Anticipated Return on Investment for a "College for All" Scholarship Program in the Rockford Public Schools[1]

Place-based universal college scholarship ("college for all") programs are emerging in cities across the U.S. as a strategy for increasing both human capital and economic development. The W.E. Upjohn Institute for Employment Research has identified 22 programs in 12 states that provide financial resources for public school graduates to pay for education beyond high school, regardless of family income (see Attachment A)[2]. Although these programs vary in their funding source, residency and academic requirements, and scholarship amounts, they share the premise that a high school diploma is no longer sufficient for success in today's globalized economy. The promise of a college scholarship can serve as a "game changer" by motivating students to higher academic achievement and parents to support college and career readiness.

Rockford Public Schools has approached Northern Illinois University to assist in developing a return on investment (ROI) methodology for estimating the impact of adopting a college for all program in Rockford. The methodology used to estimate an ROI of 131.81 to 1 is described in this paper. Using a number of assumptions, this analysis concludes that **for a hypothetical cohort of 100 Rockford public high school students that would not otherwise have gone to college, for every dollar invested in a Rockford college for all program, an estimated $131.81 would be generated in additional lifetime earnings, increased local expenditures, and avoided costs of social programs and incarceration.**

Five basic program assumptions were used in this analysis:

1. All public school students are eligible – there is no needs-based financial requirement or limitation on the number of students per family.
2. The financial benefit students receive is a grant that requires no repayment.
3. Students have a generous period of time, e.g. 10 years, in which to use their financial benefit.
4. Students may attend any two-year public institution in Illinois.
5. The focus of the ROI is on students who are attending college as a result of the college for all initiative and who otherwise would not pursue postsecondary education.

These and other assumptions made below are consistent with the features of other college for all programs and are intended to generate a conservative estimate of ROI. They are also made explicit for purposes of reproducing or modifying the ROI calculations. While other college for all programs allude to ROI, none have made their methodology explicit. However, descriptions of benefits associated with college for all initiatives are extensive and occur at the individual, school, and community levels. Examples of these follow.

Individual benefits

- Improved access to jobs that pay well, have benefits, and offer career mobility

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[1] This analysis was prepared by Diana L. Robinson, Director of the Center for Governmental Studies at Northern Illinois University (NIU). Valuable input was provided by Marilyn Bellert, Director of NIU's Center for P-20 Engagement: Rena Cotsones, NIU's Assistant Vice President for Regional Engagement in Rockford; and Norman Walzer, Senior Research Scholar with NIU's Center for Governmental Studies.

[2] http://www.upjohn.org/Research/SpecialTopics/KalamazooPromise/PromiseTypeScholarshipProgramsSource

- Incomes that support family formation
- Access to a business climate hospitable to knowledge workers and entrepreneurs
- Avoidance of significant financial debt upon graduation

P-12 school benefits

- Increased parental interest and involvement in their children's education
- Increased school attendance
- Increased quality of academic performance
- Increased expectations of students by teachers
- Increased volunteerism (e.g., mentoring and tutoring) from the community in the schools

Community benefits

- Expanded pool of highly educated workers
- Expansion or relocation of businesses due to the community's commitment to education
- Access to better jobs by under- and unemployed workers
- Increased economic self-sufficiency and expenditures in the local economy
- Increased tax contributions
- Reduced crime
- Avoided costs associated with public services and corrections
- Increased socioeconomic integration resulting from population influx

Calculating the "Return" Component of ROI

Quantifying the benefits for purposes of calculating ROI of college for all scholarship funds is challenging due to the lack of output or impact data from existing programs. In addition, variations in program, student, and community characteristics limit comparisons across municipalities. Three primary economic impacts may be associated with increased educational attainment: (a) the anticipated lifetime earnings associated with postsecondary education; (b) the multiplier effect associated with consumer spending of increased wages resulting from higher education levels; and (c) avoided costs of social programs and incarceration that are correlated to level of education. Each of these is estimated separately below.

A. Lifetime Earnings

National data are available on median wage by level of educational attainment. However, for purposes of calculating ROI, three considerations must be factored in.

