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Contribution of Fort Berthold Community College to North Dakota's Economy in 2012



Randal C. Coon
Dean A. Bangsund
Nancy M. Hodur



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North Dakota State University

Fargo, North Dakota 58108

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TABLE OF CONTENTS

	<u>Page</u>
List of Tables.	ii
List of Figures.	ii
List of Appendix Tables.	ii
Executive Summary.	iii
Background of Fort Berthold Community College.	2
Methods.	2
Results.	3
Student Economic Impact.	4
Value of a College Education.	8
Conclusions.	12
References.	14
Appendix	17

LIST OF TABLES

	<u>Page</u>
Table 1. Direct, Secondary, and Total Economic Impacts for Fort Berthold Community Colleges' Operations, FY2012.....	4
Table 2. Direct Economic Impacts for Student Living Expenses, Fort Berthold Community College, Summer School 2011 and Academic Year 2011-2012.....	6
Table 3. Direct, Secondary, and Total Economic Impacts for Fort Berthold Community College Student Spending, Academic Year 2011-2012.....	7

LIST OF FIGURES

	<u>Page</u>
Figure 1. Unemployment Rate by Level of Education in the United States, 2011.....	11
Figure 2. Medium Annual Earnings of Adults Age 25 and Older, Full-time Workers in the United States, 2011.	11
Figure 3. Ratio of Expected Lifetime Earnings Relative to High School Graduates in the United States, by Education Level, 2005.....	12

LIST OF APPENDIX TABLE

	<u>Page</u>
Table 1. Standardized AKIS Student Enrollment and Credit Hours Reporting Data, Fort Berthold Community College, Summer School 2011 and Academic Year 2011-2012.....	18

Executive Summary

The North Dakota Association of Tribal Colleges (NDATC) has five Tribal Colleges located in the State with the first college established in 1969. These colleges were founded to provide post-secondary cultural-based educational opportunities on several of North Dakota's Native American reservations and for the urban Indian population in the Bismarck-Mandan area. Expenditure and enrollment data provided by each respective college were used to estimate the economic impact for each of the individual colleges and five Tribal Colleges collectively. A previous report provided the economic impact for the combined NDATC colleges, but this report will focus on Fort Berthold Community College, which serves the Three Affiliated Tribes (Mandan, Arikara, and Hidatsa). Student living expenses also has an economic impact beyond that of Fort Berthold Community College. Student spending was used to estimate the economic impact resulting from student living expenses.

Expenditures by the colleges constitute the direct, or first-round, economic effects. Fort Berthold Community College spent over \$4 million in North Dakota in Fiscal Year (FY) 2012. Over half of these expenditures (direct effects) (\$2.1 million) were to the *Households* Sector, primarily for wages and salaries. Total economic impact of Fort Berthold Community College was over \$12 million in FY2012. The highest level of total economic impact business activity was in the *Households* Sector (economy-wide personal income) with \$5.0 million, followed by *Retail Trade* Sector with \$3.2 million. Total employment at Fort Berthold Community College was 55 full-time and 19 part-time workers. Levels of business activity generated by Fort Berthold Community College's expenditures would support an additional 35 secondary jobs in various sectors of the North Dakota economy.

Student spending also creates an economic impact in addition to the impacts associated with the college. Expenditures by full-time and part-time students for personal items, recreation, books, supplies, and room and board amounted to \$1.4 million in the 2011-2012 academic year. Applying these expenditures to the North Dakota Input-Output Model provided an estimate of the total economic impact associated with student spending. Total economic impact from student spending was \$3.5 million (\$1.4 million in direct impacts plus \$2.1 million in secondary impacts). Student spending would generate enough economic activity to support 6 secondary (indirect and induced) jobs in North Dakota.

Fort Berthold Community College and its students have substantial impacts on their local economy. The college also provides valuable post-secondary educational programs. Fort Berthold Community College provides both social and economic benefits to the North Dakota community that is home to this college. Measuring the social value of a college degree is difficult, but the economic value can be identified in terms of lower unemployment, higher median annual earnings, and a higher total lifetime income.

Contribution of Fort Berthold Community College to North Dakota's Economy in 2012

Randal C. Coon, Dean A. Bangsund, and Nancy M. Hodur*

North Dakota is home to numerous institutions that provide higher education opportunities. The North Dakota University System (NDUS) has 11 colleges and the North Dakota Association of Tribal Colleges (NDATC) consists of 5 institutions. One of the colleges that comprise the North Dakota Association of Tribal Colleges is Fort Berthold Community College (FBCC) which serves the Three Affiliated Tribes (Mandan, Arikara, and Hidatsa). The Tribal Colleges are relatively new to the state's educational system with FBCC being established in 1973. In addition to educational opportunities for students, FBCC has an economic impact on the community where it is located. Fort Berthold Community College makes expenditures for goods and services purchased in the state, hires employees to staff their institutions, and constructs campus buildings for the purpose of providing educational opportunities. The purpose of this study is to estimate the economic impact FBCC's operations have on the North Dakota economy. A previous study analyzed the economic impact of the 5 Tribal Colleges collectively (Coon et al. 2013), but this report will focus on the economic impacts of Fort Berthold Community College individually.

