

**The Economic Impact of
Early College Opportunity Programs
at Iowa's Community Colleges**

Prepared for the
Iowa Association of Community College Trustees
And the
Iowa Association of Community College Presidents

Strategic Economics Group
Des Moines, Iowa

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Executive Summary

Iowa code permits high school students to enroll in courses at community colleges, Board of Regents universities or private colleges. The student may receive high school credit towards graduation, as well as academic or vocational college credit upon completion of the course.

Because state policymakers are interested in ensuring that state funds are invested wisely, successfully decreasing the time-to-degree for college students is one way of achieving this goal in a cost effective manner. Decreasing the time-to-degree can and does result in a substantial savings of public dollars. Decreasing the time-to-degree can also provide a real cost savings to Iowa families.

Our analysis of data for the 2005 school year¹ indicates that:

- 27,331 students participated in early college opportunity programs at Iowa community colleges
- they earned 142,140 credits in college-level courses
- that is the equivalent of 4,738 full-time students for a year
- the cost to the State of Iowa was about \$9.8 million

As a result of this program, we estimate that those students:

- saved the State the equivalent of \$21.7 million in future state general aid assistance at other educational institutions
- saved their families the equivalent of \$30.7 million in future college-related expenses
- generated a 535% return on the program's investment ($\$21.7 \text{ million} + \$30.7 \text{ million} = \$52.4 \text{ million} \div \$9.8 \text{ million} = 5.3469$)

As a result of this program, we estimate that the savings impacted the economy of Iowa by:

- increasing our consumer spending by \$57.8 million
- increasing our personal income by \$12.7 million
- increasing the State gross domestic product (the value of our production) by \$24.2 million
- increasing employment by 470 jobs
- increasing state tax receipts by \$2.2 million as a result of the additional economic activity that the savings generated

¹ 2005 was the most recent year for which consistent and complete data was available.

Introduction

Concurrent enrollment classes have been increasingly popular in Iowa and other states as a means of offering to high school students challenging learning opportunities and quality preparation for college. Because state policymakers are interested in ensuring that state funds are invested wisely, successfully decreasing the time-to-degree or certification for college students is one way of achieving these goals in a cost effective manner.

In Iowa, state funds underwrite the cost of education at the public colleges and tuition support assists students at Iowa's private colleges. Decreasing the time-to-degree can and does result in a substantial savings of public dollars. Decreasing the time-to-degree can also provide a real cost savings to Iowa families. The objective of this report is to analyze the magnitude of these savings and the benefits to the state and local economy.

Background

There are two general types of enrollment for high school students in the community colleges. The first is Iowa's Postsecondary Enrollment Options Act (PSEO)² which was enacted to promote rigorous academic pursuits and to provide a wider variety of options to high school students. It enables 11th and 12th grade students, along with 9th and 10th grade students identified as gifted and talented, to enroll part time in college credit courses offered by two- and four-year colleges. A comparable course, as defined by a rule made by the board of directors of the public school district, must not be offered by the school district or the accredited non-public school district that the student attends. If an eligible institution accepts a high school student for enrollment, the institution must send written notice to the student, the district, and the Iowa Department of Education.

This notice must list the course, the clock hours, and the number of hours of postsecondary or vocational-technical credit that the student will receive upon successful completion of the course. If a student successfully completes a postsecondary course, he or she is likely to be granted secondary

² A comparison of the policy characteristics and funding mechanisms of similar programs offered in twelve Midwest states is provided in Appendices B and C.

credit, and the credit will appear on his or her transcript. This credit counts toward high school graduation requirements. Further, a student may take and receive credit for up to seven semester hours of credit during the summer if the student pays the cost of attendance.

The PSEO legislation stipulates a funding arrangement: high schools must pay the partnering college an amount not to exceed \$250 for college tuition, textbooks, and fees. Students must reimburse the district if they do not complete or successfully pass the course. Since the inception of this program, increasingly, the postsecondary institutions report that the \$250 fails to cover all of the colleges' costs of offering courses to high school students, yet no additional tuition or fees can be collected from the students or the high school. The maximum payment of \$250 for each high school student involved under the PSEO legislation, in most cases, is insufficient to cover all costs associated with the program.

The second type of plan used to enroll high school students in community colleges relies on the supplementary weighting plan within the school foundation formula (Section 257.11, Code of Iowa) to address the funding issue. This supplemental weighted funding allows local school districts to receive additional state funding (1.48 funding factor) for high school students enrolled in community college courses.

This funding stream is critical to the growth and sustainability of dual enrollment of high school students in community colleges and accounts for 84.4% of the student credit hours in FY05. To qualify for supplemental weighted funding, the local school district must verify that the specified community college courses meet seven criteria. They must:

- Supplement, not supplant, high school courses
- Be included in the community college catalog or an amendment or addendum to the catalog
- Be open to all registered community college students, not just high school students
- For college credit and the credit must apply toward an associate of arts or associate of science degree, or toward an associate of applied arts or associate of applied science degree, or toward completion of a college diploma program
- Taught by a community college-employed instructor
- Taught utilizing the community college course syllabus
- Of the same quality as a course offered on a community college campus

The state policy for supplemental weighted funding has led to an increase in the number of contractual

agreements³ between high schools and community colleges for the provision of college credit classes to high school students.

The most recent public policy supporting dual enrollment was legislation passed in 2002 for the development and implementation of career academies or programs of study which:

- combines a minimum of two years of secondary education with a postsecondary career preparatory program
- provides a non-duplicative sequential course of study that is standards-based
- integrates academic and technical instruction
- incorporates work-based and worksite learning, where appropriate and available
- uses an individualized career-planning process that involves parents
- leads to an associate degree or postsecondary diploma or certificate in a rewarding, high-skill career field

Several funding streams are available to support career academies, which are a sequence of studies offered to high school students through an agreement or contract between their high school and a community college. A traditional 28e agreement between the school district and the community college or a variety of state and federal programs can be used to finance career academies (Iowa Administrative Code 281-47.2). The Iowa Department of Education's approval process for secondary vocational education programs requires documentation of articulation with the community college.

Dual enrollment programs can make a college education or an associate degree attainable to qualified low income students by reducing at the margin the opportunity cost of going to college. It can provide an entry to a better life for low income underrepresented populations not just for the gifted students. That point was made in a recent report funded by the Bill and Melinda Gates Foundation and the Ford Foundation.