1. The entire lifetime earnings associated with postsecondary education may not be attributed to a college for all program because many of the high school graduates would enter the workforce and find jobs - albeit at lower wages – regardless of the existence of such a program. Rather, it is the *earnings premium* for students who would not otherwise attend college that is the added benefit of the college for all program.

2. Median wage varies by gender and race/ethnicity. The demographic characteristics of high school students in Rockford District 205 must be considered.

3. Earnings are predicated on the particular occupational profile of a community, which correlates to an educational attainment profile. Although it is anticipated that the presence of a college

for all initiative and development of a college-going culture in Rockford will attract new employers and quality jobs to the area, the existing labor market characteristics and associated educational levels were used to project wages.

Step 1. A hypothetical cohort of 100 Rockford public school students was used as the basis for calculating both the return and the investment. It was assumed that this cohort would represent the current racial/ethnic profile of Rockford District 205 high school students, which was calculated using Auburn, Guilford, Jefferson, and Rockford East high schools. The results are presented in Table 1.

Table 1: Racial/Ethnic Distribution of Rockford District 205 High Schools, 2012 Academic Year

Race/Ethnicity	Percent of Total
White	37.9
Black	29.4
Hispanic	23.8
Asian	4.3
Other	4.6
TOTAL	100.0

Source: Illinois State Board of Education eReport Card data

Step 2. The next step was to generate median earnings data by race and ethnicity. This began with the national earnings data presented in Table 2.

Table 2: Median Earnings of Year-Round, Full-Time Workers Ages 25-34, by Race/Ethnicity, Gender, and Education Level, 2008

		High School Graduate	College, No Degree	Associate Degree	Bachelor's Degree
Asian	Female	n/a	n/a	n/a	$52,100
	Male	$31,900	$39,500	n/a	$60,300
Black	Female	$24,500	$28,600	$29,100	$41,000
	Male	$30,000	$34,400	$40,100	$42,500
Hispanic	Female	$23,500	$30,200	$30,100	$41,000
	Male	$29,700	$34,900	$36,900	$45,000
White	Female	$26,500	$28,300	$35,500	$41,500
	Male	$36,300	$39,900	$42,400	$54,200

Note: Sample sizes for the following groups are too small to allow reliable reporting: Asian females with less than a bachelor's degree, Asian males with less than a high school diploma or an associate degree.
Source: Baum, Ma, J., & S. Payea, 2010. *Education Pays: The Benefits of Higher Education for Individuals and Society.* College Board Advocacy and Policy Center. http://trends.collegeboard.org/education-pays.

Step 3. The data in Table 2 document significant earnings differentials based on race/ethnicity and gender. For purposes of estimating ROI, the median wage figures by gender were averaged for each of the racial/ethnic categories. The results are shown in Table 3.

Table 3: Gender-Averaged Median Earnings of Year-Round, Full-Time Workers Ages 25-34 by Race/Ethnicity and Education Level, 2008

	High School Graduate	College, No Degree	Associate Degree	Bachelor's Degree
Asian	n/a	n/a	n/a	56,200
Black	27,250	31,500	34,600	41,750
Hispanic	26,600	32,550	33,500	43,000
White	31,400	34,100	38,950	47,850

Source: Northern Illinois University Center for Governmental Studies, using data from Baum, Ma, J., & S. Payea, 2010. *Education Pays: The Benefits of Higher Education for Individuals and Society.* College Board Advocacy and Policy Center. http://trends.collegeboard.org/education-pays.

Step 4. The earnings premiums associated with these postsecondary educational attainment levels were then calculated by race and ethnicity. As illustrated in Table 4, the median earnings of a high school graduate were subtracted from each of the three higher educational attainment levels. For example, black students who achieved some college but no degree earned a median wage of $31,500 in 2008. Deducting the wage of black high school graduates ($27,250) yields an earnings premium of $4,250 for that additional education.

