Private Higher Education's Annual Contribution to Nebraska's Economic Health

Study produced for the
Nebraska Educational Finance Authority

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Economic Solutions
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Executive Summary

By applying Input-Output[1] computer models to actual 2005-2006 payroll and spending data, it is estimated that Nebraska's private universities and colleges, also referred to as independent colleges, contribute the following to the Nebraska economy on an annual basis:

To the local & state economy for 2006:[2]

- For 2005-2006, the state's fourteen private universities and colleges will directly spend approximately $521 million on goods and services. This spending will generate another $900 million in spillover impacts[3] for a total estimated impact of $1.42 billion for the Nebraska economy.

To state & local tax collections for 2006:

- In addition to education support taxes, it is estimated that Nebraska's private colleges and universities will generate almost $69 million in state and local taxes.

To the labor force for 2006:

- Nebraska's private colleges and universities will employ 4,888 individuals full-time in 2005-06 compared to 4,537 in 2001-02. This number excludes part-time workers

[1]This study was completed using the Implan Input-Output methodology. An explanation of this methodology is contained in the accompanying appendix.

[2]It is assumed that similar impacts, adjusted for inflation, will result in future years.

[3]Spillover impacts represent 'ripple' impacts in related businesses as the initial contract dollars are re-spent in the community. For example, university employees will spend a portion of their earnings in Nebraska grocery stores. This spending creates sales, earnings and jobs, termed spillover impacts, for businesses in the retail trade sector.

and student workers. Additionally, the fourteen universities and colleges will support another 17,859 workers thus supporting a total of 22,747 jobs in the state of Nebraska.

- The 14 institutions' payroll for 2005-2006 is $333 million, including benefits, or approximately $68,000 per employee. It is estimated that both directly and indirectly, Nebraska's private universities and colleges will generate another $243 million in indirect wages and salaries for a total of $576 million in wages and salaries for 2006.[4]
- Nebraska's private colleges and universities will increase the income of area private business owners and self-employed by $47 million in 2006.

To non-education industries (spillovers) for 2006:

- Private college and university spending in Nebraska will support 864 jobs, $27.5 million in wages & salaries and $74 million in sales for the state's *Construction Industry*.
- Nebraska's 14 private college and university spending will support 5,303 jobs, $91.8 million in wages & salaries and $211.3 million in sales for the state's *Retail Trade Industry.*
- Private college and university spending in Nebraska will support 127 jobs, $5.7 million in wages & salaries and $26.0 million in revenues for the state's *Manufacturing Sector.*
- In total, 381 of the state's 507 industries are impacted by private university spending.

[4]Compensation includes fringe benefits and FICA taxes paid by the employer on behalf of the employee. These costs are estimated to be approximately 28% of the compensation value.

To a stable job base and quality jobs:

- Private colleges and universities have a stabilizing impact on the state economy with the number of jobs in this sector rising consistently year over year. For example between 2002 and 2005, employment at the 14 independent colleges grew by 7.7 percent. Furthermore, each of the private institutions is generally one of its county's largest employers.

To economic growth:

- Private colleges contribute to the attractiveness of an area. Nebraska counties with a private college or university experienced population growth of 13.0 percent between 1990 and 2000. Nebraska counties without a private college or university experienced population growth of 3.0 percent for this same time period.
- Nebraska counties with a private college or university experienced personal income growth of 80.0 percent between 1990 and 2000. Nebraska counties without a private college or university experienced personal income growth of 45.2 percent for this same time period.
- In 2004, Nebraska's independent colleges' 4-year graduation rate was 42 percent whereas Nebraska's public four-year college graduation rate was 18 percent. This has the impact of getting college students to the labor market more quickly with a resultant positive influence on the economy.

Tables 1 and 2 summarize the yearly impacts of private colleges and universities on the state of Nebraska and counties respectively. The assumptions and methodology used to produce these estimates are contained in the accompanying Appendix.

Table 1: Summary of annual economic impacts of Nebraska's private colleges & universities

	Impact
Annual impact on Nebraska economy	$1.42 billion
Annual impact on state and local tax collections (not including education	$68.6 million
Jobs supported	22,747
Annual payroll (does not include self-employed workers)	$575.8 million
Annual impact on income of private business owners and self-employed	$47.0 million

Source: Implan System

Table 2: Impact of Nebraska's private colleges and universities by county for 2006

	Adams	Dodge	Douglas	Lancaster	Saline	Sarpy	Seward	Washington	York
Overall	$54,416,529	$44,359,940	$854,120,417	$139,267,953	$68,612,888	$157,250,951	$49,202,381	$27,524,427	$25,210,982
Wages & salaries	$20,252,558	$15,009,963	$362,496,695	$53,207,361	$25,054,399	$63,975,945	$16,259,550	$9,884,917	$9,663,443
Self-employment income	$1,879,931	$1,878,514	$26,894,974	$5,576,898	$2,820,686	$3,472,369	$2,377,880	$1,156,671	$935,904
Jobs	1,008	854	11,960	2,309	1,506	2,814	1,211	593	493
State & local taxes	$2,711,503	$2,353,285	$36,222,082	$7,145,229	$3,920,182	$11,330,204	$2,525,838	$1,373,575	$997,746

Source: Implan System

Chapter 1: Private Colleges & Universities in Nebraska-An Overview

Nebraska has 14 regionally accredited, not-for-profit, privately controlled colleges and universities. Table 3 lists each institution along with its location and 2002 and 2006 student enrollment. In 2006, these institutions will enroll approximately one-fifth of total students attending Nebraska colleges and universities but award over 38 percent of the baccalaureate degrees in the state. More than 74 percent of students at Nebraska's private colleges in Nebraska were enrolled as full-time students in 2005-06.

Table 3: Nebraska private colleges & universities (2002 and 2006 enrollment)

	City	County	Number of students 2002	2006
Bellevue University	Bellevue	Sarpy	4,107	5929
Clarkson College	Omaha	Douglas	507	507
College of St. Mary	Omaha	Douglas	852	955
Concordia University	Seward	Seward	1,425	1328
Creighton University	Omaha	Douglas	6,327	6723
Dana College	Blair	Washington	577	676
Doane College	Crete	Saline	2,263	2394
Grace College	Omaha	Douglas	563	440
Hastings College	Hastings	Adams	1,078	1189
Midland Lutheran College	Fremont	Dodge	930	930
Nebraska Methodist	Omaha	Douglas	341	580
Nebraska Wesleyan University	Lincoln	Lancaster	1,688	1852
Union College	Lincoln	Lancaster	951	939
York College	York	York	463	452
		Total enrollment	22,072	24,894

Source: NEFA 2002 and 2006 surveys

In a 2000 series, the Omaha World-Herald identified the importance of the University of Nebraska-Lincoln to the economic strength of the state. Certainly, past research studies have confirmed the importance of higher education to the economic development of a region. While Nebraska's private colleges and universities have been an important provider of education in the state, they have been even more important in terms of their contribution to economic growth.

In fact, for equivalent annual budgets, private universities and colleges in Nebraska actually contribute more economically to the state than tax-supported institutions. This conclusion is based on three factors. (1) Private institutions contribute disproportionately more to "brain gain." (2) Private institutions bring more new tuition dollars to the state than equivalent state institutions. (3) Private institutions bring significantly more new federal dollars to the state than equivalent size schools.

Private institutions tend to recruit a higher percentage of their students from outside the state than public universities and colleges, thus contributing to "brain gain."

Brain Gain

The 2003 LR174 Higher Education Task Force recommended that Nebraska universities and colleges more actively recruit non-Nebraska high school graduates. Private institutions tend to recruit a higher percentage of their students from outside Nebraska than state universities and colleges, thus contributing to "brain gain." This is certainly an important factor adding to Nebraska's economic growth since the Federal Reserve Bank estimates that each year Nebraska loses over $300 million per year (1995 dollars) as a result of "brain drain," or the out-migration of individuals with significant education and skills (Ferguson, 1995).

Table 4 lists the percent of students drawn from outside Nebraska for each institution for 2006. As presented, roughly 31 percent of students attending private colleges and universities in Nebraska originated from outside the state. The rates varied from a low of 7 percent at Nebraska Wesleyan University to a high of 81 percent for Union College. Data also show that in general, Nebraska's independent colleges contribute more to brain gain in terms of size, with the publicly supported schools bringing in a lower share of non-Nebraska residents.