³ Iowa Code 2007, Title 1, Chapter 28E, Joint Exercise of Governmental Powers reads, "Any power or powers, privileges or authority exercised or capable of exercise by a public agency of this state may be exercised and enjoyed jointly with any other public agency of this state having such power or powers, privilege or authority, and jointly with any public agency of any other state or of the United States to the extent that laws of such other state or of the United States permit such joint exercise or enjoyment. Any agency of the state government when acting jointly with any public agency may exercise and enjoy all of the powers, privileges and authority conferred by this chapter upon a public agency."

According to the report's author, "in states with long-term programs and no costs to students, between 10 and 30 percent of juniors and seniors gain college credit in high school. When promoted as an acceleration mechanism or head start on college rather than a program for gifted students, a wide range of students benefit. In some states, students headed for career and technical certificates and associate's degrees make up half of dual enrollments."⁴

Getting an early start on college while in high school can increase the odds that a person will complete college and move on to a career with the expectation of higher lifetime earnings. Shortening the time-to-degree can also speed up the return-on-investment of limited state education dollars.

Methodology

The dual credit/concurrent enrollment program at the community colleges offers a valuable opportunity for Iowa high school students to begin acquiring college credits while they complete their high school requirements. In addition to the academic enrichment opportunity, the program offers significant economic benefits to the students, their family and the State.

As college costs continue to rise and pose potential financial hardships for many families, the dual credit program provides an opportunity for students to get an early start on their college programs while still in high school and can shorten the length of time required to obtain a college or vocational degree. At today's college costs, even a semester can offer considerable savings to students and families. For those students pursuing a two-year college degree program, it can mean entering the workforce sooner.

Most recent estimates indicate 27,331 students participated in this program in 2005. Those students completed slightly more than 142,000 credits (See Table 1). Throughout this report, we have referenced 2005 as the most recent academic year for which consistent and comprehensive data is available.

⁴ Nancy Hoffman, Add and Subtract: Dual Enrollment as a State Strategy to Increase Postsecondary Success for Underrepresented Students. One of a series of *Double the Numbers* publications from Jobs for the Future, April 2005.

Table 1. Dual Enrollment of High School Students in Community College Classes
Enrollment and Credit Hours, FY 2005

Community College	Post-Sec. Enroll. Options (PSEO)				Weighted Enrollment				Total	
	Undup. Head count	% of total	Credit hours	% of total	Undup. Head count	% of total	Credit hours	% of total	Undup. Head count	Credit hours
Northeast Iowa	407	18.6%	1,613	14.3%	1,777	81.4%	9,689	85.7%	2,184	11,302
North Iowa Area	291	30.6%	1,471	24.1%	660	69.4%	4,631	75.9%	951	6,102
Iowa Lakes	347	38.2%	2,151	58.2%	561	61.8%	1,548	41.9%	908	3,699
Northwest Iowa	141	17.5%	596	18.8%	663	82.5%	2,577	81.2%	804	3,173
Iowa Central	407	15.5%	2,003	10.0%	2,227	84.6%	18,080	90.0%	2,634	20,083
Iowa Valley	162	20.0%	817	14.8%	649	80.0%	4,711	85.2%	811	5,528
Hawkeye	275	25.4%	1,520	31.7%	809	74.6%	3,283	68.4%	1,084	4,803
Eastern Iowa	638	36.1%	1,945	36.4%	1,132	64.0%	3,395	63.6%	1,770	5,340
Kirkwood	515	19.8%	2,343	22.6%	2,083	80.2%	8,031	77.4%	2,598	10,374
Des Moines Area	642	12.5%	3,383	10.0%	4,494	87.5%	30,535	90.0%	5,136	33,918
Western Iowa Tech	220	4.5%	669	4.7%	4,674	95.5%	13,642	95.3%	4,894	14,311
Iowa Western	176	10.3%	1,350	10.5%	1,533	89.7%	11,538	89.5%	1,709	12,888
Southwestern	222	40.0%	787	21.4%	333	60.0%	2,899	78.7%	555	3,686
Indian Hills	500	73.6%	1,323	32.2%	179	26.4%	2,784	67.8%	679	4,107
Southeastern	50	8.1%	174	6.2%	564	91.9%	2,653	93.9%	614	2,827
Total	4,993	18.27%	22,145	15.58%	22,338	81.73%	119,995	84.42%	27,331	142,140

Source: Iowa Legislative Services Agency, Fiscal Services, Enrollment of High School Students at Community Colleges, 2006.

Since these dual credit courses also count as college level credit, successfully completing the classes while in high school can save time and money at the college level. The value of tuition savings to the state and to the family will depend on the type of college the student chooses to attend.

The tuition savings provides benefit to both the student and the state. Under the PSEO the cost of providing college-credit classes to high school students through the community college system does cost school systems a maximum of \$250 per semester long class. These fees are paid by the local school system and require funds to be raised. However, this cost is considerably less than the equivalent state aid that goes to the public universities and community colleges as well as the private colleges which benefit from scholarships that are made to Iowa high school graduates who attend a private college in Iowa. We assumed that the college credits received in high school will shorten the required time to college graduation by a comparable amount. Less time required to complete college means less financial drain on personal and state budgets.

The savings to the state budget can be viewed as a potential reduction in the amount of state aid that will need to be provided to these Iowa students as they enter Iowa's colleges and universities for a shortened period of time. To obtain a better estimate of these cost savings to the state, we need to know the number of students involved and the differential in state budget dollars. The student information is available from a number of sources. Each year the Iowa Department of Education publishes the survey results of the post graduation plans of Iowa high school seniors.⁵

Seventy-seven percent had plans for some level of college. However, since not all of these students will be attending Iowa schools, some additional adjustment is needed.

For another indication of likely college choices of Iowa students, we looked at the composition of the student body in Iowa. The public record on student enrollment at Iowa universities and colleges provided additional information on college choices by Iowa students. A January 2006 report to the Iowa College Student Aid Commission on the Iowa Tuition Grant Legislative Policy Report summarized information on Iowa students attending higher learning institutions in Iowa. This report indicates that 16,002 Iowa students received a state-funded tuition grant to attend a private college in Iowa in 2005. This same report provided estimates of students enrolled at Board of Regents schools in Iowa for the same period. Based on this report⁶ and state budget information relating to publicly funded schools and student numbers in the Iowa tuition grant program, we arrived at the numbers and percentage distribution of undergraduate students in Iowa for the 2005-06 school year (See Table 2).

Table 2. Distribution of Undergraduate Students in Iowa, 2005-06

Educational Institution	Students	Weighting Factor
Board of Regents undergraduate enrollment	51,984	34.5%
Community College enrollment	82,499	54.8%
Private Colleges, students receiving tuition grants	16,002	10.6%
Total	150,485	100.0%

Source: Iowa College Student Aid Commission, Iowa Tuition Grant Legislative Policy Report, 2006.