The North Dakota University System has sponsored economic impact assessments for Fiscal Year (FY) 1999 and 2004 (Leistritz and Coon 2005), FY2006 (Leistritz and Coon 2007), FY2008 (Leistritz and Coon 2009), FY2009 (Bangsund et al. 2010), and FY2011 (Coon et al. 2012a). While a combined economic impact analysis for the five Tribal College was the first of its type to be completed, individual colleges have sponsored economic impact analyses including Cankdeska Cikana Community College for FY2008 (Leistritz and Bangsund 2008), Sitting Bull College for FY2009 (Leistritz and Bangsund 2010), and United Tribes Technical College for FY2010 (Gipp et al. 2011). This analysis is intended to be a parallel study to those conducted for the North Dakota Association of Tribal Colleges and the North Dakota University System.

Similar methods, analysis, and format will be used so this document will contain corresponding information. This report will provide an estimate of the economic impact of Fort Berthold Community College and its student spending. Also, a section of this report will provide selected background information about the college. The background information will include a history of the school, campus location, academic areas of study, degrees granted, and the mission of the college. Consistent with other studies, an economic impact analysis also will be completed for each of the other four Tribal Colleges and presented in separate reports.

In addition to the traditional economic impact analysis including direct and secondary effects resulting from expenditures by the colleges and their students, this study will include a brief examination of the value of a college education. No original research was conducted for this topic, but a comprehensive review of published literature was conducted to summarize the social and economic benefits of a college education. This information is not specific to any of the Tribal Colleges, but rather provides salient information regarding a college education in general. Extensive research has been conducted on the value of a college degree and selected statistics will be presented to highlight the economic value of a post-secondary education.

* The authors are, respectively, research specialist, research scientist, and research assistant professor in the Department of Agribusiness and Applied Economics, North Dakota State University, Fargo.

Background of Fort Berthold Community College

Fort Berthold Community College was founded by the Three Affiliated Tribes of the Fort Berthold Reservation at New Town, ND. The first classes were offered in 1973 and were on an extension basis with coordinating institutions. The cooperating colleges included University of Mary, Minot State, and the University of North Dakota-Williston. FBCC added academic programs and was granted accreditation in 1987 by the North Central Association of Colleges and Schools. FBCC was one of the 29 Tribal colleges that was designated as a “1994 Tribal Land Grant College”. The mission statement for the college states that the Fort Berthold Community College will provide quality cultural, academic, and vocational education and services for the Mandan, Hidatsa, and Arikara Nation. FBCC is a commuter college which does not provide any on-campus housing, but the Early Childhood Learning Center provides childcare. FBCC offers cafeteria services for the commuter students and a fitness center is located on the campus. Student tutorial services are available to students that request academic assistance.

FBCC offers academic programs that grant Bachelor of Arts Degrees, Bachelor of Science Degrees, Associate of Arts Degrees, Associate of Science Degrees, Associate of Applied Science Degrees and Vocational Certificates of Completion. Bachelor of Science Degrees are available for elementary education and environmental science. A Bachelor of Arts Degree is offered in Native American studies. Eight Associate of Arts Degrees are offered for business administration/management, addictive studies, early childhood education, elementary education, human services, liberal arts, Native American studies, and public/Tribal administration. Five Associate of Science Degrees programs offered are for environmental science, mathematics, pre-engineering, science, and agriculture. FBCC offers Associate of Applied Science Degrees in 10 fields of study and grants Vocational Certificates in 14 fields (e.g., building maintenance, home health care, technician, welding). In 2012, FBCC had 309 full-time and 130 part-time students enrolled in classes and employed 55 full-time and 19 part-time workers.

Methods

In-state expenditures for Fort Berthold Community College comprise the direct economic impacts, or first-round effects. Data provided by FBCC were used to estimate the direct impacts. The member colleges of the NDATC do not subscribe to a common accounting and reporting system, and as a result, the FY2012 data from each college were not available in a standardized format. The data were reconciled to provide consistent and uniform in-state expenditures, which were allocated to industrial categories, or sectors, defined by the North Dakota Input-Output Model (Coon et al. 2012b). These expenditures included both outlays for capital improvements and general campus operations. Several of the individual colleges were involved in on-going building projects. The North Dakota Input-Output Model was previously used to estimate the economic impacts for the 5 combined Tribal Colleges (Coon et al. 2013) and the North Dakota University System (Coon et al. 2012a) and will also be used for this analysis.

The North Dakota Input-Output Model was used to estimate the secondary economic impacts based on Fort Berthold Community College’s expenditure data. The North Dakota Input-Output Model consists of interdependence coefficients, or multipliers, that measure the level of business activity generated in each economic sector from an additional dollar of expenditures in a

given sector. A sector is a group of similar economic units, (e.g., firms engaged in retail trade make up the *Retail Trade* Sector). For a complete description of the input-output model, see Coon et al. (1989). The model estimates the changes in total business activity (gross receipts) for all sectors of the area economy resulting from the direct expenditures associated with Fort Berthold Community College. Increased business volumes are used to estimate secondary employment and tax revenues based on historic relationships. The procedures used in the analysis are similar to those used in estimating the impact of other facilities and activities in the state (Leistritz 1995; Bangsund and Leistritz 2004) and the North Dakota University System (Coon et al. 2012a). Empirical testing has confirmed the model's accuracy in estimating changes in levels of economic activity in North Dakota; over the period 1958-2011, estimates of statewide personal income derived from the model averaged within 10 percent of comparable values reported by the U.S. Department of Commerce (Coon et al. 2012c, Bureau of Economic Analysis 2012).