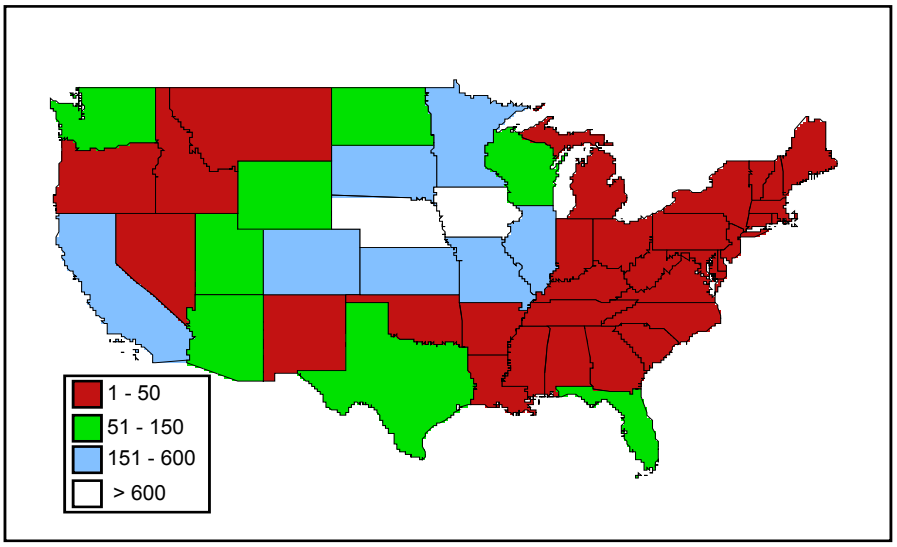
Table 4: Percent of students from outside the state by institution 2003 & 2006

	2003	2006
Bellevue University	24.9%	34.8%
Clarkson College	12.0%	12.0%
College of St. Mary	37.0%	11.0%
Concordia University	49.0%	35.0%
Creighton University	47.8%	50.7%
Dana College	53.0%	47.6%
Doane College	17.0%	15.3%
Grace College	37.0%	28.0%
Hastings College	23.0%	23.0%
Midland Lutheran College	25.0%	18.1%
Nebraska Methodist	20.0%	11.0%
Nebraska Wesleyan University	7.0%	7.0%
Union College	81.0%	81.5%
York College	62.0%	34.1%
University of Nebraska-Lincoln	n.a.	17.3%
University of Nebraska-Kearney	n.a.	6.3%
University of Nebraska-Omaha	n.a.	5.1%
State colleges	n.a.	23.6%

Source: NEFA surveys, 2003 and 2006

Current private institution students are likewise drawn from a wide geographic area. Figure 1 presents a distribution of the state-of-origin for current students for private institutions reporting results.

Figure 1: Number of students by state attending independent colleges, 2002[5]



Not only do Nebraska's private colleges import a large number of residents, many of these students remain in Nebraska upon graduation. For example, more than 3,000 of Creighton Health Science graduates currently reside in Nebraska. In the Omaha Metropolitan area, 27 percent of physicians, 69 percent of dentists, 59 percent of pharmacists, 72 percent of occupational therapists and 16 percent of registered

[5]In 2002, 77 students originated from Alaska and 130 originated from Hawaii. Colleges providing data were: College of St. Mary, Concordia, Creighton, Doane, Hastings, Midland Lutheran and York.

nurses are Creighton graduates. Creighton also provides patient care services to 48 communities in every part of Nebraska.

Most of the independent colleges have a large share of their graduates residing in Nebraska. Table 5 lists each private institution along with the number of alumni currently living in the state of Nebraska.

Table 5: Alumni currently living in Nebraska 2002 & 2006

	2002	2006
Bellevue University	7,021	9,587
Clarkson College	1,694	1,891
College of Saint Mary	4,023	4,603
Concordia University	2,644	3,044
Creighton University	13,233	15,446
Dana College	3,570	3,610
Doane College	7,079.	7,633
Grace College	2,190	2,443
Hastings College	5,318	5,470
Midland Lutheran College	6,579	6,955
Nebraska Methodist College	2,153	2,498
Nebraska Wesleyan University	6,500	9,399
Union College	1,293	1,516
York College	1,085	1,372
Nebraska's private colleges & universities	64,382	75,467

Source: NEFA, 2002 and 2006 surveys

U.S. Census population values provide a gauge on the importance of Nebraska's private colleges to state growth. In 2005, the U.S. Census estimated that a net of only 443 individuals moved into Nebraska. However, Nebraska actually lost 3,286 individuals to other U.S. states but gained 3,729 individuals from abroad. Given the values listed in Tables 4 and 5, one can clearly gauge the importance of Nebraska's private colleges and universities to migration gains and "brain gain."

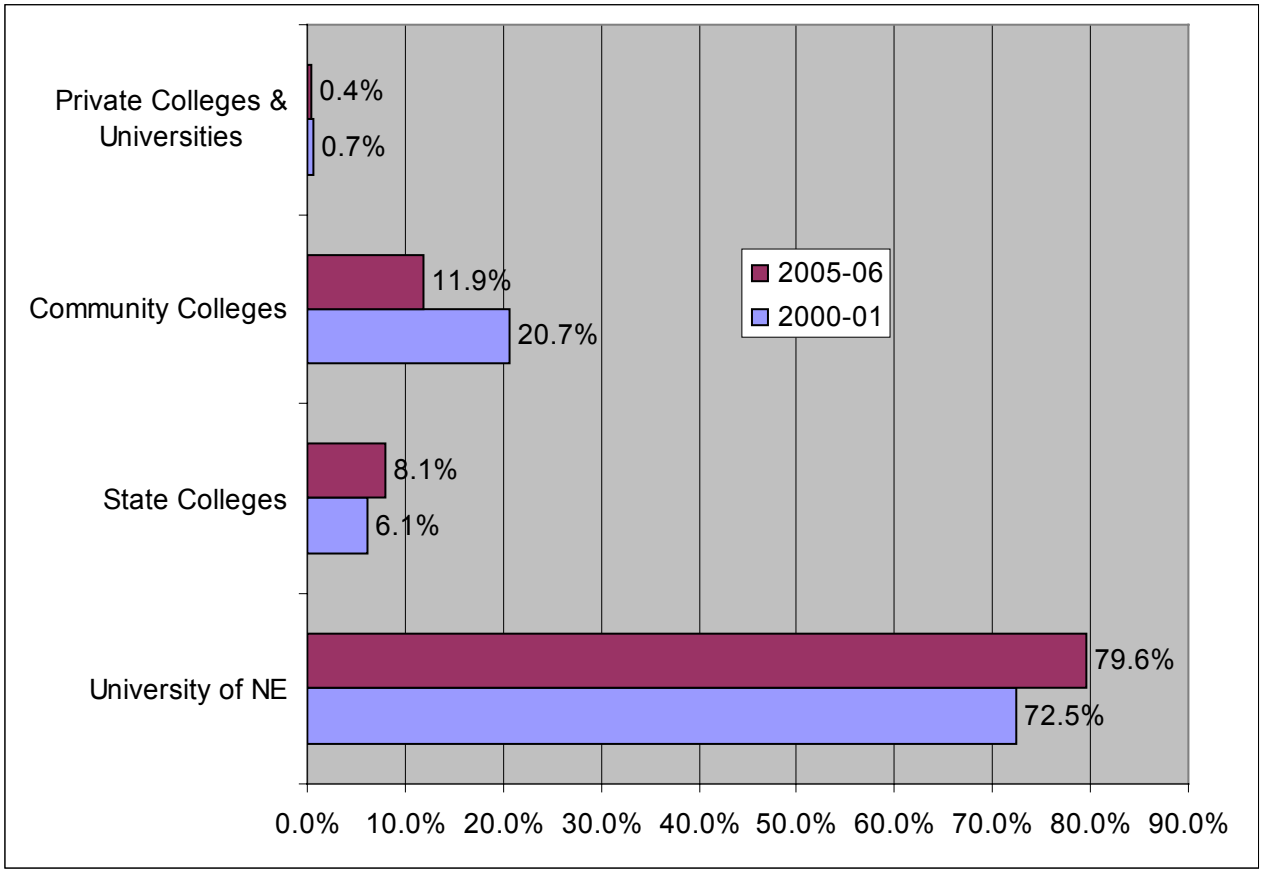
Institutions funded primarily by dollars generated from Nebraska residents via tuition and taxes have less economic impact since a high share of these dollars are diverted from industries and individuals in Nebraska.