⁵ Check the Iowa Department of Education's internet site at www.iowa.gov/educate/component/option,com_docman/task,cat_view/gid,531/Itemid,55/.

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To zero in on the cost savings to the state from students shortening their length of stay at Iowa colleges, we next focus on the level of state aid to the universities and colleges in support of these students. Data are from the state budget and include direct appropriations to the schools and to the tuition grant program. State aid dollars to students at Iowa universities and colleges for FY2006 and per capita amounts that go along with these student numbers are presented in Table 3.

Table 3. Per Student Cost of State Support

Educational Institution	Total State Support*	Average State Support per Student
Board of regent schools	\$484,273,312	\$9,316
Community Colleges	\$157,910,624	\$1,914
Private colleges (tuition grants)	\$46,938,709	\$2,933

* Source: Iowa Department of Management, Operating Budget

Public Sector Savings

With this information, the research staff estimated the governmental savings to the state from this program by applying the state aid per student data to the distribution of students by different types of educational institutions and multiplying that by the full time equivalent credits taught at the community colleges. Assuming a full time student load of 30 semester hours per year, the total credits of 142,140 translated to 4,738 FTE students ($142,140 \div 30 = 4,738$). The student FTEs distributed by the pattern of college choice in Tables 2 and 3 established our estimate of total cost savings and the distribution of that savings according to type of college.

Table 4. Weighted Cost of College for Early College Opportunity Students, 2005

Educational Institution	Weighting (from Table 2)	Number of Students 2005	Average State Support per Student (Table 3)	State Aid Savings
Board of regent schools	34.5%	1,637	\$9,316	\$15,250,292
Community Colleges	54.8%	2,597	\$1,914	\$4,970,658
Private colleges (tuition grants)	10.6%	504	\$2,936	\$1,479,744
Total	100.0%	4,738		\$21,700,694

We estimated the reduction in state aid as a result of the students in the early college opportunity program in 2005 at \$21.7 million (Table 4). Offsetting these savings is the appropriation to the local school districts that paid for these programs. In 2005-06 these costs were reported as \$9.8 million⁷, for a net savings of \$11.9 million to the state (\$21,700,694 - \$9,849,914 million = \$11,850,780).

The savings enabled state policymakers to support other budget priorities. Table 5 shows our Input-Output estimates of the secondary effects on the State economy of that \$11.9 million savings. When circulated through the economy, that savings created an additional \$16 million in consumer spending, \$3.5 million in additional personal income and resulted in an additional 131 jobs.⁸

Table 5. Economic Impact of Program Savings to Government

Sectors	Total Sales	Labor Income	Value Added	Jobs
Agriculture & Mining	\$2,007,772	\$71,116	\$1,510,012	2
Utilities	\$363,632	\$83,926	\$206,195	2
Manufacturing	\$1,119,275	\$172,941	\$267,438	4
Transportation & Warehousing	\$269,302	\$114,261	\$145,771	3
Wholesale & Retail Trade	\$3,632,696	\$827,486	\$1,371,024	33
Finance, Insurance & Real Estate	\$1,484,588	\$390,360	\$868,283	11
Professional Services	\$3,837,487	\$1,166,630	\$1,357,630	33
Other	\$3,325,527	\$693,478	\$992,535	44
Total	\$16,040,279	\$3,520,197	\$6,718,888	131

Savings to Families

Shortening the time for college graduation can also provide savings to students and their families. Those savings include tuition, room and board and other living expenses saved by shortening the length of time spent as a student in a more expensive college setting. Information on the costs of attending different types of colleges is published by the College Board in their Annual Survey of Colleges (Table 6). These average annual costs range from \$13,126 for a two-year commuter college to \$35,000 for a private four-year college.

⁷ Iowa Legislative Services Agency, Fiscal Services, "Enrollment of High School Students at Community Colleges," Appendix E, February 1, 2006.

⁸ See Appendix A for detail tables with the estimates from the IMPLAN Input-Output model for Iowa.

In Table 7 we estimated the value of savings to students and families from the 4,738 student FTEs worth of college classes completed while in high school using the same weights that were used to allocate state aid cost savings (Table 2).

Table 6. Average Estimated Undergraduate Budgets, 2007-08 (Enrollment-Weighted)

Sector	Tuition and Fees	Books and Supplies	Room and Board	Transp.	Other Expenses	Total Expenses*
Public Two-Year						
Resident	\$2,361	\$921	INA	INA	INA	INA
Commuter	\$2,361	\$921	\$6,875	\$1,270	\$1,699	\$13,126
Public Four-Year						
Resident	\$6,185	\$988	\$7,404	\$911	\$1,848	\$17,336
Commuter	\$6,185	\$988	\$7,419	\$1,284	\$2,138	\$18,014
Out-of-State	\$16,640	\$988	\$7,404	\$911	\$1,848	\$27,791
Private Four-Year						
Resident	\$23,712	\$988	\$8,595	\$768	\$1,311	\$35,374
Commuter	\$23,712	\$988	\$7,499	\$1,138	\$1,664	\$35,001

Notes: INA - Sample too small to provide meaningful information. * Average total expenses include room and board costs for commuter students, which are average estimated living expenses for students living off campus but not with parents. Estimates of individual budget items are based on reporting by institutional financial aid offices. Source: Annual Survey of Colleges, The College Board, New York, NY.

Table 7. Weighted Cost of College Savings for Early College Opportunity Students, 2005

Educational Institution	Weighting (from Table 2)	Total Expenses (from Table 6)	Weighted Component	Number of Students 2005	Total Student Expense Savings
Board of regent schools	34.5%	\$18,014	\$6,222	1,637	\$10,185,472
Community Colleges	54.8%	\$13,126	\$7,196	2,597	\$18,687,163
Private colleges (tuition grants)	10.6%	\$35,001	\$3,721	504	\$1,875,186
Total	100.0%		\$17,138	4,738	\$30,747,821

Overall, we estimate that \$30.7 million of Iowa-based income will not have to be spent on college tuition and related expenses by acquiring 142,140 semester credit hours while in high school. By not spending this \$30.7 million on college-related expenses, Iowa families are able to spend this on other goods, services and activities that benefit them and the Iowa economy. Our Input-Output model was

again used to estimate the secondary impacts to the rest of the Iowa economy. The results of this estimation are presented in Table 8.