Table 4: Earnings Premiums of Year-Round, Full-Time Workers Ages 25-34 by Race/Ethnicity and Education Level, 2008

	High School Graduate	Some College, No Degree	Associate Degree	Bachelor's Degree
Asian	n/a	n/a	n/a	$56,200
Black	$27,250	$31,500 → $4,250	$34,600 → $7,350	$41,750 → $14,500
Hispanic	$26,600	$32,550 → $5,950	$33,500 → $6,900	$43,000 → $16,400
White	$31,400	$34,100 → $2,700	$38,950 → $7,550	$47,850 → $16,450

Source: Northern Illinois University Center for Governmental Studies, using data from Baum, Ma, J., & S. Payea, 2010. *Education Pays: The Benefits of Higher Education for Individuals and Society.* College Board Advocacy and Policy Center. http://trends.collegeboard.org/education-pays.

Step 5. The next consideration to factor into the ROI calculation was the occupational profile of Rockford. The larger two-county Boone-Winnebago region was used as the basis for this given the mobility of the Rockford workforce. Occupational projections from the Illinois Department of Employment Security also were used to anticipate where additional employment opportunities were likely to occur. Table 5 presents these data for all levels of educational attainment.

Table 5: Projected Annual Employment in Boone and Winnebago Counties by Education Attainment, 2008 - 2018

Educational Attainment	2008 Employed	2008-18 Growth	Total Projected Jobs
Less than high school	42,868	3,370	46,238
High school diploma or equivalent	70,001	2,955	72,956
Some college, no degree and Postsecondary non-degree award	7,544	959	8,503
Associate's degree	6,873	883	7,756
Bachelor's degree	16,227	1,440	17,667
Master's degree	1,602	247	1,849
Doctoral or professional degree	1,628	230	1,858
TOTAL	146,743	10,084	156,827

Source: U.S. Bureau of Labor Statistics, Illinois Department of Employment Security

Step 6. Focusing on the total jobs represented in the three educational attainment categories targeted in a college for all program (see the shaded rows in Table 5 above) yields a total of 33,926 jobs between 2008 – 2018 that will require a minimum of some college, no degree up to a bachelor's degree. These distribute as follows:

25.0% - Some college no degree and postsecondary non-degree award
22.9% - Associate's degree
52.1% - Bachelor's degree

This distribution was then applied to the hypothetical cohort of 100 Rockford public high school students with the result shown in Table 6. Because data for Asian students suggests that most would pursue a bachelor's degree, it is assumed that there would be no earnings premium for this racial group so the estimated four students in this category are not included. Also, data were not available for students in the "Other" racial/ethnic category. The earnings premium for the five students in the "Other" category was based on the average premium of the other 91 students in the cohort for whom a premium could be estimated. This average of $10,903 was used to calculate their earnings premium.

Table 6: Annual Average Earnings Premium of Post High School Education for Hypothetical Rockford School District 205 High School Graduate Cohort of 100* (columns reflect number of students multiplied by the earnings premium)

	College/No Degree	Associate's Degree	Bachelor's Degree	TOTAL
White (38)	9 x $2,700 = $24,300	9 x $7,550 = $67,950	20 x $16,450 = $329,000	$421,250
Black (29)	7 x $4,250 = $29,750	7 x $7,350 = $51,450	15 x$14,500 = $217,500	$298,700
Hispanic (24)	6 x $5,950 = $35,700	6 x $6,900 = $41,400	12 x $16,400 = $196,800	$273,900
Asian (4)	n/a	n/a	n/a	0
Other (5)	n/a	n/a	n/a	$54,515
TOTAL	$89,750	$160,8800	$743,300	$1,048,365

*Of the 100 students in this hypothetical cohort, 4 are Asian and no earnings premiums could be calculated for them. Another 5 are "Other" racial/ethnic groups with no median earnings data available, so their premium was based on the average of the other 91 students.

Three assumptions are imbedded in Table 6:

1. 100 percent of the college-for-all program graduates were employed
2. All remained in the Boone-Winnebago area and were employed in occupations in proportion to workforce projections.
3. The graduates were employed in occupations that matched their educational attainment.