Tuition

Besides contributing to "brain gain," private higher educational institutions generate a larger proportion of their budget from outside the state than comparable public universities. These dollars are very powerful and have a higher multiplier or economic impact than dollars spent by public institutions. Institutions funded primarily by dollars generated from Nebraska residents via tuition and taxes have less economic impact since a high share of these dollars is diverted from industries and individuals in Nebraska.

Figure 2 shows the relative support institutions of higher learning in Nebraska received for fiscal year 2000 and for 2005. As presented, the lion's share of tax support, or 79.6 percent, goes to the University of Nebraska, up from 72.5 percent in 2000. On the other hand, Nebraska provided independent colleges with only 0.4 percent of its higher education tax support in 2005-06 which was down from 0.7 percent in 2000.

Figure 2: Percent of Nebraska tax expenditures for higher education, 2000-01 and 2005-06



In addition to educating students, Nebraska's private institutions conduct a major portion of regional research bringing significant external funds to the state. For example, studies have found that medical facilities, in addition to providing health care, have a net positive effect on the local economy and attract substantial health care expenditures from other geographic areas. Furthermore, private medical educational facilities add to overall regional economic activity by reducing medical care spending by

residents of the State in cities such as Des Moines and Kansas City. In other words, private medical educational institutions contribute to the state's export of health care. The export of health care has a positive impact on the local area by adding jobs and income to the local area in the health care industry and related industries.

For 2003-2004, more than fifty percent of health- related baccalaureate degrees were awarded by the state's independent colleges.

In addition to educating health care professionals, Nebraska's private institutions conduct a major portion of regional biomedical research and provide care to a large share of hospital admissions. Similar to other academic health centers, Nebraska's private institutions provide a major portion of the uncompensated hospital care in the region (Naughton and Vana, 1994).[6] By educating health care professionals, conducting important health care research and providing health care to the public, Nebraska's private higher education institutions generate significant economic impacts for the regional economy. For 2003-2004, more than fifty percent of health- related baccalaureate degrees were awarded by the state's independent colleges. The objective of this study is to quantify these impacts. The economic impacts will be divided into impacts generated by institution, by county and by industry.

Table 6 summarizes the additional funds brought into Nebraska each year just from the federal government and from gifts by individuals and businesses.[7]

[6]Currently, CUMC is one of the largest providers of uncompensated, or charity care, in Nebraska.

[7]It should be noted that a portion of these yearly contributions came from Nebraska residents. As such, their impact on the Nebraska economy would be less.

Table 6: 2002 & 2006 addition to state economy (private colleges and universities)

	2002	2006
Federal grants & contracts	$44,104,828	$90,254,627
Yearly contributions	$54,634,696	$79,879,879

Source: NEFA 2002 and 2006 surveys of 14 private colleges and universities

In terms of long-term but less measurable impacts, private colleges' and universities' presence increases the attractiveness of the community and encourages the startup and/or relocation of other businesses in the state. By contributing to livability via access to art, entertainment, education and healthcare facilities, private colleges and universities influence the community by increasing its attractiveness to non-medically and non-university oriented industries.

Direct Employment

A private university's direct expenditures, such as payroll, generate local jobs and income while payments to local vendors produce indirect impacts that affect the overall level of community economic activity. The most obvious direct impact of a private university or college on the economy comes in the form of salaries to faculty and staff and purchases of supplies from vendors in the region. Additionally, spending by university students and their visitors produces direct impacts in the region. All of these expenditures are then re-circulated throughout the economy by suppliers of goods and services to produce another round of impacts. Researchers use multipliers to estimate the direct and indirect impact of initial spending. Private higher education spending

emanating from revenues attracts other firms and individuals to the region and generates new jobs and income for firms already resident in the region. For example, medical education contributes significantly to high technology industrial development in the region (Goss and Vozikis, 1994).

For 2005-06, private universities and colleges operating budgets totaled $520.9 million and capital spending was $64.0 million with a large share spent in the state of Nebraska. Furthermore, students attending these institutions will spent an estimated $269.3 million in the state for 2006 for products ranging from clothing to movie tickets. For 2006, private institutions employed 4,888 full-time workers. This number excludes part-time workers and student workers. This is a significant increase from 2002 when these same institutions employed 4,537 individuals. The objective of this research study is to monetarily quantify the impacts from this spending and employment.

Chapter 2: Measuring the Impact of Nebraska's Independent Colleges and Universities

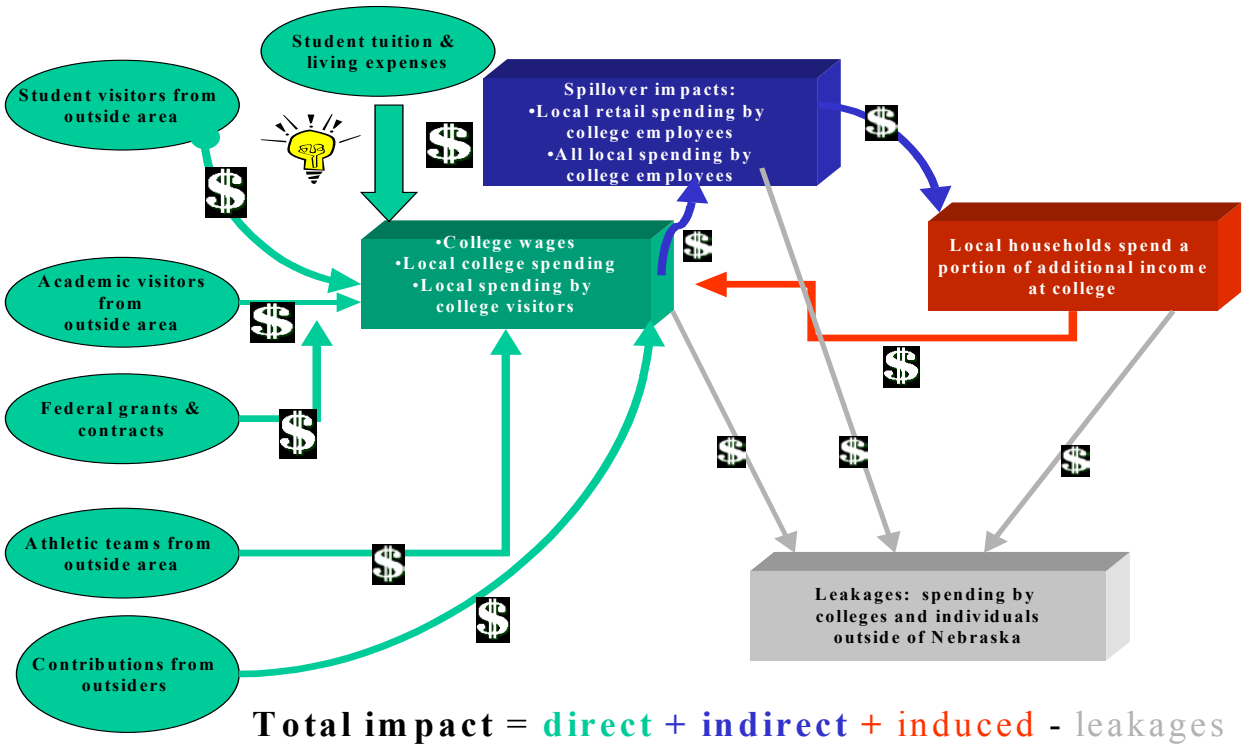
As argued in Chapter 1, private higher educational institution revenues are more powerful than revenues of firms that deal in intra-state commerce in terms of job and income creation since most of these revenues are "new" to the state and are not offset by reduced spending in other Nebraska industries. For example, increased spending in Nebraska's *Entertainment Industry* is offset by reduced spending in Nebraska's *Retail Industry*. This is less the case in spending on higher education. Moreover, by making the nation more aware of Nebraska, private institutions contribute to the overall growth of state and local economic activity.

Economic impacts can be divided into direct, indirect and induced impacts.

Private institution spending emanating from visitors, tuition, research revenues, and medical receipts attracts other firms and individuals to the region and generates new jobs and income for firms resident in the region. The objective of this research study is to quantify these benefits in the form of contribution to gross state revenues and in tax receipts, jobs, and wages to Nebraska.

