high level of program success. Beyond these benefits, it is also likely that poverty reduction will yield improved health outcomes (and decreased healthcare costs), lower rates of criminal behavior, and stronger social cohesion and civic participation. Clearly, the overall cost-benefit of investing in enhancing workforce capacity via targeted efforts to change the trajectory of impoverished young people could be highly positive.

A mature technology eco-system makes Austin in particular is ripe for efforts of this type. The primary competitive advantage an area can possess is a well trained, educated labor force. Given that knowledge, especially embodied in technology, is a primary component of the overall value created in many firms, it follows that, as a general rule, that technology companies require better-educated workers than in more traditional industries. Furthermore, the innovation process in these industries demands a certain level of education. It is difficult to create the next generation of microchips if you do not first know how existing microchips work.

While it is absurd to suggest that everyone must have an advanced degree in order to function in the modern economy, it is evident that a more complex and competitive economic environment requires a greater commitment to education and training. The process of skill development begins in early childhood, and continues throughout an individual's lifetime, including their participation in formal education and ongoing job training. Intervention to assist this process at virtually any point has been shown to have positive outcomes, as quality child care programs, education enrichment, higher education preparation, job training, and literacy are all designed to facilitate the cognitive, social, emotional, and interpersonal skills necessary for success in the modern workforce. This continues on into adulthood, where the impact of higher education is equally compelling. The results are clear; not only do these programs benefit the participants and the organizations that ultimately employ them, but they provide a positive financial return to the public sector as well. As a result, the case for strengthening these programs seems evident.





Legal Disclaimer

TXP reserves the right to make changes, corrections, and/or improvements at any time and without notice. In addition, TXP disclaims any and all liability for damages incurred directly or indirectly as a result of errors, omissions, or discrepancies. TXP disclaims any liability due to errors, omissions, or discrepancies made by third parties whose material TXP relied on in good faith to produce the report. Any statements involving matters of opinion or estimates, whether or not so expressly stated, are set forth as such and not as representations of fact, and no representation is made that such opinions or estimates will be realized. The information and expressions of opinion contained herein are subject to change without notice, and shall not, under any circumstances, create any implications that there has been no change or updates.