This analysis will also include the economic impact of student living expenses. Student spending has an economic impact beyond that of the college's operations. Estimated student budgets for 2011-2012 academic year were available from the North Dakota Career Resource Network (2012). Total student spending was estimated using enrollment numbers provided by each individual college. Student living expenditures are the direct economic impacts, and provide the data needed to estimate the total economic impact. The direct and total economic impact of student spending will be presented separately from the impacts associated with FBCC's operations.

Results

Fort Berthold Community College's expenditures to North Dakota entities for FY2012 totaled \$4.2 million (Table 1). Total in-state expenditures for FBCC's operations were provided by the college. When expenditures were allocated to the North Dakota Input-Output Model sectors, the largest amount went to the *Households* Sector (e.g., payrolls), followed by outlays to the *Retail Trade and Finance, Insurance and Real Estate* Sectors. Also, there were significant levels of spending in the *Professional and Social Services*, and *Business and Personal Services* Sectors. When the North Dakota Input-Output Model coefficients (multipliers) were applied to the direct impacts, secondary impacts were estimated to be \$8.4 million in FY2012. The largest secondary impacts occurred in the *Households* and *Retail Trade* Sectors. Total (direct plus secondary) economic impacts totaled \$12.6 million in FY2012. Total economic impact for the FBCC would generate business activity in the *Households* Sector (personal income) of \$4.9 million and retail sales of \$3.2 million.

Fort Berthold Community College provided employment for 55 full-time and 19 part-time workers. Levels of business activity resulting from FBCC's spending would support an additional 35 FTE secondary (indirect and induced) jobs in various sectors of the local and state economy. These levels of economic activity would be expected to lead to increased sales and use tax revenues of \$148,000, personal income taxes of \$75,000, and corporate income taxes of \$21,000. In FY2012, Fort Berthold Community College had a measurable impact on the local and state economies.

Table 1. Direct, Secondary, and Total Economic Impacts for Fort Berthold Community Colleges' Operations, FY2012

Sector	Direct	Secondary	Total
-----\$000-----			
Construction	- -	313	313
Communication & Public Utilities	226	471	697
Retail Trade	598	2,601	3,199
Finance, Insurance, Real Estate	535	582	1,117
Business & Personal Services	323	223	546
Professional & Social Services	335	333	668
Households	2,084	2,885	4,969
Other ¹	<u>72</u>	<u>1,032</u>	<u>1,104</u>
Total	4,173	8,440	12,613

¹Other includes agriculture, mining, transportation, manufacturing, and government.

Student Economic Impact

Student spending also creates an economic impact in addition to that of Fort Berthold Community College. Student spending included outlays for personal items, recreation, books, supplies, and room and board. Excluded from student expenditures were outlays for tuition and fees. Estimates of student expenditures for an academic year were available for FBCC (North Dakota Career Resources Network 2012). The North Dakota Career Resource Network estimated student spending for personal and recreation to be \$3,400 for the 2011-2012 school year. Total per student living expenses for 2011-2012 school year was \$8,200 per year for Fort Berthold Community College. Fort Berthold Community College provided full-time and part-time student enrollment numbers and associated credit hours for the 2011-2012 academic year, which included the 2011 Summer session, in their American Indian Measures for Success Key Indicator System (AKIS) reports (Appendix Table 1). Part-time students numbers were converted to FTE students based on credit hours taken by part-time students. The head count of full-time students and FTE equivalent for part-time students were summed to obtain total 365 FTE students at Fort Berthold Community College (Appendix Table 1).

All of the North Dakota Tribal Colleges reported their student enrollment numbers for the 2011-2012 academic year in a standardized format on the AKIS forms. Data reported on the AKIS forms covered student enrollment for the Summer 2011 session, the Fall 2011 semester, and the Spring 2012 semester for full-time and part-time students (Appendix Table 1). Credit hours taken by students were also reported in a similar manner. Part-time students were converted to FTE by dividing total credit hours taken by those students by 12 credit hours, the number of credit

hours needed to be classified as a full-time student. The total FTE students were the sum of the enrolled full-time students (309) (head count) plus the FTE part-time students (56) (calculated using credit hours). The estimate of FTE students (365) used to calculate student spending was less than the sum of the total full-time and part-time students (439) enrolled at the Fort Berthold Community College (Appendix Table 1).

The 2011 Summer session and the 2011-2012 academic year FTE students were calculated separately (Appendix Table 1). The number of students for the academic year represents the sum of students enrolled in the Fall and Spring semesters. Estimated per-student expenditures for the academic year were divided by two to avoid double counting of student spending when using estimates of total students for the academic year. Likewise, Summer session student expenditures were based on a 3-month term, or one-third of the 9-month academic year (i.e., the academic-year student spending was divided by three). The FTE students for the academic year and the Summer session were multiplied by the estimated student living expenses for each of the respective colleges, to obtain total student spending (i.e., direct economic impacts from student expenditures). Table 2 presents the student spending from FBCC students that resulted in a \$1.4 million direct economic impact. Methodology and data sources used to estimate student direct economic impacts in this study were similar to those used in the North Dakota University System study (Coon et al. 2012a).