Figure 3 depicts examples of the flow of funds into and out of Nebraska's private institutions. As indicated, the total impact is the summation of direct, indirect and induced impacts minus leakages.

Figure 3: Impact of private higher education spending



Revenue and expenditures for private institutions used in the subsequent analysis come from a January 2006 survey of each institution. Particular attention is devoted to identifying revenues that come from out of state. From an economic perspective, these sources represent new dollars in the state's economy and are thus very powerful in generating jobs and income for the region. Institutions funded primarily by dollars generated from within the state have less economic impacts than private institutions spending since a high proportion of these dollars are diverted from other industries in the state

Revenue and expenditures for institutions are quantified from financial records for 2005-06. Expenditures by students and visitors are estimated using information available from a variety of campus sources and from secondary data sources. Particular attention is devoted to identifying revenues which come from out-of-state sources such as research grants, federal funds, and federal financial aid. From an economic perspective, these sources represent new dollars in the state's economy and are thus very powerful in generating jobs and income for the region. Institutions funded primarily by dollars generated from Nebraska residents via tuition and taxes have less economic impacts since a high proportion of these dollars are diverted from other industries in the state.

The most obvious direct impact of educational institutions on the economy comes in the form of salaries to faculty and staff, and purchases of supplies from vendors in the region. Additionally, spending by students, their visitors, and visitors to medical facilities produces direct impacts in the region. Indirect impacts come from expenditures by supplying firms. Expenditures are then re-circulated throughout the economy by household spending on goods and services to produce induced impacts.

Economic impacts identified in this study are short-run in nature and represent annual, recurring events. Indicators are provided for long run, more intangible impacts on the regional economy such as work force development, and knowledge enhancement, but no attempt is made to assign dollar values. The estimates presented in this report are conservative in nature. For example, no consideration of out-of-pocket spending by patients to medical facilities is incorporated. Table 7 lists the direct spending that is considered in the calculation of impacts.

Table 7: Spending by Nebraska's private institutions & their students, 2002 & 2006

	2002	2006	Yearly Growth
Operating budget[a]	$436,815,574	$520,887,171	4.5%
Capital spending[a]	$56,266,951	$63,976,246	3.3%
Student spending[b]	$163,840,456	$269,332,873	13.3%
Total injection	$656,922,981	$854,196,290	6.7%

Sources: [a]2002 and 2006 surveys; [b]U.S. Bureau of Labor Statistics Consumer Expenditures Surveys

Input-output models are applied to the injections in Table 7 to estimate the overall impact as presented in Figure 3. Appendix B provides an overview of input-output multipliers while Appendix C provides a description of the actual multipliers used in this study.

Chapter 3: Total Impact and Impacts by Industry

Table 8 lists total impacts.[8] The number of jobs supported each year by private institution spending is listed. The **jobs** number includes total wage and salary employees as well as self-employed workers in the state. It includes both full-time and part-time workers. **Proprietary** income consists of payments received by self-employed individuals as income. This includes income received by private business owners, doctors, lawyers, and others. **Wages and salaries** include the total payroll costs (including benefits) of workers who are paid by employers, as well as benefits such as health/life insurance, retirement payments, and non-cash compensation. **Sales** or output represents the value of total production.

`Table 8: Impact of private higher education on Nebraska, 2006

	2006
Total jobs supported	**22,747**
Proprietary (self-employment) income	**$46,993,827**
Wages & salaries	**$575,804,831**
Sales or output	**$1,419,966,468**

Source: Implan Multiplier System

[8] None of these estimates includes the impact of visitors to the college or university such as parents, sales representatives, and academic visitors on the state.

Table 9: Impact of Nebraska's private universities on output by industry and county, 2006

	Nebraska	Adams	Dodge	Douglas	Lancaster	Saline	Sarpy	Seward	Washington	York
Ag, Forestry, Fish & Hunting	$615,869	$121,386	$51,900	$74,786	$83,093	$101,985	$44,557	$52,071	$21,796	$64,295
Mining	$129,428	$374	$210	$109,605	$17,529	$0	$779	$0	$602	$329
Utilities	$3,229,502	$0	$0	$3,026,507	$104,361	$0	$94,429	$0	$4,205	$0
Construction	$74,155,460	$5,412,617	$2,315,046	$49,772,268	$6,982,552	$2,050,718	$3,136,670	$1,388,357	$2,076,477	$1,020,755
Manufacturing	$26,065,527	$1,155,735	$908,213	$17,182,584	$3,368,984	$681,459	$1,997,441	$361,901	$90,944	$318,266
Wholesale Trade	$26,421,135	$515,295	$816,340	$18,451,974	$1,502,828	$310,167	$3,335,444	$513,518	$461,857	$513,712
Transportation & Warehousing	$17,870,220	$590,274	$504,912	$11,540,291	$1,973,596	$498,061	$1,785,261	$509,984	$193,986	$273,855
Retail trade	$211,320,380	$9,995,571	$7,797,376	$88,634,176	$23,935,660	$17,676,232	$44,639,152	$9,857,823	$5,090,778	$3,693,612
Information	$25,709,056	$1,048,948	$603,644	$16,964,076	$2,594,638	$695,640	$2,168,507	$285,912	$768,145	$579,546
Finance & insurance	$41,444,133	$970,253	$762,343	$29,227,512	$4,008,214	$809,312	$4,155,561	$769,773	$351,191	$389,974
Real estate & rental	$89,153,212	$2,132,835	$3,530,005	$67,040,948	$7,382,291	$723,018	$6,833,025	$772,212	$347,166	$391,712
Professional- scientific & tech services	$34,751,744	$825,086	$622,099	$24,353,468	$4,086,588	$230,671	$3,057,622	$992,386	$305,973	$277,851
Management of companies	$7,451,310	$31,207	$38,243	$4,510,744	$1,021,438	$45,041	$1,569,056	$0	$184,953	$50,628
Administrative & waste services	$24,610,418	$719,135	$814,631	$16,789,662	$2,468,209	$1,085,850	$1,882,686	$335,109	$284,265	$230,871
Educational services	$542,755,744	$18,010,584	$15,971,195	$353,991,488	$47,517,896	$25,169,764	$36,680,396	$21,654,350	$11,346,157	$12,413,914
Health & social services	$80,225,339	$3,579,779	$2,271,335	$46,375,192	$9,298,098	$4,106,467	$9,243,754	$2,632,236	$1,405,029	$1,313,449
Arts- entertainment & recreation	$31,501,023	$1,367,199	$1,054,844	$13,879,184	$3,565,686	$2,558,881	$6,413,778	$1,424,952	$726,312	$510,187
Accommodation & food services	$77,033,833	$3,530,675	$2,793,932	$34,409,480	$8,567,895	$5,929,973	$15,214,195	$3,505,907	$1,669,712	$1,412,064
Other services	$45,471,761	$1,937,624	$1,505,036	$23,528,224	$4,956,498	$2,660,039	$7,311,672	$1,885,452	$911,394	$775,822
Government & other	$60,051,374	$2,471,952	$1,998,636	$34,258,248	$5,831,899	$3,279,610	$7,686,966	$2,260,438	$1,283,485	$980,140
Total	$1,419,966,468	$54,416,529	$44,359,940	$854,120,417	$ 139,267,953	$68,612,888	$157,250,951	$49,202,381	$27,524,427	$25,210,982

Table 10: Impact of Nebraska's private universities on earnings by industry and county, 2006