Step 7: The penultimate step in calculating the earnings premium associated with a college for all program is to project these annual earnings over the lifetime of the cohort. This was done assuming a 2.0% annual increase in wages and salary, the increment reported by the U.S. Bureau of Labor Statistics in 2012 for both civilian and private sector employees.[3] It was further assumed that these college for all beneficiaries would work until age 67, the average expected retirement age identified in a Gallup poll earlier this year.[4]

For the three main postsecondary educational attainment levels for which an earnings premium would accrue, the lifetime earnings were calculated as follows:

- College, no degree – employment beginning at age 20 - $6,894,342
- Associate's degree – employment beginning at age 22 - $11,560,348
- Bachelor's degree – employment beginning at age 24 - $49,919,632
  Subtotal - $68,374,322

As explained in the footnote to Table 5, the remaining five students in the hypothetical cohort that fell into the "Other" racial/ethnic category, and for whom no median wage data are available, were assigned an averaged annual earnings premium of $54,515. Their estimated lifetime earnings total to $3,919,231, and when added to the subtotal above, yields a grand total **of $72,293,553.** This is the total estimated lifetime ***earnings premium*** associated with a representative cohort of 100 Rockford public high school graduates who participate in a college for all program.

Step 8. The final step is to remove from consideration those public high school students who would most likely attend college regardless of a college for all program. The factor used to estimate this is the percentage of Rockford District 205 students who are not low income[5]. According to ISBE, this percentage was 21.3 in the 2012 academic year. Applying this to the result in the preceding step **yields an adjusted total estimated lifetime earnings premium for the cohort of 100 students of $56,895,026.**

B. Income Multiplier

Income multipliers help estimate the economic benefit of additional earnings that are spent on local goods and services. These expenditures reflect the return of earnings to the local economy in the form of payment for expenses. To arrive at a reasonable multiplier, assumptions must be made about spending patterns of both the college for all participants and the local businesses. For purposes of this ROI analysis, it is assumed that the college for all participants will spend 90% of his/her earnings

[3] http://www.bls.gov/news.release/eci.nr0.htm
[4] http://www.gallup.com/poll/154178/expected-retirement-age.aspx
[5] Low income students come from families receiving public assistance, live in institutions for neglected or delinquent children, are in foster homes, or are eligible to receive free or reduced-price lunches.

premiums, and approximately 80% of those expenditures will be in Illinois. The third assumption is that the businesses providing the goods and services obtain one-half of their goods from out-of-state.

These assumptions may be plugged into an income multiplier formula of 1/1 – (x) (y) (z) where x is the percentage of the new income a consumer will spend, y is the percentage of consumer expenditures made in state, and z is the percentage of business expenditures made in state.[6] This results in the following calculation: 1 / 1 – (.9)(.8)(.5) = 1.56. Applying this multiplier to the $56,895,026 in total lifetime earnings premium estimated above yields an economic impact of $88,756,240. Because this includes the original earnings premium, removing those earnings yields a net impact of approximately $31,861,215.

C. Avoided Costs of Social Programs

A 2009 study conducted by the RAND Corporation [7] concluded that lifetime public expenditures on social programs and incarceration decreased as individuals' educational attainment increased. Based on this study, reductions in both categories of spending were estimated by the authors of the College Board's 2010 *College Pays* report for two educational attainment levels: persons with some college and those with a bachelor's degree. Given that the aim of the proposed college for all program is for participants to obtain an associate degree, the estimates for people with some college were used as the more conservative set of figures.

These estimated costs savings are presented below for both social program spending and incarceration spending. As with the previous estimates in this analysis, a hypothetical cohort of 100 Rockford public high school graduates was used to approximate impact. The racial/ethnic distribution used in the preceding tables was also used to calculate these avoided social costs. However, because the *College Pays* estimates vary significantly by gender, the distribution of male and female students also had to be estimated.

School and district data are not readily available by both race/ethnicity and gender, so the 2011 *American Community Survey* of the U.S. Census Bureau was used to determine a reasonable distribution. The number of male and female residents of Rockford between the ages of 18 and 24 with a high school diploma or high educational level was used to calculate the gender breakdown. Of the 12,898 Rockford residents with these characteristics, 50.5% were male and 49.5% were female. These percentages were used to calculate the reductions in lifetime public expenditures shown in Table 7. As in previous tables, an average of the hypothetical cohort was used to estimate the reduction in lifetime public expenditures for the five graduates in the "other" racial/ethnic category.