Table 8. Economic Impact of Program Savings to Families

Sectors	Total Sales	Labor Income	Value Added	Jobs
Agriculture & Mining	\$5,223,609	\$185,023	\$3,928,590	4
Utilities	\$946,060	\$218,350	\$536,457	4
Manufacturing	\$2,912,012	\$449,939	\$695,792	10
Transportation & Warehousing	\$700,642	\$297,273	\$379,252	7
Wholesale & Retail Trade	\$9,451,168	\$2,152,866	\$3,566,986	85
Finance, Insurance & Real Estate	\$3,862,447	\$1,015,597	\$2,259,007	28
Professional Services	\$9,983,971	\$3,035,214	\$3,532,139	86
Other	\$8,652,009	\$1,804,219	\$2,582,273	115
Total	\$41,731,918	\$9,158,480	\$17,480,496	340

The impact includes a \$ 41.7 million increase in gross sales, \$9.2 million increase in personal income and an additional 340 jobs.

Combining the savings to the public sector and to the families of Iowa, the total impact of the early college opportunity program in Iowa during 2005 was a savings that resulted in \$57.8 million in additional consumer purchasing, \$12.7 million more in personal income, an increase in the state's gross domestic product of \$24.2 million and an additional 470 jobs. Table 9 shows the detail on each sector of the economy. In the absence of this program, that benefit would not have been realized.

Table 9. Economic Impact of Program Savings to Government and to Families

Sectors	Total Sales	Labor Income	Value Added	Jobs
Agriculture & Mining	\$7,231,381	\$256,139	\$5,438,602	6
Utilities	\$1,309,692	\$302,276	\$742,652	6
Manufacturing	\$4,031,287	\$622,880	\$963,230	13
Transportation & Warehousing	\$969,944	\$411,534	\$525,023	10
Wholesale & Retail Trade	\$13,083,864	\$2,980,352	\$4,938,010	118
Finance, Insurance & Real Estate	\$5,347,035	\$1,405,957	\$3,127,290	38
Professional Services	\$13,821,458	\$4,201,844	\$4,889,769	120
Other	\$11,977,536	\$2,497,697	\$3,574,808	159
Total	\$57,772,197	\$12,678,677	\$24,199,384	470

The IMPLAN model also generated estimates of the state and local taxes that would be generated by the infusion of the projected savings into the spending stream in Iowa. For 2005, the savings to the public sector and to families resulted in state and local tax receipts of an additional \$2.2 million – above what would have been collected in the absence of this program.

Conclusions

We started this report by stating that in Iowa state funds underwrite the cost of education at the public colleges and tuition support assists students at Iowa's private colleges. Decreasing the time-to-degree can and does result in a substantial savings of public dollars. Decreasing the time-to-degree can also provide a real cost savings to Iowa families. The objective of this report was to analyze the magnitude of these savings and the benefits to the state and local economy.

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As a result of this program, we estimate that those students:

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- increasing employment by 470 jobs
- increasing state tax receipts by \$2.2 million as a result of the additional economic activity that the savings generated

Appendix A – IMPLAN Public Sector Savings Detail Tables

Table 1a. Output Impact

Sectors	Direct Impact	Business-Related Indirect Impact	Consumer-Related Induced Impact	Total Impact
Agriculture & Mining	\$1,517,423	\$137,868	\$352,481	\$2,007,772
Utilities	\$172,831	\$124,151	\$66,650	\$363,632
Manufacturing	\$521,299	\$390,538	\$207,438	\$1,119,275
Transportation & Warehousing	\$99,720	\$119,470	\$50,112	\$269,302
Wholesale & Retail Trade	\$3,040,687	\$209,599	\$382,410	\$3,632,696
Finance, Insurance & Real Estate	\$744,127	\$469,043	\$271,418	\$1,484,588
Professional Services	\$3,151,230	\$247,003	\$439,254	\$3,837,487
Other	\$2,552,683	\$390,955	\$381,889	\$3,325,527
Total	\$11,800,000	\$2,088,627	\$2,151,652	\$16,040,279

Table 1b. Income Impact

Sectors	Direct Impact	Business-Related Indirect Impact	Consumer-Related Induced Impact	Total Impact
Agriculture & Mining	34,359	23,485	13,272	71,116
Utilities	32,224	36,296	15,405	83,926
Manufacturing	76,924	64,156	31,861	172,941
Transportation & Warehousing	36,021	56,859	21,381	114,261
Wholesale & Retail Trade	602,385	77,797	147,304	827,486
Finance, Insurance & Real Estate	189,301	130,177	70,881	390,360
Professional Services	835,355	108,893	222,382	1,166,630
Other	422,760	142,659	128,060	693,478
Total	2,229,329	640,322	650,546	3,520,197

Table 1c. Jobs Impact

Sectors	Direct Impact	Business-Related Indirect Impact	Consumer-Related Induced Impact	Total Impact
Agriculture & Mining	0.6	0.7	0.3	1.7
Utilities	0.6	0.8	0.3	1.7
Manufacturing	1.6	1.4	0.7	3.7
Transportation & Warehousing	0.9	1.4	0.5	2.8
Wholesale & Retail Trade	24.4	2.6	5.8	32.8
Finance, Insurance & Real Estate	5.0	3.7	2.0	10.6
Professional Services	24.3	2.5	6.5	33.2
Other	29.1	7.0	8.0	44.1
Total	86.4	20.1	24.1	130.6

Appendix A (Cont'd) – IMPLAN Family Savings Detail Tables

Table 2a. Output Impact

Sectors	Direct Impact	Business-Related Indirect Impact	Consumer-Related Induced Impact	Total Impact
Agriculture & Mining	\$3,947,870	\$358,691	\$917,048	\$5,223,609
Utilities	\$449,653	\$323,003	\$173,404	\$946,060
Manufacturing	\$1,356,260	\$1,016,062	\$539,690	\$2,912,012
Transportation & Warehousing	\$259,442	\$310,824	\$130,376	\$700,642
Wholesale & Retail Trade	\$7,910,940	\$545,314	\$994,914	\$9,451,168
Finance, Insurance & Real Estate	\$1,935,992	\$1,220,308	\$706,147	\$3,862,447
Professional Services	\$8,198,539	\$642,628	\$1,142,804	\$9,983,971
Other	\$6,641,304	\$1,017,146	\$993,559	\$8,652,009
Total	\$30,700,000	\$5,433,976	\$5,597,942	\$41,731,918