	Total	Adams	Dodge	Douglas	Lancaster	Saline	Sarpy	Seward	Washington	York
Ag, Forestry, Fish & Hunting	$61,233	$11,910	$3,344	$9,174	$10,471	$5,908	$8,231	$4,503	$1,780	$5,912
Mining	$6,867	$25	$9	$6,027	$477	$0	$209	$0	$85	$35
Utilities	$289,428	$0	$0	$251,464	$16,468	$0	$20,580	$0	$916	$0
Construction	$27,500,411	$2,163,127	$872,641	$18,349,860	$2,604,373	$657,056	$1,386,459	$390,913	$728,577	$347,405
Manufacturing	$5,723,936	$219,100	$199,320	$3,636,802	$624,740	$143,794	$733,194	$88,247	$14,580	$64,159
Wholesale Trade	$9,890,350	$217,809	$345,069	$6,542,279	$624,795	$128,821	$1,409,110	$210,379	$195,062	$217,026
Transportation & Warehousing	$7,984,072	$286,324	$260,034	$4,775,195	$966,264	$267,969	$933,203	$250,788	$105,786	$138,509
Retail trade	$91,800,845	$4,519,714	$3,190,445	$39,400,644	$10,505,249	$7,035,951	$20,157,252	$3,429,973	$2,084,811	$1,476,806
Information	$5,309,405	$183,651	$129,192	$3,663,560	$490,993	$59,998	$432,122	$55,996	$187,668	$106,225
Finance & insurance	$13,050,050	$219,649	$183,260	$9,515,352	$1,164,001	$201,001	$1,460,670	$153,096	$79,072	$73,949
Real estate & rental	$7,964,788	$128,587	$135,317	$6,088,665	$830,311	$109,996	$528,308	$83,165	$35,569	$24,870
Professional- scientific & tech services	$13,195,441	$297,795	$191,017	$9,209,806	$1,528,833	$75,590	$1,404,222	$332,940	$67,014	$88,224
Management of companies	$3,381,993	$12,407	$18,193	$2,118,295	$402,125	$17,858	$704,926	$0	$82,695	$25,494
Administrative & waste services	$10,835,916	$254,677	$283,786	$7,873,036	$945,798	$371,356	$837,304	$87,111	$91,351	$91,497
Educational services	$281,753,764	$7,789,170	$6,201,647	$199,120,928	$22,369,094	$10,169,844	$18,574,598	$7,693,318	$4,411,885	$5,423,280
Health & social services	$42,433,394	$1,828,153	$1,296,404	$24,484,218	$3,941,713	$2,423,705	$5,649,767	$1,491,857	$639,888	$677,689
Arts- entertainment & recreation	$9,117,888	$437,937	$338,457	$4,029,912	$1,029,398	$661,781	$1,801,887	$430,760	$228,921	$158,835
Accommodation & food services	$22,998,736	$926,916	$732,184	$10,996,806	$2,551,209	$1,475,054	$4,626,009	$861,916	$430,944	$397,698
Other services	$16,442,187	$498,897	$420,630	$8,975,544	$2,054,019	$951,630	$2,526,744	$459,723	$308,015	$246,985
Government & non NAICs	$6,064,127	$256,710	$209,014	$3,449,128	$547,030	$297,087	$781,150	$234,865	$190,298	$98,845
Total	$575,804,831	$20,252,558	$15,009,963	$362,496,695	$53,207,361	$25,054,399	$63,975,945	$16,259,550	$9,884,917	$9,663,443

Table 11: Impact of Nebraska's private universities on jobs by industry and county, 2006

	Total	Adams	Dodge	Douglas	Lancaster	Saline	Sarpy	Seward	Washington	York
Ag, Forestry, Fish & Hunting	7	1	0	1	2	1	1	1	0	0
Mining	0	0	0	0	0	0	0	0	0	0
Utilities	3	0	0	3	0	0	0	0	0	0
Construction	864	68	28	566	84	26	35	18	25	14
Manufacturing	127	5	6	79	15	3	15	2	0	2
Wholesale Trade	184	5	7	120	13	3	24	5	3	4
Transportation & Warehousing	200	8	5	134	20	7	16	5	2	3
Retail trade	5,303	272	211	1,896	583	547	1,111	405	176	103
Information	119	5	5	70	11	3	13	4	5	4
Finance & insurance	293	8	7	200	24	5	35	7	3	4
Real estate & rental	667	21	34	489	49	5	57	5	3	4
Professional- scientific & tech services	333	9	7	223	39	3	33	13	3	4
Management of companies	42	0	0	24	7	0	9	0	1	0
Administrative & waste services	472	15	14	326	53	18	31	5	4	7
Educational services	9,827	382	368	5,836	938	563	689	529	261	261
Health & social services	943	39	33	516	110	46	123	33	25	19
Arts- entertainment & recreation	706	29	22	314	69	64	141	36	20	11
Accommodation & food services	1,753	90	72	722	196	156	345	94	44	35
Other services	828	48	32	400	91	51	126	47	17	17
Government & non NAICs	78	4	3	41	6	5	13	4	2	1
Total	**22,747**	**1,008**	**854**	**11,960**	**2,309**	**1,506**	**2,814**	**1,211**	**593**	**493**

Table 12: Impact of Nebraska's private universities on self-employment income by industry and county, 2006

	Total	Adams	Dodge	Douglas	Lancaster	Saline	Sarpy	Seward	Washington	York
Ag, Forestry, Fish & Hunting	$89,009	$8,245	$7,400	$22,446	$5,414	$20,888	$5,870	$9,325	$4,150	$5,271
Mining	$6,680	$107	$65	$4,241	$2,014	$0	$41	$0	$127	$85
Utilities	$431,285	$0	$0	$413,495	$0	$0	$17,032	$0	$758	$0
Construction	$8,192,045	$346,459	$195,385	$6,099,479	$680,559	$249,184	$95,740	$195,673	$252,375	$77,191
Manufacturing	$203,673	$1,233	$1,089	$15,310	$107,436	$5,261	$24,342	$22,432	$1,127	$25,443
Wholesale Trade	$1,346,923	$2,030	$3,205	$1,295,682	$16,070	$3,443	$13,863	$8,521	$1,974	$2,135
Transportation & Warehousing	$759,415	$9,598	$1,505	$656,226	$50,037	$4,628	$31,070	$4,060	$1,868	$423
Retail trade	$9,810,779	$324,224	$572,660	$3,064,878	$984,922	$1,439,013	$1,420,780	$1,320,405	$377,761	$306,136
Information	$386,546	$1,688	$15,366	$158,235	$36,455	$156,003	$9,002	$7,330	$908	$1,559
Finance & insurance	$851,099	$27,779	$26,851	$634,605	$53,367	$4,390	$57,048	$23,377	$12,042	$11,640
Real estate & rental	$6,702,304	$228,398	$440,427	$4,875,097	$446,250	$8,448	$577,204	$46,673	$25,334	$54,473
Professional- scientific & tech services	$2,603,239	$58,947	$82,361	$1,920,629	$305,937	$32,176	$95,944	$31,295	$37,210	$38,740
Management of companies	-$4	$0	$0	$0	-$4	$0	$0	$0	$0	$0
Administrative & waste services	$800,497	$41,354	$10,121	$527,953	$116,248	$7,265	$78,204	$7,992	$741	$10,619
Educational services	$6,614,250	$398,654	$317,427	$3,314,504	$905,240	$520,451	$261,466	$393,886	$225,845	$276,777
Health & social services	$4,100,753	$256,645	$98,154	$1,721,786	$1,384,408	$102,966	$162,040	$114,621	$180,050	$80,083
Arts- entertainment & recreation	$1,728,800	$23,361	$19,255	$891,342	$211,853	$174,381	$349,636	$37,582	$9,139	$12,251
Accommodation & food services	$631,696	$30,614	$19,604	$359,268	$64,288	$55,938	$65,565	$24,177	$6,168	$6,074
Other services	$1,734,838	$120,595	$67,639	$919,798	$206,404	$36,251	$207,522	$130,531	$19,094	$27,004
Government & non NAICs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	$46,993,827	$1,879,931	$1,878,514	$26,894,974	$5,576,898	$2,820,686	$3,472,369	$2,377,880	$1,156,671	$935,904

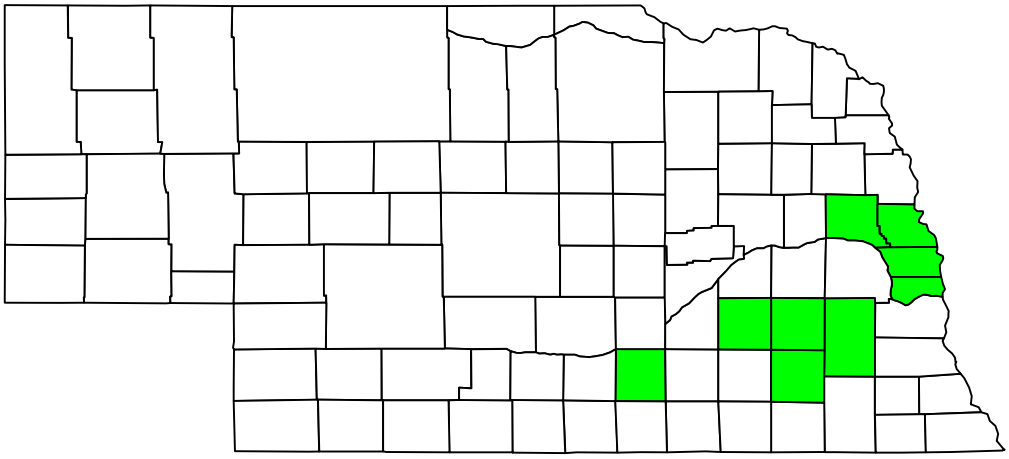
Table 13: Impact of Nebraska's private universities on taxes by industry and county, 2006