Multiplying student enrollment for each school by their respective per-student living expenditures provided an estimate of direct impacts or first-round effects associated with student spending. However, using North Dakota Career Resource Network estimates for room and board may overstate the economic effects of student expenditures. Although a large number of students live on-campus or live independently off-campus, some students live at home. Students living at home would likely incur less expense for room and board compared to those living on-campus or independently off-campus. Also complicating estimates of the effects of student spending is that some of the revenues for room and board for students living in college dormitories could be considered double counting with expenditures by the college. Revenues received by colleges for on-campus room and board would likely be dispersed for inputs and services associated with student housing. As such, expenditures for providing student housing are likely to be at least partially captured in the analyses of college spending. Therefore, including room and board expenses for all students might result in some double counting. Data were unavailable to adjust the economic contribution of student spending to account for those students living at home or to adjust for the percentage of room and board expenses already captured in this assessment.

Another area of potential double counting could occur in how expenses are handled for books and other educational materials. Books and educational materials purchased by students through campus-sponsored book stores are likely to be fully or partially captured by college expenditures. Since those facilities are part of the college, expenses for staff, facilities, and materials/inventory would necessarily be included in the college analysis. Further, it is likely that most of college text books would be purchased from publishing entities outside of North Dakota, and accordingly would not represent in-state expenditures by the colleges. However, to the extent that educational materials are purchased by students from off-campus sources, those expenditures would not represent double counting. The degree of overlap between student spending for books and educational supplies and college expenditures associated with book stores is unknown, as is the degree of those supplies purchased from out-of-state entities. Despite these potential problems, the cost of books was included in the student spending analysis for consistency with previous

analyses (Coon et. al. 2012a). Although the potential for some double counting of spending does exist, it most likely would be relatively small compared to the total expenditures used for the impact assessment.

For the 2011-2012 academic year, 365 FTE students were enrolled at Fort Berthold Community College. Based on expenditures per FTE student, students were estimated to have spent \$1.4 million in North Dakota on books, room and board, personal items, and recreation (Table 2). Of course, students also incur expenses for fees, tuition, and other items not covered in this analysis. Those expenditures were not included in this study and would be captured by the analysis of university expenditures.

Table 2. Direct Economic Impacts for Student Living Expenses, Fort Berthold Community College, Summer School 2011 and Academic Year 2011-2012

Institution	Term	2011-2012 FTE Students ¹	Student Living Expenses ²	Total Expenditures
			-----	\$-----
Fort Berthold CC				
	Academic Year	322	4,100	1,320,200
	Summer School	<u>43</u>	2,733	<u>117,519</u>
Total		365		1,437,719

Sources: North Dakota Career Resource Network (2012) and AKIS reports from individual colleges.

¹ Full-time equivalent students based on data obtained from AKIS academic reports. AIMS (American Indian Measures for Success) Key Indication System (AKIS) requires colleges to separately report students taking 12 credits or more per semester, and report students taking less than 12 credit hours per semester. Full-time equivalent students were estimated based on a head count of students in fall and spring semesters taking 12 credits or more, and total credit hours for part-time students in fall and spring semesters divided by 12 credit hours. Summer school full-time students also represented those taking 12 credit hours or more, and total credit hours for part-time summer students divided by 12 credit hours.

² Student living expenses include room, board, supplies and \$3,400 for personal recreation and miscellaneous spending for the 2011-2012 academic year. North Dakota Career Resource Network academic-year student spending estimates were divided by two because full-time equivalent students were the sum of enrollment in fall and spring semesters. Because the 3 months of summer school represents one-third of an academic year, academic-year student spending was divided by 3 to estimate student spending during summer school.

A large share of the student spending would occur in the communities where the institutions are located, due to the nature of their purchases (i.e., books, supplies, and room and board). Some of the student expenditures for recreation and personal items will occur in cities and trade areas other than those where the college is located. However for this analysis, all student spending will be assumed to remain in close proximity to the community where the college is located.

Student spending was estimated to be \$1.4 million for the 2011-2012 academic year, which most closely approximated the FY2012 used for FBCC's expenditures. Student expenditures are in addition to operational expenditures for FBCC, without accounting for potential double counting previously discussed. Student expenditures at FBCC were 34.4 percent of the college's outlays, lower than the 34.9 percent for all of the Tribal Colleges, but slightly higher than the 33.6 percent for the North Dakota University System (Coon et al. 2012a).

Spending by students at the Tribal Colleges was allocated to two sectors of the North Dakota Input-Output Model: *Retail Trade* Sector (75 percent), and *Finance, Insurance, Real Estate* Sector (25 percent). Direct economic impact of student spending was \$1.4 million for academic year 2011-2012 (Table 2). Applying these expenditures to the North Dakota Input-Output Model produces the total (direct and secondary) economic impact. Secondary economic impacts resulting from student spending totaled \$2.1 million, resulting in a total economic impact of \$3.5 million for academic year 2011-2012. The *Retail Trade* Sector received the largest economic impact, with \$1.6 million in retail trade activity. The *Households* Sector (economy-wide personal income) was estimated to be \$0.9 million. Retail purchases result in sales and use tax collections. The total level of retail activity generated by student spending would result in \$75,000 in sales tax revenues, assuming all purchases were made in the North Dakota economy. Personal income tax collections of \$13,000 would result from increased levels of income activity in the Households Sector due to student spending. Also, the business activity from student spending would support 6 secondary (indirect and induced) jobs in the state.