Table 2b. Income Impact

Sectors	Direct Impact	Business-Related Indirect Impact	Consumer-Related Induced Impact	Total Impact
Agriculture & Mining	89,392	61,101	34,530	185,023
Utilities	83,838	94,432	40,080	218,350
Manufacturing	200,132	166,916	82,892	449,939
Transportation & Warehousing	93,715	147,930	55,628	297,273
Wholesale & Retail Trade	1,567,222	202,404	383,239	2,152,866
Finance, Insurance & Real Estate	492,504	338,681	184,412	1,015,597
Professional Services	2,173,339	283,305	578,570	3,035,214
Other	1,099,892	371,154	333,172	1,804,219
Total	5,800,034	1,665,924	1,692,522	9,158,480

Table 2c. Jobs Impact

Sectors	Direct Impact	Business-Related Indirect Impact	Consumer-Related Induced Impact	Total Impact
Agriculture & Mining	1.6	1.9	0.8	4.4
Utilities	1.5	2.1	0.8	4.4
Manufacturing	4.3	3.6	1.8	9.6
Transportation & Warehousing	2.4	3.6	1.4	7.4
Wholesale & Retail Trade	63.4	6.7	15.2	85.3
Finance, Insurance & Real Estate	12.9	9.6	5.1	27.6
Professional Services	63.1	6.4	16.9	86.4
Other	75.6	18.3	20.8	114.7
Total	224.7	52.3	62.7	339.7

Appendix A (Cont'd) – IMPLAN Total Savings Detail Tables

Table 3a. Output Impact

Sectors	Direct Impact	Business-Related Indirect Impact	Consumer-Related Induced Impact	Total Impact
Agriculture & Mining	\$5,465,293	\$496,559	\$1,269,529	\$7,231,381
Utilities	\$622,484	\$447,154	\$240,054	\$1,309,692
Manufacturing	\$1,877,559	\$1,406,600	\$747,128	\$4,031,287
Transportation & Warehousing	\$359,162	\$430,294	\$180,488	\$969,944
Wholesale & Retail Trade	\$10,951,627	\$754,913	\$1,377,324	\$13,083,864
Finance, Insurance & Real Estate	\$2,680,119	\$1,689,351	\$977,565	\$5,347,035
Professional Services	\$11,349,769	\$889,631	\$1,582,058	\$13,821,458
Other	\$9,193,987	\$1,408,101	\$1,375,448	\$11,977,536
Total	\$42,500,000	\$7,522,603	\$7,749,594	\$57,772,197

Table 3b. Income Impact

Sectors	Direct Impact	Business-Related Indirect Impact	Consumer-Related Induced Impact	Total Impact
Agriculture & Mining	\$123,751	\$84,586	\$47,802	\$256,139
Utilities	\$116,062	\$130,728	\$55,485	\$302,276
Manufacturing	\$277,056	\$231,072	\$114,753	\$622,880
Transportation & Warehousing	\$129,736	\$204,789	\$77,009	\$411,534
Wholesale & Retail Trade	\$2,169,607	\$280,201	\$530,543	\$2,980,352
Finance, Insurance & Real Estate	\$681,805	\$468,858	\$255,293	\$1,405,957
Professional Services	\$3,008,694	\$392,198	\$800,952	\$4,201,844
Other	\$1,522,652	\$513,813	\$461,232	\$2,497,697
Total	\$8,029,363	\$2,306,246	\$2,343,068	\$12,678,677

Table 3c. Jobs Impact

Sectors	Direct Impact	Business-Related Indirect Impact	Consumer-Related Induced Impact	Total Impact
Agriculture & Mining	2.2	2.6	1.1	6.1
Utilities	2.1	2.9	1.1	6.1
Manufacturing	5.9	5.0	2.5	13.3
Transportation & Warehousing	3.3	5.0	1.9	10.2
Wholesale & Retail Trade	87.8	9.3	21.0	118.1
Finance, Insurance & Real Estate	17.9	13.3	7.1	38.2
Professional Services	87.4	8.9	23.4	119.6
Other	104.7	25.3	28.8	158.8
Total	311.1	72.4	86.8	470.3

Appendix B

Policies Regarding Dual Credit/Concurrent Enrollment Programs in Selected States⁹

Illinois¹⁰

Recognition is a statutory term describing the status of a district which meets instructional, administrative, financial, facility, and equipment standards as established by the Illinois Community College Board (Section 805/2-12f and 805/2-15). The recognition standards in Illinois for dual credit or concurrent enrollment programs include the following:

1. **State Laws and Regulations and Accreditation Standards.** All State laws, ICCB regulations, accreditation standards specified by the North Central Association and local college policies that apply to courses, instructional procedures and academic standards at the college apply to college-level courses offered by the college on campus, at off-campus sites, and at secondary schools. These policies, regulations, instructional procedures and academic standards apply to students, faculty and staff associated with these courses.
2. **Instructors.** The instructors for these courses shall be selected, employed and evaluated by the college. They shall be selected from full-time faculty and/or from adjunct faculty with appropriate credentials and demonstrated teaching competencies at the college level.
3. **Qualification of Students.** Students accepted for enrollment in college-level courses must have appropriate academic qualifications, a high level of motivation and adequate time to devote to studying a college-level course. The students' course selections shall be made in consultation with high school counselors and/or principals and ordinarily are restricted to students in the junior and senior years of high school. The students shall meet all college criteria and follow all college procedures for enrolling in courses.
4. **Placement Testing and Prerequisites.** Students enrolling in college-level courses must satisfy course placement tests or course prerequisites when applicable to assure that they have the

⁹ The source of information for most of the states (unless otherwise identified) was excerpted from Accelerated Learning Options: Moving the Needle on Access and Success, Western Interstate Commission for Higher Education. June 2006.

¹⁰ Sources: Illinois information from the Recognition Manual for Illinois Public Community College Districts, Fiscal Year 2006-2010, Illinois Community College Board, July 2005.

same qualifications and preparation as other college students.

5. **Course Offerings.** Courses shall be selected from transfer courses that have been articulated with senior institutions in Illinois or from the first-year courses in ICCB approved associate in applied science degree programs.
6. **Course Requirements.** The course outlines utilized for these courses shall be the same as for courses offered on campus and at other off-campus sites and shall contain the content articulated with colleges and universities in the State. Course prerequisites, descriptions, outlines, requirements, learning outcomes and methods of evaluating students shall be the same as for on-campus offerings.
7. **Concurrent Credit.** The determination of whether a college course is offered for concurrent high school and college credit shall be made at the secondary level, according to the school's policies and practices of the district.