[6] Coppedge, R.O. and Crawford, T. (2011). "Income Multipliers in Economic Impact Analysis." Las Cruces, NM: New Mexico State University. http://aces.nmsu.edu/pubs/_z/Z-108.pdf.
[7] Carroll, S. and Erkut, E. (2009). "The Benefits to Taxpayers from Students' Educational Attainment." Santa Monica, CA: RAND Education.

Table 7: Estimated Reductions in Lifetime Public Expenditures Associated with Increases in Educational Attainment, in 2010 Dollars, for a Hypothetical Cohort of 100

	Estimated Number for Rockford SD 205	Reduction in *Social Program Spending* for Person with Some College Compared to a High School Diploma	Number of Participants Multiplied by Estimated Reduction in Social Program Spending	Reduction in *Incarceration Spending* for Person with Some College Compared to a High School Diploma	Number of Participants Multiplied by Estimated Reduction in Incarceration Spending
White	19 Male	x $10,900	$207,100	$10,900	$207,100
	19 Female	x $14,500	$275,500	$1,200	$22,800
Asian	2 Male	x $15,700	$31,400	$18,100	$36,200
	2 Female	x $16,900	$33,800	$0	0
Black	15 Male	x $16,900	$253,500	$55,600	$834.000
	14 Female	x $26,600	$372,400	$3,600	$50,400
Hispanic	12 Male	x $12,100	$145,200	$30,200	$362,400
	12 Female	x $18,100	$217,200	$2,400	$28,800
Other*	5 Total	x $16,169	$80,845	$16,228	$81,142
TOTAL	**100**		**$1,616,945**		**$1,622,842**

Source: Source: Northern Illinois University Center for Governmental Studies, using data from Baum, Ma, J., & S. Payea, 2010. *Education Pays: The Benefits of Higher Education for Individuals and Society.* College Board Advocacy and Policy Center. http://trends.collegeboard.org/education-pays.

The estimated minimum benefit associated with reduced public expenditures for a hypothetical cohort of 100 individuals who pursue further education if $1,616,945 in social programs including welfare, housing benefits, food stamps, Supplemental Security Income, Medicare, Medicaid, unemployment insurance, and Social Security. Another $1,622,842 in state and local incarceration cost savings is estimated to result from this cohort participating in the college for all program.

Calculating the Investment Component of ROI

Estimating the value of the grants that will be awarded to students participating in a college for all type program in Rockford also necessitated making three assumptions:

1. 100% of the cost of tuition and fees was used as the amount of the college for all grant. NIU was used for pricing a four-year institution and Rock Valley College was used as the basis for two-year institutions.
2. Students participating in the college for all program were awarded the full amount of the grant regardless of their family income.
3. Only tuition and fees are covered. However, it is important to note that room and board, books, and supplies' costs may be nearly as high or more costly than tuition and fees. For example, at NIU, tuition and fees for the 2011-12 academic year were $12,422. On-campus room and board, books, supplies, and related living expenses were $14,938.[8]

Using the estimated educational attainment breakdown from Table 5 (i.e., 22 students pursue college with no degree, 27 pursue an associate's degree, and 51 pursue a bachelor's degree), "investment"

[8] http://nces.ed.gov/collegenavigator

figures may be generated. The multi-year tuition and fee costs used below are based on projected in-state/in-district estimates available from the National Center for Educational Statistics' College Navigator website and assume matriculation in the 2014-15 academic year. Although it is anticipated that 51 of the hypothetical cohort of 100 will go on to complete a bachelor's degree, only the investment of a two-year associate's degree is included in this calculation.

College with no degree (assumes one year of community college): 22 students x $3,712 = $81,664
Associate's and bachelor's degrees: 83 students (includes the five "other" racial/ethnic students) x $7,425 = $616,275
Total: $697,939

Calculating ROI

The three main sources of economic benefit of the college for all program include:

- $56,895,026 in adjusted total estimated earnings premium
- $31,861,215 in economic benefit resulting from additional earnings that are spent on local goods and services (i.e., the income multiplier)
- $1,616,945 in avoided social program costs
- $1,622,842 in state and local incarceration cost savings

The total benefit from these three sources is an estimated $91,996,028 for the hypothetical cohort of 100 Rockford public high school graduates. Dividing this by the estimated investment of $697,939 yields a return of 131.8 to 1. That is, for every dollar invested by the college for all program, an estimated $131.81 would be generated in lifetime earnings, increased local expenditures, and avoided costs of social programs and incarceration.