Table 3. Direct, Secondary, and Total Economic Impacts for Fort Berthold Community College Student Spending, Academic Year 2011-2012

Sector	Direct	Secondary	Total
-----\$000-----			
Construction	- -	64	64
Communication & Public Utilities	- -	105	105
Retail Trade	1,078	538	1,616
Finance, Insurance, Real Estate	360	113	473
Business & Personal Services	- -	48	48
Professional & Social Services	- -	59	59
Households	- -	868	868
Other ¹	<u>- -</u>	<u>341</u>	<u>341</u>
Total	1,438	2,136	3,574

¹Other includes agriculture, mining, transportation, manufacturing, and government.

Value of A College Education

A college education has both social and economic benefits. A review of published literature indicates that the economic value of a college degree in the United States has been studied extensively. While the monetary value of higher education has been measured by many studies, the social benefits have been acknowledged but are very difficult to quantify. An analysis of the value of a college education at all of the Tribal Colleges in North Dakota was beyond the scope of this study. However, this topic will be discussed to provide some additional insight into how a college education can benefit a community beyond the economic impacts of the Tribal Colleges.

One obvious advantage of a college degree is better wages, but benefits extend beyond increased salaries. Adults with a college degree are healthier, more active citizens, who read to their children more often than those without a college degree (Kyle 2010). Specifically, college graduates are 14 percent less likely to be obese than high school grads and nearly twice as likely to exercise vigorously. Only 9 percent of college graduates smoke compared to 27 percent with a high school diploma. A higher percentage of college-educated parents (68 percent) read to their children daily than do high school graduates (27 percent) (Kyle 2012). People with a college degree donate their time to community organizations at a higher rate than any other group. Rawley and Hurtado (2002) contend that benefits of a college degree are also passed along to succeeding generations. Additionally, “college attendance has been shown to decrease prejudice, enhance knowledge of world affairs, and enhance social status while increasing economic and job security”.

The Alliance For Excellent Education (2012) published a report stressing the importance of providing a quality education to all children, regardless of their skin color or socioeconomic status. This report states that in order to maintain the United States economic strength, it is imperative to equitably provide all students with a quality education. In addition to the economic benefits individuals receive from increased education, communities, states, and the nation also benefit. For example, if 90 percent of the students in the class of 2011 were to graduate from high school (750,000 additional graduates), an additional \$9 billion could be earned each year. This revenue could increase tax collections by \$2 billion per year at the federal, state, and local levels (Balfanz 2012). Although the study did not report statistics specifically for Native American students, it stated that 31 percent of whites aged twenty five and older held a bachelors degree in 2011, compared to just 20 percent for blacks and 14 percent for Hispanics (Alliance for Excellent Education 2012). Northwest Area Foundation Indicators Website (2006) showed 22 percent of North Dakota’s population had a bachelors degree compared to 4 percent of the Spirit Lake Tribe’s population in 2000. The Northwest Area Foundation Indicators Website has been discontinued, but current census data provides similar statistics. In 2011, 26.3 percent of North Dakota’s population had a bachelors degree or higher and 5.3 percent of the Spirit Lake Tribes population held a bachelors degree or higher for the 2007-2011 period (U.S. Bureau of the Census 2012). Non-white K-12 school enrollment in North Dakota has grown from 8 percent in the 1989-1990 school year to 13 percent in the 2009-2010 school year (Alliance for Excellent Education 2012), indicating the educational disparity is becoming a larger problem. North Dakota Department of Public Instruction (2010) reported high school graduation rates as low as 40 percent at one reservation school. The Alliance for Excellent Education (2012) study concluded that improving education levels in the United States could save tens of billions of taxpayer dollars annually on social costs, such as health care, unemployment, and incarceration. Improving

education for traditionally undeserved and under-represented groups is a major factor in breaking the cycle of poverty and disenfranchisement. Low education levels are closely associated with increased rates of homelessness, teen pregnancy, and community violence. These reasons indicate how important a college education is for social and economic welfare of our nation.

Research by Hardy (2010) compiled seven benefits associated with higher education. These seven benefits can be categorized as three being economic and four as social. The economic benefits include: higher earnings potential, employer-provided health care coverage, and job stability. Social benefits were listed as lower stress, healthier lifestyle choices, job satisfaction, and future children benefits. Job satisfaction is a benefit that might be overlooked, but because people spend most of their lives working, how they feel about their work can greatly affect them. Salient observations regarding future children benefits included correlation between mother's education and the health of her children, child mortality rates decreased as the mother's education attainment levels increased, and parents with a higher education had higher expectations for their children to earn a college degree. Also, parents with college degrees were more likely to pay for their children's college education. In a report released by Fort Berthold Community College (2010) the social benefits particular to Native American Reservations were listed as mitigation of social problems; centers for preservation of culture; language and traditions; provision for further educational opportunities; technology transfer; and community programs.