Indiana

Indiana's Postsecondary Enrollment Program is designed for students in grades 11 and 12. If a course has been approved for secondary credit by the school corporation, a student is entitled to credit toward graduation requirements for each course that the student successfully completes at the postsecondary institution. Each year, the school corporations must provide each student in grades 10 and 11 with information about the program. Each student who intends to participate must notify the principal of his or her high school. A representative of the school corporation must meet with each student who intends to participate in the program and discuss the following:

- The student's eligibility to participate in the program
- The courses in which the student is authorized to enroll
- The postsecondary credit the student earns upon successful completion of a course
- The student's schedule
- The financial obligations of the student and the school under the program
- The responsibilities of the student, the student's parent or guardian, and the school under the program
- Other matters concerning the program

Postsecondary institutions may accept or reject a student's application for enrollment based on the standards ordinarily used to decide student enrollments. A participating student is considered to be

enrolled in the school corporation in computing average daily membership. Upon demonstration of financial need, an institution may grant financial assistance to a student accepted for admission. A postsecondary enrollment program fund was established to provide financial assistance to students in the program.

The fund consists of appropriations made by the Indiana General Assembly and gifts. A school corporation must grant secondary credit for a course successfully completed by a student at an institution if the course was approved by the school corporation. If a student enrolls in an institution after graduation from secondary school, the institution will award postsecondary credit for a course successfully completed at that institution.

At the end of each school year, each school corporation must submit to the department of education a list of the students who are enrolled in the program and a list of the courses successfully completed by each student in the program. Further, for each student enrolled in the program, each school corporation must make and maintain records of the following:

- The courses and credit hours in which the student enrolls
- The courses that the student successfully completes and fails to complete
- The secondary credit granted to the student
- Other information requested by the department of education

Iowa

(Iowa Code § 257.6; Iowa Code § 261C.9; Iowa Code § 261C.8; Iowa Code § 261C.7; Iowa Code § 261C.6; Iowa Code § 261C.5; Iowa Code § 261C.4; Iowa Code § 261C.3; Iowa Code § 261C.2)

Iowa's Postsecondary Enrollment Options Act (PSEO) was enacted to promote rigorous academic pursuits and to provide a wider variety of options to high school students. It enables 11th and 12th grade students, along with 9th and 10th grade students identified as gifted and talented to enroll part time in college credit courses offered by two- and four-year colleges. A comparable course, as defined by a rule made by the board of directors of the public school district, must not be offered by the school district or the accredited non-public school district that the student attends. If an eligible institution accepts a high school student for enrollment, the institution must send written notice to the student, the district, and the Iowa Department of Education.

This notice must list the course, the clock hours, and the number of hours of postsecondary or vocational-technical credit that the student will receive upon successful completion of the course. If a student successfully completes a postsecondary course, he or she will be granted secondary credit,

and the credit will appear on his or her transcript. This credit counts toward high school graduation requirements. Further, a student may take and receive credit for up to seven semester hours of credit during the summer if the student pays the cost of attendance.

The PSEO legislation stipulates a funding arrangement: high schools must pay the partnering college an amount not to exceed \$250 for college tuition, textbooks, and fees. Students must reimburse the district if they do not complete or successfully pass the course. Since the inception of this program, increasingly the postsecondary institutions report that the \$250 fails to cover all of the college's costs of offering courses to high school students, yet no additional tuition or fees can be collected from the students or the high school.

The maximum payment of \$250 for each high school student involved under the PSEO legislation, in most cases, is insufficient to cover all costs associated with the program. Hence, supplemental weighted funding was created to allow local school districts to receive additional state funding (1.48 funding) for high school students enrolled in community college courses.

This funding stream is critical to the growth and sustainability of dual enrollment of high school students in community colleges. To qualify for supplemental weighted funding, the local school district must verify that the specified community college courses meet seven criteria. They must:

- Supplement, not supplant, high school courses
- Be included in the community college catalog or an amendment or addendum to the catalog
- Be open to all registered community college students, not just high school students
- For college credit and the credit must apply toward an associate of arts or associate of science degree, or toward an associate of applied arts or associate of applied science degree, or toward completion of a college diploma program
- Taught by a community college-employed instructor
- Taught utilizing the community college course syllabus
- Of the same quality as a course offered on a community college campus

The state policy for supplemental weighted funding has led to an increase in the number of contractual agreements between high schools and community colleges for the provision of college credit classes to high school students. The most recent public policy supporting dual enrollment was legislation passed in 2002 for the development and implementation of career academies or programs of study that combine a minimum of two years of secondary education with a postsecondary career preparatory program in a non-duplicative, sequential course of study that is standards-based; integrates academic and technical instruction; incorporates work-based and worksite learning, where appropriate and

available; uses an individualized career-planning process that involves parents; and leads to an associate degree or postsecondary diploma or certificate in a rewarding, high-skill career field. Several funding streams are available to support career academies. The Iowa Department of Education's approval process for secondary vocational education programs requires documentation of articulation with the community college.

Kansas

The Kansas Legislature declared that secondary school students should be challenged continuously in order to maintain their interests in the pursuit of education and skills critical to success in the modern world. As a result, they passed the Kansas Challenge to Secondary School Pupils Act, which allows school districts to cooperate with postsecondary institutions to provide students with postsecondary education opportunities in the form of concurrent enrollment.

To be a concurrent enrollment student in Kansas, a person must be enrolled in grades 11 or 12, demonstrate the ability to benefit from participation, be authorized by the school principal to apply at the postsecondary institution, and be acceptable to or accepted at the postsecondary institution.

Agreements between the school district and postsecondary institution must include, but are not limited to: the academic credit to be granted, in terms of whether the credit qualifies as college credit or college credit and high school credit; the requirement that coursework qualify as credit applicable toward a degree or certificate; and the requirement that the student pay the negotiated amount of tuition. Concurrent enrollment students who satisfactorily complete coursework at an eligible institution are granted credit toward high school graduation.

Further, students are responsible for tuition and transportation to the college or university. Consistent with state law, the Kansas Board of Regents specifically encourages high school students to take advantage of postsecondary education opportunities by enrolling in postsecondary courses while still in high school or participating in home schooling. The system-wide purposes of concurrent enrollment are to develop seamlessness in the Regents' System, enhance efficiency, challenge high school students and promote college-level success, and foster improved relationships between the Regents' System and Kansas secondary schools. Kansas Board of Regents' policy further defines specific requirements for school district/postsecondary institution agreements, curriculum standards, faculty/ instructors, student eligibility, credit, accountability, and reporting.