	Total	Adams	Dodge	Douglas	Lancaster	Saline	Sarpy	Seward	Washington	York
Corporate Profits Tax	$7,704,149	$265,885	$254,349	$4,716,808	$771,116	$319,306	$1,017,874	$145,726	$116,471	$96,614
Indirect Bus Tax: Custom Duty	$1,761,547	$54,327	$54,123	$1,141,900	$159,608	$77,684	$189,824	$32,649	$23,206	$28,226
Indirect Bus Tax: Excise Taxes	$5,622,133	$173,388	$172,738	$3,644,476	$509,403	$247,937	$605,839	$104,202	$74,065	$90,085
Indirect Bus Tax: Fed NonTaxes	$1,909,714	$58,896	$58,675	$1,237,948	$173,033	$84,219	$205,790	$35,395	$25,158	$30,600
Personal Tax: Income Tax	$7,139,662	$249,024	$197,820	$4,210,619	$708,968	$312,799	$956,284	$255,376	$149,331	$99,441
Social Ins Tax- Employee Contribution	$32,376,780	$1,169,867	$922,169	$20,668,434	$3,046,572	$1,531,194	$3,055,633	$888,991	$589,400	$504,520
Social Ins Tax- Employer Contribution	$31,391,473	$1,125,661	$869,686	$20,174,037	$2,904,533	$1,457,256	$3,007,204	$814,442	$558,753	$479,901
Total federal tax collections	**$87,905,458**	**$3,097,048**	**$2,529,560**	**$55,794,222**	**$8,273,233**	**$4,030,395**	**$9,038,448**	**$2,276,781**	**$1,536,384**	**$1,329,387**
Corporate Profits Tax	$1,019,161	$35,173	$33,647	$623,973	$102,009	$42,240	$134,652	$19,278	$15,408	$12,781
Dividends	$1,929,575	$66,593	$63,704	$1,181,369	$193,133	$79,973	$254,936	$36,498	$29,171	$24,198
Indirect Bus Tax: Motor Vehicle Lic	$546,125	$22,035	$19,360	$279,035	$56,852	$33,032	$96,424	$20,645	$10,802	$7,940
Indirect Bus Tax: Other Taxes	$2,755,976	$111,200	$97,700	$1,408,126	$286,898	$166,693	$486,597	$104,183	$54,509	$40,070
Indirect Bus Tax: Property Tax	$821,686	$33,154	$29,129	$419,828	$85,538	$49,699	$145,077	$31,062	$16,252	$11,947
Indirect Bus Tax: S/L NonTaxes	$9,943,806	$401,219	$352,509	$5,080,647	$1,035,153	$601,443	$1,755,688	$375,900	$196,673	$144,574
Indirect Bus Tax: Sales Tax	$37,823,324	$1,526,120	$1,340,841	$19,325,291	$3,937,419	$2,287,712	$6,678,121	$1,429,815	$748,086	$549,919
Indirect Bus Tax: Severance Tax	$27,402	$1,106	$971	$14,001	$2,853	$1,657	$4,838	$1,036	$542	$398
Personal Tax: Income Tax	$11,397,454	$414,725	$333,436	$6,619,731	$1,141,646	$533,832	$1,525,981	$420,044	$239,122	$168,937
Personal Tax: Motor Vehicle License	$621,820	$23,618	$18,815	$365,453	$62,335	$30,553	$76,971	$22,266	$12,164	$9,645
Personal Tax: NonTaxes (Fines- Fees	$450,051	$17,277	$13,887	$261,831	$45,317	$22,592	$56,602	$16,471	$8,969	$7,105
Personal Tax: Other Tax (Fish/Hunt)	$382,999	$13,274	$10,412	$230,506	$37,747	$16,531	$48,629	$13,060	$7,565	$5,275
Personal Tax: Property Taxes	$9,933	$408	$328	$5,712	$1,009	$545	$1,198	$369	$192	$172
Other miscellaneous taxes	$850,332	$45,601	$38,546	$406,579	$157,320	$53,680	$64,490	$35,211	$34,120	$14,785
Total state & local tax collections	**$68,579,644**	**$2,711,503**	**$2,353,285**	**$36,222,082**	**$7,145,229**	**$3,920,182**	**$11,330,204**	**$2,525,838**	**$1,373,575**	**$997,746**

Impacts by County

Figure 4 shows the geographic location by county of the state's fourteen Independent colleges.

Figure 4: Counties with private colleges/universities



As presented in Figure 4, the Nebraska counties of Adams, Dodge, Douglas, Lancaster, Saline, Sarpy, Seward, Washington and York have private higher education institutions. Table 14 summarizes the impacts by county. Of course, Douglas and Lancaster counties with multiple institutions receives more of an economic boost than the other counties with only one institution.

Table 14: Impact of independent colleges by county

	Overall	Wages & Salaries	Self-employment Income	Jobs	State & Local taxes
Adams	$54,416,529	$20,252,558	$1,879,931	1,008	$2,711,503
Dodge	$44,359,940	$15,009,963	$1,878,514	854	$2,353,285
Douglas	$854,120,417	$362,496,695	$26,894,974	11,960	$36,222,082
Lancaster	$139,267,953	$53,207,361	$5,576,898	2,309	$7,145,229
Saline	$68,612,888	$25,054,399	$2,820,686	1,506	$3,920,182
Sarpy	$157,250,951	$63,975,945	$3,472,369	2,814	$11,330,204
Seward	$49,202,381	$16,259,550	$2,377,880	1,211	$2,525,838
Washington	$27,524,427	$9,884,917	$1,156,671	593	$1,373,575
York	$25,210,982	$9,663,443	$935,904	493	$997,746

Summary

Tables 15 and 16 compare population and income growth for Nebraska counties with private higher education institutions with those without private higher educational institution. As shown, counties with independent colleges experienced higher growth than counties without such institutions. Given the significant economic impacts outlined in this study these differences are as expected. Not only do the institutions provide a substantial economic stimulus to their respective counties, they contribute to the attractiveness of the community above and beyond the sheer economic impacts.

Table 15: Comparison of population growth of counties with and without private higher education institutions

	Population		
County	**1990**	**2000**	**Growth, 1990-2000**
Adams County	29,625	31,151	5.2%
Dodge	34,500	36,160	4.8%
Douglas	416,444	463,585	11.3%
Lancaster	213,641	250,291	17.2%
Saline	12,715	13,843	8.9%
Sarpy	102,583	122,595	19.5%
Seward	15,450	16,496	6.8%
Washington	16,607	18,780	13.1%
York	14,428	14,598	1.2%
All counties with private colleges	855,993	967,499	13.0%
All Other Counties	722,424	743,764	3.0%
State	1,578,417	1,711,263	8.4%

Source: U.S. Census Bureau

Table 16: Comparison of income growth of counties with and without private higher education institutions

	Personal income		
	1990	2000	Growth, 19990-2000
Adams County	$528,582	$760,253	43.8%
Dodge	$546,878	$918,906	68.0%
Douglas	$8,858,148	$16,334,053	84.4%
Lancaster	$3,927,035	$7,217,080	83.8%
Saline	$203,264	$288,647	42.0%
Sarpy	$1,812,295	$3,181,510	75.6%
Seward	$260,247	$400,933	54.1%
Washington	$304,683	$571,818	87.7%
York	$259,405	$383,664	47.9%
All counties with private colleges	$16,700,537	$30,056,864	80.0%
All Other Counties	$11,890,566	$17,261,840	45.2%
State	$28,591,103	$47,318,704	65.5%

Source: U.S. Bureau of Economic Analysis

Appendices

Appendix A: Why Estimate Impacts?