Numerous studies have examined the earnings advantage for a college graduate compared to a high school graduate. However, the lifetime earnings advantage for a college degree varies by study. Lifetime earnings advantage ranged from a low of \$150,000 (Robinson 2010), to a middle range of \$650,000 (Pew Research Center 2011), with the highest of \$1,000,000 (Longley 2010). The wide range of values for a college degree are due to assumptions regarding unemployment and underemployment. Robinson (2010) assumes that 29 percent of college grads are underemployed (i.e., working at high school-level jobs). Current national unemployment rates remain in the 8 percent range, and many college graduates may be forced to take employment below their educational level. However, these workers will move into jobs in their career field as they become available. This study also acknowledged that the value of a college education could range from \$150,000 to \$500,000 over the course of a lifetime. An estimated \$1 million earnings advantage for a college degree was the highest reported, but is a figure that is often cited. People with less than a high school degree are at a distinct disadvantage. The unemployment rate for individuals with less than a high school diploma was 14.1 percent compared to 4.9 percent for college graduates in 2011 (Figure 1). In 2011, an estimated 40 percent of the population 25 years and older had a two-year or four-year college degree (Department of Treasury and Education 2012). Women in the 25-34 year age cohort are currently more likely to be college-educated than men, with 37 percent having at least a bachelor's degree compared to 29 percent for men in the same age group.

Adults with a high school degree received 60 percent lower mean annual earnings than those with a bachelor's degree (Figure 2). Bachelor's degree holders mean annual earnings were \$54,756 compared to \$33,176 for a high school degree. A comprehensive study (Baum and Ma 2007) on the value of higher education analyzed income earning potential by level of education, race/ethnicity, and gender. This study developed rates of lifetime earnings for all educational levels compared to a high school degree baseline (i.e., a high school degree had a value of 1.00). Figure 3 presents the earnings ratio for various levels of education.

A bachelor's degree has an earnings ratio of 1.61, meaning that over their working life the college graduate will earn 61 percent more than the high school graduate (Baum and Ma 2007). A non-high school graduate will earn 25 percent less than a high school graduate over their working lives. Post-baccalaureate degrees returned even higher lifetime earnings. The ratios presented in Figure 3 provide a graphic representation of the income-earning potential for each level of education. Clearly, education achievement at every level is rewarded with greater lifetime earnings. The value of a college education can be quantified in monetary terms, but the social benefits are also important and should not be overlooked.

Zaback et al. (2012) also developed earnings ratios for education levels relative to a high school degree. This study developed the ratios for different academic areas (i.e., arts and humanities, business) and for each state. This analysis supports the belief that a college degree results in a higher median income, even though the variation across states and disciplines is substantial. Also, the study indicates that almost without exception each successive level of higher education attainment results in additional economic benefits.

The social and economic benefits that result from attainment of college education are important to the five Tribal Colleges and the reservations in North Dakota. Higher education results in increased earnings and improved social conditions. Higher earnings and reduced unemployment also act to strengthen the rural Native American communities. Improved economic and social conditions that have occurred because of post-secondary education tend to enhance the quality of life for all. As the social and economic benefits of a college education get passed onto subsequent generations, the Tribal Colleges serve a role in improving economic and social conditions for people and communities in North Dakota. Although the study was not able to quantify the direct economic benefits of a college education specifically for graduates of the five Tribal Colleges, the social and economic benefits of higher education have a positive economic effect on Native American reservations.