Michigan

(Mich. Comp. Laws § 388.511- 524; Mich. Comp. Laws §380.1481; Mich. Comp. Laws § 388.1698)

Passed in 1996, Michigan's Postsecondary Enrollment Act was created to provide a wider variety of options to high school students by encouraging and enabling qualified students to enroll in courses or programs in eligible postsecondary institutions. The school district supports the students by paying their tuition and fees. Students attend classes on campus and can earn high school credit, college credit, or both. The high school credits count toward high school graduation. The superintendent of public instruction approved the ACT as the readiness assessment to determine eligibility beginning with participation in the 2006-2007 school year.

The school district must provide an eligibility letter to the student, signed by the principal. Within a reasonable time after registration, the postsecondary institution must send written notice to the student and his or her school district. Each school district must provide information to all high school students on the postsecondary enrollment options, including enrollment eligibility, institutions, and types of courses that are eligible; the decision-making process for granting academic credits; an explanation of charges that will be paid by the school district and of financial arrangements for paying costs not covered by the school district; and other specific information items. To the extent possible, a school district also must provide counseling services that ensure that the student and his or her parent or guardian understand the benefits, risks, and possible consequences of participating in the program.

Further, the student and his or her parent or guardian must file with the postsecondary institution a signed form stating that they received this information prior to enrollment. The school district pays the postsecondary institution on behalf of the student an amount equal to the eligible charges or the prorated percentage of the state portion of the foundation allowance paid on behalf of the student, whichever is less. The student is not considered less than full time in his or her district solely because of the effect of the student's postsecondary enrollment. The school district is not responsible for transportation or parking costs associated with participation in this program. Finally, each intermediate school district must collect annually from each school district information on:

- The amount of money expended for payments required under this program. The number of eligible students who were enrolled in the school district and the number who enrolled in one or more postsecondary courses and received payment, both in aggregate and by grade level
- The percentage of the school district's enrollment represented by the eligible students, both in aggregate and by grade level
- The total number of postsecondary courses for which the school district made payment; the number of courses for which postsecondary credit was granted; the number of those courses

for which high school credit was granted; and the number of those courses that were not completed by the student

Michigan also has a virtual university, which operates the Michigan Virtual High School. Under state law, the Michigan Virtual High School must act as a broker for college-level equivalent courses and dual enrollment courses from postsecondary education institutions. State law explicitly says that the Michigan Virtual High School must offer dual enrollment opportunities.

Minnesota

(Minn. Stat. § 120B.14; Minn. Stat. § 135A.101; Minn. Stat. § 124D.09; Board of Trustees MN State Colleges and Universities – Policy 3.5)

The Postsecondary Enrollment Options Act is designed to promote rigorous academic pursuits and to provide a wider variety of options to high school students by encouraging and enabling secondary students to enroll full time or part time in college or university programs. Students who first enroll in grade 11 may not enroll in postsecondary courses for secondary credit for more than the equivalent of two academic years. Schools or school districts must provide counseling services to students and their parents or guardians before the students enroll in courses to the extent possible. Students may enroll in a course for either secondary credit or postsecondary credit and must designate which at the time of enrollment.

The department must not make payments to a school district or postsecondary institution for a course taken for postsecondary credit only. Students or their parents may apply to the school district for reimbursement for transportation expenses. To participate in the postsecondary enrollment options program, a college or university may provide information about its programs to a secondary school, student, or parent but may not recruit or solicit participation on financial grounds. Postsecondary institutions may not enroll secondary students for developmental courses. Finally, board policy specifies admission requirements for the postsecondary enrollment options programs that are more specific than state law.

Students must provide evidence of the ability to do college work in the form of (for juniors) class rank in the upper one-third of their class or a score at or above the 70th percentile on a national, standardized, norm-referenced test; or (for seniors) class rank in the upper one-half of their class or a score at or above the 50th percentile on a national, standardized, norm-referenced test; and (for juniors and seniors) documentation other than the above that demonstrates the student's readiness and ability.

Missouri¹¹

The Missouri Department of Higher Education adopted the following Principles of Good Practice for Dual Credit Courses:

It is desirable that institutions in compliance with the statewide dual credit policy follow these agreed-upon principles of good practice. Although the structure and delivery of dual credit programs will vary among institutions, those variations should consistently reflect current policy. Institutional approaches to the delivery of dual credit courses should be consistent with an institution's mission while remaining aligned with state-level policy guidelines.

1. Dual credit programs should reflect a commitment to high quality and integrity.
 - Each dual credit course should involve the same academic rigor and evaluation criteria as that of its campus-based equivalent.
 - Institutions should establish procedures for the selection, training, evaluation, and mentoring of dual credit instructors.
2. Institutional context, commitment, and responsibilities should be clearly established.
 - Institutions should establish dual credit relationships only with high schools that are within a reasonable commuting distance.
 - Institutions of higher education should facilitate frequent, consistent, and timely communication with the high schools in which they provide dual credit courses. That communication should address the scheduling of courses, compliance with statewide dual credit policy, identification and resolution of problems that occur, and evaluation of each dual credit course.
 - Institutions providing dual credit courses should assume responsibility to ensure and document the quality of dual credit practices by demonstrating compliance with the statewide dual credit policy.
 - High schools and institutions providing dual credit courses should work cooperatively to ensure that students enrolled in those courses meet minimum qualifications as outlined

¹¹ Missouri Department of Higher Education, "Principles of Good Practice for Dual Credit Courses," October 7, 1999.

in the statewide dual credit policy. A listing of students eligible to enroll in dual credit courses, as determined by GPA, test scores, and criteria described in the statewide dual credit policy, should be updated each semester.

- Institutions, in partnership with high school personnel, should ensure that instructors teaching dual credit courses meet the minimum qualifications as established by the North Central Association of Colleges and Schools, Commission on Institutions of Higher Education guidelines. Each institution's list of eligible dual credit teachers who meet the academic preparation requirements of the dual credit policy shall be updated each semester.
 - Transfer and articulation officers should be familiar with their institution's dual credit policy and any agreements between their institutions and high schools in order to provide information to interested individuals.
 - High school advisors should be familiar with the statewide dual credit policy as well as specific school/college agreements so as to provide accurate and sound advice to high school students.
 - Colleges and universities involved in dual credit programs should provide dual credit instructors with both ongoing supervision by on-campus faculty and access to regular pedagogical and resource support such as professional development workshops.
 - Students in dual credit courses should have access to student services and academic support similar to those accorded students on the traditional college campus, i.e., advisors, adequate library services, and other resources requisite for college-level academic performance.
3. Institutions providing dual credit courses should develop and maintain procedures for evaluation and assessment.
- Institutions should maintain close alignment between dual credit courses taught in high schools and corresponding courses taught on college campuses by ensuring that dual credit assignments and grading criteria are identical to, or of comparable design, quality, and rigor to, the equivalent campus-based course. In circumstances where assignments and grading criteria are not identical, a rationale approved by the college's academic department must guide such modifications.
 - Procedures for the supervision and evaluation of dual credit instructors should include activities such as:

- regular site visits to the high school by representatives of the institution of higher education
 - opportunities for dual credit instructors to discuss concerns and to share information with each other and with the institution of higher education
 - regular evaluation of dual credit instructors through methods identical to those used to evaluate their campus-based counterparts
 - access to appropriate professional development opportunities and mentoring offered either exclusively to dual credit instructors or to both campus-based faculty and dual credit instructors
- Institutions should assess, document, and transcript student achievement in each course.
 - Based on prior academic performance, high school students should demonstrate a high likelihood of success in dual credit courses.