This estimated ROI could be influenced by numerous factors. For example, the ROI could be ***increased*** If the program were to limit the grant award to the financial gap between family means and college cost, thereby requiring that families assume as much of the cost as they are able. Another factor that could be altered is to assume annual salary increases greater than 2 percent.

Conversely, ROI may be ***decreased*** by including living expenses as part of the grant award which would result in a higher benefit per student. However, such a provision may also eliminate a barrier to college for many low income students. ROI may also be decreased by applying an unemployment factor, a less than 100% labor force participation rate, mortality rates, and/or delays in finding employment for recent college graduates.

Additional Considerations

The experiences of other college for all programs provide Rockford with an opportunity to maximize its return on its investment in such an initiative. Following are a number of design considerations that the Rockford Public Schools may wish to take into account in planning its own college for all program. Some of these suggestions are already under discussion as part of the College and Career Academies programs.

1. Engage the entire community in creating a college and career readiness culture. As part of this, a college for all scholarship expectation could be incorporated into the College and Career Preparatory Academies.
2. Provide students with information about the scholarship early in their education so they and their families can begin planning.
3. Provide students and their parents/guardians with labor market information that will help them make smart career choices. Individual career plans created for the College and Career Academies should be included as a requirement of the scholarship application process.
4. Create an advisory board that includes business representatives who can talk about new positions they expect in the future.
5. Incentivize students to pursue college and career pathways that are aligned with high demand occupations in their community.
6. Provide current information on the variety of degree and certificate options that offer flexibility for students' career choices and address the range of workforce needs.
7. Offer mentors and tutors from corporate and postsecondary institutions, as intended for the College and Career Academies, to help first-generation college-going students, those who are struggling academically, and students needing more information to help with choices.
8. Provide supports for students demonstrating social and/or behavioral issues.
9. Make the college for all application process as simple as possible.
10. Include room and board, books, and supplies in addition to tuition and fees as eligible costs.
11. Support year-round attendance (including summer semesters) for students that wish to accelerate their education program.

Attachment A

Promise-Type Scholarship Programs

- Arkadelphia Promise (Arkadelphia, AR)
- Bay Commitment (Bay City, MI)
- College Bound Scholarship Program (Hammond, IN)
- Denver Scholarship Foundation (Denver, CO)
- Detroit College Promise (Detroit, MI)
- Educate and Grow Scholarship Program, Northeast State Community College (Blountville, TN)
- El Dorado Promise (El Dorado, AR)
    - El Dorado Promise Impact January 2010
- Great River Promise Scholarship (Phillips County, AR)
- Hopkinsville Rotary Scholars, Hopkinsville Community College (Hopkinsville, KY)
- Jackson Legacy (Jackson, MI)
- Legacy Scholars (Battle Creek, MI)
- Leopard Challenge (Norphlet, AR)
- Michigan Promise Zones
    - Baldwin Promise (Baldwin, MI)
- Muskegon Opportunity (Muskegon, MI)
- New Haven Promise (New Haven, CT) Note: This is not a universal program.
- Northport Promise (Northport, MI)
- Peoria Promise (Peoria, IL)
- Pittsburgh Promise (Pittsburgh, PA)
- Promise for the Future (Pinal County, AZ)
- Say Yes to College (Syracuse, NY)
- School Counts Program, Madisonville Community College (Hopkins County, KY)
- Sparkman Promise (Sparkman, AR)
- Ventura College Promise (Ventura County, CA)

http://www.upjohn.org/Research/SpecialTopics/KalamazooPromise/PromiseTypeScholarshipProgramsSource:

Source: Miller-Adams, Michelle. 2010. “Can Universal, Place-Based Scholarships Reduce Inequality? Lessons from Kalamazoo, Michigan.” Presented at the Midwest Political Science Association conference, Chicago, IL, April 22-25. http://research.upjohn.org/confpapers/14