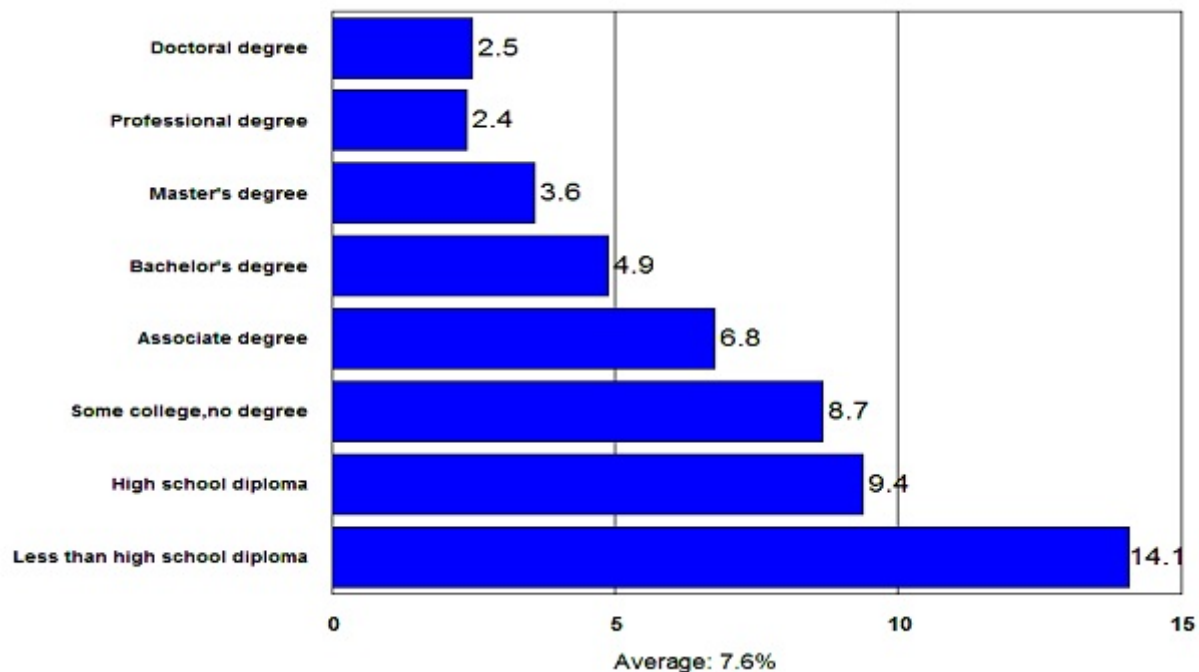


Figure 1. Unemployment Rate by Level of Education in the United States, 2011.
Source: U.S. Bureau of Labor Statistics 2012.

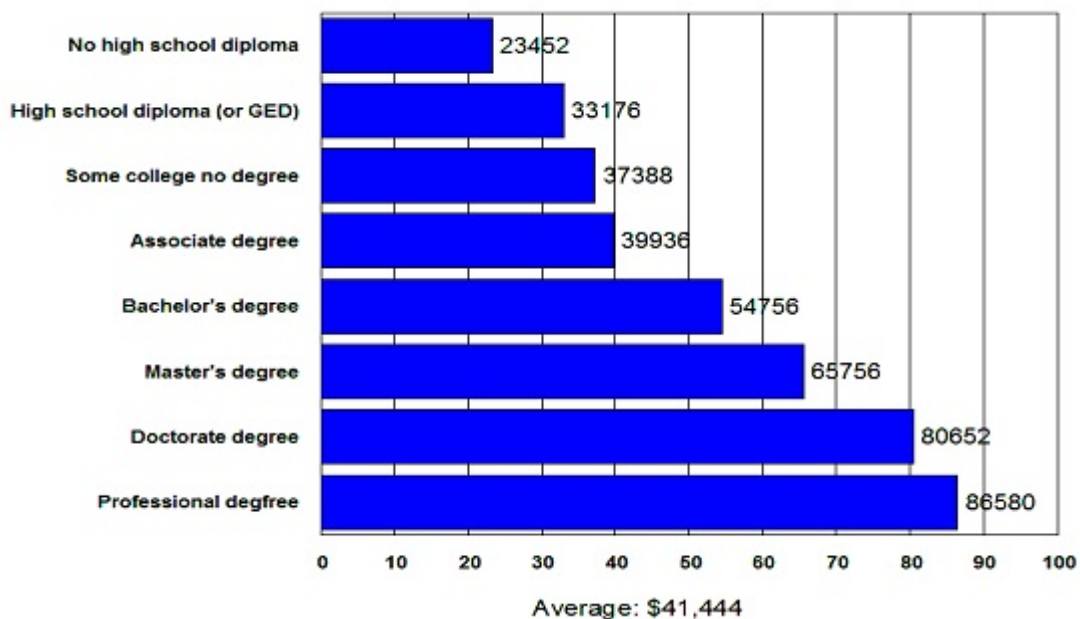


Figure 2. Median Annual Earnings of Adults Age 25 and Older, Full-time Workers in the United States, 2011

Source: U.S. Bureau of Labor Statistics 2012.

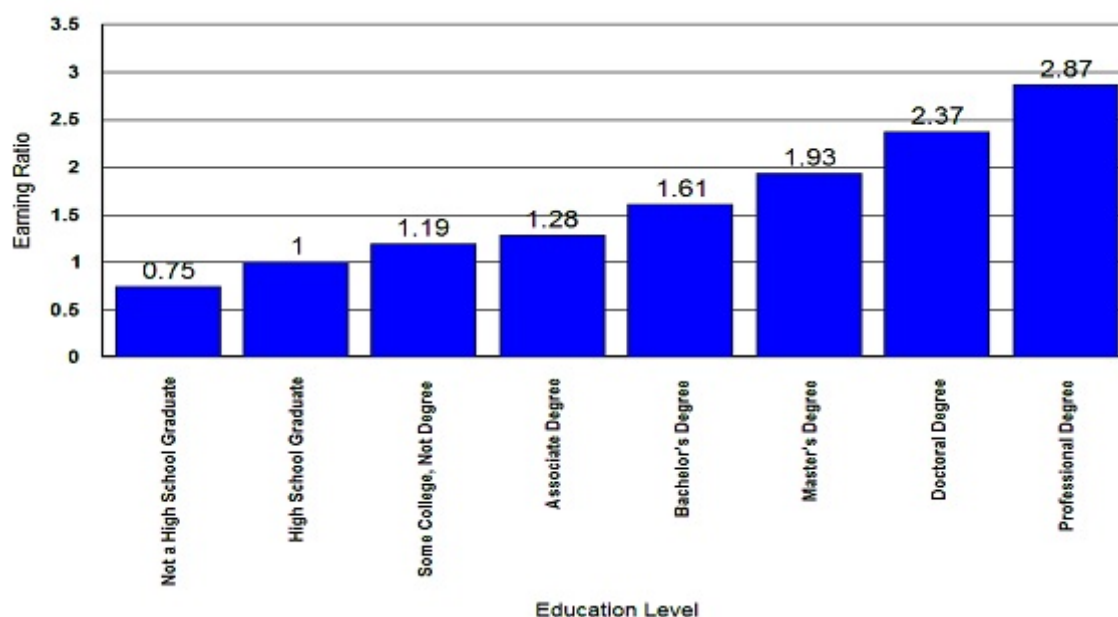


Figure 3. Ratio of Expected Lifetime Earnings Relative to High School Graduates in the United States, by Education Level, 2005.