Since the early 1980s, one of the most frequent applications of economic tools to industrial assessment has been economic impact analysis. The focus of such studies has been to convince policy makers and the general public of the importance of the industry to the economic viability of the state. However, the assessment of the impact of business investment is fraught with problems.

The impact analysis can also be used to tailor tax restructuring initiatives to the needs of firms and the overall economy and to insure that the changes are consistent with the overall economic development plan of the community or state.

These problems center on measurement issues and include the proper treatment of the industry's impact on spending by local residents, the extent to which the industry diverts spending from other local firms, and the isolation of the industry's impact on other non-education and health related firms in the area.

Despite these difficulties, the *Council of State Governments* contends that communities should undertake economic impact analysis to assess the costs and benefits of either retaining an existing event/business, or attracting a new event or business (Council of State Governments, 1989). Impact analysis can also be used to tailor tax restructuring initiatives to the needs of firms and the overall economy, and to insure that the changes are consistent with the overall economic development plan of the community or state. Furthermore, many states, including Nebraska, have enacted legislation requiring completion of a cost-benefit assessment by local governments granting tax incentives or concessions.

However, due to the rapid growth of tax incentive/subsidy packages, and the belief that their state should remain competitive, policymakers in many states and localities have awarded tax incentive packages or made changes to the tax system not well grounded in economic theory or empirical evidence. According to the *Council of State Governments*, the presence of interstate impacts, as with the universities, necessitates the development of new models of assessment to more properly evaluate the impact of the industry.[9]

At the same time that citizens are asking public officials to be more proactive in economic development, they are holding public officials to a higher level of fiduciary responsibility regarding tax dollars. But given this increased accountability, why have states been slow to adopt evaluation methodologies? According to Bartik (1991), the following represent the primary reasons that states do not use systematic or structured evaluation programs:

- Good evaluations are expensive.
- Findings from analyses are available to states and localities not paying for the assessment.
- Negative evaluations are sometimes used against an industry, whereas positive evaluations are often discounted by critics.
- Obtaining reliable data to produce accurate estimates of both costs and benefits is difficult and fraught with ambiguity.
- The time frame over which the benefits are derived and costs incurred is difficult to gauge. Evaluations are simply snapshots of the effect of policy at a particular time with future changes not considered.

[9]It is quite likely, for example, that a significant proportion of impacts occur across the Nebraska border.

The breadth or diversity of initiatives prevents a systematic or structured evaluation approach. For example, projects usually have different objectives, diverse time-scales and take effect in different ways.

According to the *Council of State Governments* (1989), states and localities should at least begin systematically collecting data on incentives and monitoring their effects with a comprehensive evaluation in mind. To expand economic development programs on a significant scale, it should be demonstrated to skeptics that these programs have a large effect on state or local area economic performance. While objective evidence of effectiveness will not overcome all political opposition, it can change the terms of the policy debate. Not only can the evaluation affect the actions of public officials, it can push industry leaders to be more vigilant in fully meeting their promises and commitments. The objective of this study is to estimate the public benefits of private universities and colleges on Nebraska.[10]

According to the *Council of State Governments* (1989), states and localities should at least begin systematically collecting data on inter-industry buying with a comprehensive evaluation in mind.

[10]Section 1 of LB 1373 passed by the 1996 Nebraska legislature states that "It is the intent of the Legislature to accurately and objectively measure the costs and benefits of tax incentives granted by state and local governments to businesses, individuals, and communities using the tax incentives."

Appendix B: Types of Economic Impacts

Economic impacts can be divided into direct, indirect and induced impacts. The most obvious *direct impact* of the higher education spending on the economy comes in the form of university and college salaries and in the form of purchases of supplies from vendors in the region. *Indirect impacts* come from expenditures by these vendors to their suppliers. Employees of the supplying firms spend their wages and salaries in Nebraska. This re-spending, or second round multiplying, is referred to as an *induced impact.* From an economic perspective, tuition revenues, federal research funds and visitor revenues represent new dollars in the state's economy and are thus very powerful in generating jobs and income for the area.

Direct Economic Impacts**.** College and university revenues flowing into the state have direct economic effects on their local economies by making expenditures for goods and services and by paying employee salaries. The most obvious direct expenditures are payment of wages to workers employed by private colleges and universities. In addition, expenditures by business visitors to the institutions in the area produce direct impacts on the region affecting primarily the Wholesale and Retail Trade Industry. Examples of direct economic impacts are color coded blue in Figure 3.

Indirect Economic Impacts**.** Private colleges and universities also produce indirect economic effects on the area economy. For example, office supply companies buy merchandise from area wholesalers. Furthermore, institution expenditures encourage the startup and expansion of other businesses related to the college or university. Private colleges and universities generate indirect effects by increasing: (a) the number of firms drawn to a community, (b) the volume of deposits in local financial

institutions and, (c) economic development**.** Examples of indirect economic impacts are color-coded yellow on Figure 3.

Induced Economic Impacts. Induced impacts in the region occur as the initial spending feeds back to industries in the region when workers in the area purchase additional output from local firms in a second round of spending. That is, higher education spending increases overall income and population, which produces another round of increased spending adding to sales, earnings and jobs for the area. Examples of induced economic impacts are color coded red Figure 3.

….. private college and university spending increases overall income and population, which produces another round of increased spending adding to sales, earnings and jobs for the area.

Appendix C: The Multiplier Effect

When private colleges and university employees spend their salaries within the community, this spending filters through the local economy causing increased overall spending greater than the initial spending. The impact of this re-spending is known as the *multiplier effect*. Economic impacts that take place outside the local economy, for example college and university employee spending in Kansas City or Des Moines, are called leakages and reduce the multiplier and overall impacts. They are excluded when estimating regional economic impacts. While the direct effects of private colleges and universities can be measured by a straightforward methodology, the indirect and induced effects of institution spending must be estimated using regional multipliers.

Nebraska university spending outside the local economy, for example spending in Des Moines, is called a leakage and reduces the multiplier and the overall impacts.

While the direct effects of private college and university spending can be measured by a straightforward methodology, the indirect and induced effects of must be estimated using regional multipliers.

Community characteristics that affect leakages, and consequently the multiplier include:

Location. Distance to suppliers affects the willingness to purchase locally. For example, if Omaha firms are unable to provide many of private colleges and universities supplies at competitive prices and there are alternative suppliers in Des Moines who are

more price competitive, then institutions will be encouraged to spend outside the community. This results in greater leakages, lower multipliers and smaller impacts.

Population size. A larger population provides more opportunities for companies and workers to purchase locally. Larger population areas are associated with fewer leakages and larger multipliers. Thus, in general, tuition and research revenues flowing into Omaha will have larger impacts than the same level of tuition and research revenues flowing into Lincoln or South Sioux City.

Thus, in general, tuition and research revenues flowing into Nebraska will have larger impacts than the same level of revenues flowing into North Dakota or Wyoming.

Type of industry. A community will gain more if the inputs required by local industries for production match local resources and are purchased locally. Thus, over time, as new firms are created to match the requirements of private colleges and universities, leakages will be fewer, resulting in larger multipliers and impacts.

The next chapter discusses the selection of an estimation technique to measure the direct, indirect and induced impacts of private colleges and universities on Nebraska, on Nebraska counties, and on Nebraska industries.

Economic impacts identified in this study are short-run in nature and represent annual, recurring events. Long run, but intangible factors, such as work force development and knowledge enhancement are recognized but no attempt is made to assign dollar values.

Appendix D: Choosing a Technique to Measure Impacts

Many types of public and private-sector decisions require an evaluation of probable regional effects. Since important impacts are often economic, this requirement has created a need for regional economic impact models. The three most common types of impact models are economic base, econometric, and input-output (I-O).

The three most common types of impact models are economic base, econometric and input-output (I-O).

Two of the three impact models have inherent disadvantages that markedly reduce their viability for estimating the impact of higher educational institutions on the economy.

Economic Base Model. The economic base model divides the economy into two sectors--the local/service sector and the export sector. The economic base multiplier is an average for all the economy making it impossible to distinguish, for example, the impact of a university from that of a new manufacturing plant.

I-O models are the most frequently used analysis tools for economic impact assessment.

Econometric Models. Econometric models have two major weaknesses. First, the time series data used in constructing econometric models are often unavailable at the state and metropolitan area level, thus precluding county-level analysis. This is especially true for rural counties and for counties with small populations. Second, econometric models are costly to build and maintain.

Input-Output (I-O) Models. I-O models are the most frequently used types of analysis tool for economic impact assessment. Input-output is a simple general equilibrium approach based on an accounting system of injections and leakages. Input-output analysis assumes that each sector purchases supplies from other sectors and then sells its output to other sectors and/or final consumers.

Historically, high costs precluded the extensive use of I-O models in regional impact analysis. For example, approximately $250,000 was expended over a five year period for the collection and processing of data for a 500-industry Philadelphia I-O study. However, with the advent of "ready-made" multipliers produced by third parties, such as the U.S. Forestry Service, I-O multipliers became a much more viable option for performing impact analysis.

All purely non-survey techniques or "ready-made" multipliers take a national I-O table as a first approximation of regional inter-industry relationships. The national table is then made region specific by removing those input requirements that are not produced in the region.

Input-Output Models: A Preferred Methodology

Input-output systems were originally developed by Wassily Leontief (1941) to assist in planning a national economy. Input-output represents an effective method for depicting and investigating the underlying processes that bind industries of a region. It provides a technique to project into the future the magnitude of important additions or injections into the local economy.

Input-output systems are composed of three basic tables. The first, *the Transactions Table*, traces inter-industry sales and purchases within a defined region.

The next table, the *Direct Requirements Table*, answers the question, "If a certain dollar value of intermediate requirements is present for a total dollar value of gross output, what are the intermediate requirements for each industry per dollar of gross output?" The manipulation of these two tables results in the final and most important of the tables, the *Industrial Multiplier Table*. The multiplier table is then used to calculate overall impacts.

Chief problems involved in the use of multipliers are:

- Selection of industries. For which industries will impacts be estimated? The selection is generally dictated by definitions used by government agencies that collect the data. For example, most government data do not distinguish employment in a cardiac center or clinic from that in a hospital.
- Selection of a region. Again, government agencies collect aggregate data by county, thus requiring the analysis to take place at the county level or combination of counties. Most developers of "ready-made" multipliers use the *County Business Patterns* as the primary data source. For this study, the county of each institution is the area of analysis.

For this study, the county of each institution is the area of analysis

Major assumptions of the I-O model:

- Constant production coefficients. For example it is assumed that "x" dollars of new revenues flowing to the college or university will produce "y" dollars of output regardless of the scale of operations. In other words, the I-O model assumes constant returns to scale.
- Government purchases or federal contracts and grants represent changes in final demand. That is, government spending is considered an injection into the region.

- Constant technological relationships between inputs and outputs. Thus I-O multipliers assume that technology remains the same between the time the multipliers are calculated and the period for which impacts are estimated.
- Old purchasing patterns are the same as new purchasing patterns. Thus, it is assumed that purchasing patterns between private suppliers remain the same over the period of analysis.
- No supply constraints. I-O models do not take into consideration the problem of finding an adequate supply of workers to fill new jobs brought about by the 14 private colleges and universities in the state. With a current unemployment rate of between 2.5% and 3.5%, an expansion in new jobs produced by Nebraska's private colleges and universities would likely go to residents outside the area.[11]

Due to their documented effectiveness and relatively low cost, the I-O multipliers used in this study are the Implan multipliers.

Despite their weaknesses and somewhat restrictive assumptions, I-O multipliers are the most often used methodology for impact analysis. Due to their documented effectiveness and relatively low cost, the I-O multipliers used in this study are those produced by the U.S. Forestry Service and marketed by the Minnesota IMPLAN Group Inc. The next section describes these multipliers.

[11]Bartik (1991) estimated that 75% of the net new jobs resulting from a business expansion or business relocation go to in-migrants.

Appendix E: IMPLAN Multipliers

The Forestry Service of the U.S. Department of Agriculture developed the IMPLAN multipliers in the 1980s (U.S. Forest Service, 1985). For very populous areas, IMPLAN divides the economy into 528 industrial sectors. Industries that do not exist in the region are automatically eliminated during user construction of the model (e.g. coal mining in Lancaster County). IMPLAN uses an industry-based methodology to derive its input-out coefficients and multipliers. Primary sources for data are *County Business Patterns* data and *Bureau of Economic Analysis* data.

Researchers have used IMPLAN to estimate the impact of changes in military spending on the Washington State economy (Hughes, et. al, 1991). IMPLAN and RIMS (Regional Input-Output Modeling System) are two of the most widely used multiplier models. IMPLAN has been compared to other multiplier systems and found to produce reliable estimates (Richman and Schwer, 1993). Likewise, Crihfield and Campbell (1991), in estimating the impacts of opening an automobile assembly plant, concluded that IMPLAN's outcomes are, on balance, somewhat more accurate than RIMS.

IMPLAN and RIMS (Regional Input-Output Modeling System) are two of the most widely used multiplier models.

IMPLAN multipliers possess the following advantages over other I-O Multiplier Systems:

1. Price changes are accounted for in the creation of the multipliers.
2. Employment increases or decreases are assumed to produce immediate in or out-migration.

3. Multipliers are produced at reasonable costs by third party vendors.

IMPLAN produces five different sets of multipliers. This study focuses primarily on four of these multipliers. Descriptions of the four multipliers are presented in Table 3.1.

Table 17: Multipliers Provided by IMPLAN and Used in This Study

Type of Multiplier	Description
Output Multipliers	Represents the value of production required from all sectors to deliver one dollar's worth of output in a particular sector. For private colleges and universities, this multiplier is generally in the range of 1.5 to 2.0.
Wage and Salary Multipliers	Shows the direct, indirect, and induced employee wages and salaries generated per dollar of initial spending (injection). For private colleges and universities, this multiplier ranges between .60 and .80.
Employment Multipliers	Direct, indirect and induced employment effects from the production of one *million* dollars of new spending (injection). For private colleges and universities, this multiplier is between 30.0 and 50.0.
Profit Multipliers	Shows the direct, indirect, and induced profits generated per dollar of spending (injection). For private colleges and universities, this multiplier ranges between .60 and .80.
Tax Multipliers	Direct, indirect and induced tax effects from each dollar of private colleges and universities spending by visitors.

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Researchers Biographies

George Vozikis is the Davis D. Bovaird Endowed Chairholder of Entrepreneurial Studies and Private Enterprise at the University of Tulsa, and the founding director of the Family-Owned Business Institute, as well as the Tulsa University Innovation Institute. Prior to joining the University of Tulsa, he taught at the Citadel Military College where he was the Alvah H. Chapman Endowed Chair in Business Administration, and the founding director of the Citadel's Center for International and Regional Development. Vozikis has also taught at the University of Memphis, the University of Alabama in Huntsville, the University of Miami, the University of Oklahoma, and the University of North Texas.

He received his Ph.D. in business administration from the University of Georgia under the direction of the late William F. Glueck, and his M.B.A. from Virginia Commonwealth University. In addition to numerous journal publications, conference papers, and books, Vozikis has conducted executive development seminars and served as a consultant for many organizations, such as Aramco, Goldstar, McDonnell Douglas Corporation, GTE, the Medical University of South Carolina, the U.S. Army Missile Command, the Williams Companies, and many family businesses. He has also served in the past as chair of the Entrepreneurship Division of the Academy of Management, and as track chair for the Southern Management Association.

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He has published over eighty research studies focusing primarily on economic forecasting and on the statistical analysis of business and economic data. His research paper entitled, *The Internet's Contribution to U.S. Productivity Growth*, received the National Association of Business Economics Edmund A. Mennis Contributed Papers Award for 2001. His book, Changing Attitudes toward Economic Reform during the Yeltsin Era was published by Praeger Press in 2003 and his book *Governing Fortunes: Casino Gambling in the U.S.* will be published by the University of Michigan Press in 2006.

He is a member of the Editorial Board of The Review of Regional Studies and editor of Economic Trends, an economics newsletter published three times per year. He is the past president of the Omaha Association of Business Economics, and President of the Nebraska Purchasing Management Association. Goss produces a monthly business conditions index for the nine state Mid-American region and the three state Mountain region. Survey results are cited each month in approximately 100 newspapers.

Newspaper citations have included the New York Times, Wall Street Journal (4 times last year), Investors Business Daily, The Christian Science Monitor, Chicago Sun Times and other national and regional newspapers and magazines. Each month 75-100 radio stations carry his Regional Economic Report.