Source: Baum and Ma 2007.

Conclusions

The North Dakota Association of Tribal Colleges (NDATC) consists of five colleges located in North Dakota. Each of these colleges has an economic impact through their spending for goods and services and wages and salaries. Expenditures data for this economic impact analysis were provided by Fort Berthold Community College, as were the employment and student enrollments. In addition to the college operational expenditures, student spending also has an economic impact.

Fort Berthold Community College spent over \$4 million in FY2012 in the North Dakota economy. They employed 55 full-time workers and 19 part-time workers. The over \$4 million in expenditures comprise the direct, or first-round, economic impacts for Fort Berthold Community College. The North Dakota Input-Output Model was used to estimate the total economic impact resulting from FBCC's expenditures. Fort Berthold Community College's expenditures, or direct effects, were allocated to various sectors of the North Dakota Input-Output Model. Interdependence coefficients within the model were used to estimate secondary economic effects. Combining direct and secondary economic effects provides an estimate of the total economic impact. Total economic impact for FBCC was over \$12 million in FY2012, which included over \$8 million of secondary impacts. The *Households* Sector (economy-wide personal income) was estimated to be \$5.0 million in FY2012. This was the sector with the highest level of business activity, not uncommon for an industry that has its largest expense for wages and salaries. Retail trade activity attributed to FBCC's expenditures were estimated to be \$3.2 million in FY2012. Business activity generated by FBCC's expenditures would produce \$148,000 in sales and use

taxes, and \$75,000 in personal income taxes. In addition to the 55 full-time and 19 part-time jobs at Fort Berthold Community College, their expenditures would generate enough business activity to support another 35 secondary (indirect and induced) jobs.

Student expenditures for living expenses also create an economic impact. Expenditures by the 365 FTE students at the Fort Berthold Community College for personal items, recreation, books, supplies, and room and board amounted to \$1.4 million for the 2011-2012 academic year. These expenditures, or direct economic effects are in addition to those of Fort Berthold Community College. Applying the student spending to the North Dakota Input-Output Model produces estimates of the total economic impact. The *Retail Trade* Sector had the largest economic impact (\$1.6 million) of any sector, largely due to the high percentage of student spending for retail trade items. The next highest level of business activity was in the *Households* Sector (economy-wide personal income) at \$0.9 million. Total economic impact from student spending was \$3.5 million, with the secondary economic effects being \$2.1 million. These levels of business activity from student spending would support 6 secondary workers in various sectors of the North Dakota economy.

Beyond the economic impacts that the Tribal Colleges and their student spending creates, are the social and economic benefits of a post-high school education. Original research on this topic was not possible within the scope of this study, but a review of published literature was conducted to provide validation for the time and expense of obtaining a college degree. Previous studies have determined that college graduates have healthier life style, healthier children, more job satisfaction, have shown decreased prejudice, enhanced knowledge of world affairs, and have enhanced social status. Also, many of these benefits are passed onto succeeding generations. Economic benefits are more easily quantified as college graduates have lower unemployment rates and higher annual incomes. Unemployment for high school graduates was 9.4 percent in 2011, much higher than the 4.9 percent rate for person with a college bachelors degree. That same year the median annual earnings for a college degree was \$54,756, over 65 percent higher than the median for a high school degree (\$33,176).

Fort Berthold Community College and its students have substantial impacts on North Dakota's economy. The College employs 55 full-time and 19 part-time workers. A total of 439 students were enrolled on a full-time or part-time basis during the 2011-2012 academic year. The number of students enrolled was converted to an estimated 365 FTE students so that the economic impact of student spending could be determined. Expenditures by the colleges and students provide a direct economic effect, that when applied to the multiplier effect, create a secondary impact. The total economic impact resulting from the Fort Berthold Community College's expenditures affects the state and local economies, and further provides students with an education that has social and economic benefits.

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APPENDIX

Table 1. Standardized AKIS¹ Student Enrollment and Credit Hours Reporting Data, Fort Berthold Community College, Summer School 2011 and Academic Year 2011-2012

College/Period	Part-time AI Students	Part-time Non-AI Students	Full-time AI Students	Full-time Non-AI Students	Part-time AI Credits	Part-time Non-AI Credits	Full-time AI Credits	Full-time Non-AI Credits
Fort Berthold CC								
Summer 2011	41	5	26	4	138	19	175	30
Fall 2011	36	10	136	2	212	52	1,837	31
Spring 2012	<u>35</u>	3	<u>137</u>	<u>4</u>	<u>230</u>	<u>20</u>	<u>1,959</u>	<u>60</u>
Total	112	18	299	10	580	91	3,971	121

¹ AIMS (American Indian Measures for Success) Key Indication System (AKIS) .