Nebraska

The Coordinating Commission for Postsecondary Education recently adopted dual enrollment standards, which are voluntary guidelines for dual credit programs offered by postsecondary institutions in Nebraska high schools. They relate to student eligibility, faculty qualifications, curriculum assessment, and financing. The standards state that dual enrollment programs are intended to meet the needs of academically advanced students; to provide enrichment for students who have special academic, or vocational needs; or to provide technical education. Dual enrollment programs and dual credit students are distinguished from concurrent enrollment programs and concurrently enrolled students. Dual credit students are high school students who take a course for both college and high school credit.

High schools count these students in their average daily attendance. Concurrently enrolled students are high school students who take college courses for college credit only (no high school credit), while remaining enrolled in high school and counted in their school's average daily attendance. The participating high schools and postsecondary institutions determine eligibility for the program, but eligible students typically are juniors or seniors; meet the prerequisites of the course or otherwise demonstrate the ability to achieve success in the course; or are formally identified as high ability or gifted students by the school participating in the dual enrollment program. Students must complete dual enrollment application signed by a high school official.

The postsecondary institutions have the following recommended academic guidelines to increase students' opportunity for academic success.

Eligible students will typically meet at least one of the following qualifications:

- Have attained a GPA of 3.0 or better
- Earned an ACT composite score of at least 20 or an equivalent score on another valid assessment
- Earned an ACT sub-score of at least 20 or equivalent on another valid assessment relevant to the offered dual enrollment course or courses
- Ranked in the upper one-half of their high school class
- Demonstrated through some alternative means the capacity for academic success in the desired course or courses

Eligible students are provided with appropriate course materials. They receive guidance regarding their program responsibilities, weighted credit options, if any, and specific grading practices. Institutions provide participating students with information clearly describing institutional procedures for academic credit transfer. Institutions are encouraged to provide the Coordinating Commission for Postsecondary Education with information or website links describing institutional credit transfer policies and procedures so that the commission can maintain a Nebraska dual enrollment website. Instructors must meet approved requirements for teaching at the department/college level. High school and postsecondary faculty must receive appropriate orientation and training.

Collaboration between high school and postsecondary faculty is encouraged, and faculty development is available, where appropriate. Courses must reflect college-level experiences and rigor, as well as district and state standards and practices; and course outlines or syllabi utilized in the program must meet district, state, and college/university standards. Assessment policies and procedures are consistent with district and college/university practice.

To assure the academic rigor of courses for which college credit will be awarded, universities or colleges participating in dual enrollment programs will include valid student and faculty assessment measures that are consistent with the typical assessment measures of such a university or college. Jointly developed assessment policies and procedures of K-12 schools and postsecondary education institutions should be designed to align dual enrollment curricula with state course content standards. The district and college/university review the program on an annual basis. Program participants are tracked following graduation through postsecondary experiences, when possible.

Tracking elements may include district data (e.g., class rank; GPA; ACT, where available; AP exam scores, where available and appropriate; and course outcomes and grade) and postsecondary data (e.g., GPA, major, number of hours completed, and enhancements, if appropriate to the program). School districts and postsecondary education institutions are directed to work together to ensure broad access to dual enrollment courses for all students, irrespective of the students' financial resources.

Postsecondary education institutions are encouraged to offer tuition remissions or find other means of support for eligible students qualifying for free or reduced-price lunches or otherwise demonstrating financial need. School districts that receive state aid related in part to significant numbers of students challenged by poverty or English-language limitations should consider using such aid or finding other means of support to fund the tuition expenses of eligible students who would not otherwise be able to enroll in dual enrollment courses. Students may be charged tuition by the college for college credit. If dual enrollment arrangements between schools and colleges make it impossible or very difficult for a student to take a course as a high school course only, such arrangements might be considered a violation of the Student Fee Authorization Act. Further, the state board of education policy document *Providing Equitable Opportunities for An Essential Education: For All Students in Nebraska Public School Districts* recommends that all high school students have the opportunity to participate in courses that offer an enriched, extended curriculum, such as that provided by dual credit courses between secondary and postsecondary schools.

North Dakota

(N.D. Cent. Code § 15.1-25-01- 15.1-25-06; North Dakota University System Procedures 402.3.2; North Dakota State Board of Higher Education Policies Section: 403.5)

North Dakota's Postsecondary Enrollment Options Program declares that any North Dakota public high school student enrolled in grades 11 or 12 is eligible to receive high school and postsecondary credit for the successful completion of an academic or career and technical education course offered by an accredited postsecondary institution. The student's superintendent must provide written permission prior to the student enrolling in the course and determine the number of credits for which the student is eligible. The student and the student's parent or legal guardian are responsible for all costs, including tuition and transportation, associated with attendance.

North Dakota University System policy states that institutions may enter into articulation agreements to facilitate postsecondary enrollment options. These agreements must include a list of eligible secondary and corresponding postsecondary courses; procedures by which students with eligible secondary

coursework may demonstrate postsecondary-level proficiency; and procedures for joint secondary-postsecondary review of the articulation agreement at regular intervals.

Board policy further states that any high school student enrolled in grades 11 or 12 who has received permission from the school administration is eligible for enrollment in a North Dakota University System dual credit course. However, high school counselors and teachers should advise students regarding their academic readiness to participate in dual credit courses, and only those students who are academically ready should enroll in a dual credit course. Before enrolling in a dual credit college course, high school students must obtain permission from the school district superintendent and the superintendent's signature on the North Dakota University System dual credit application form. The host campus also gives permission for the student to enroll in a dual credit course; permission is granted or denied after review of the student application for dual credit and any other campus admissions documents requested by the host institution.

Campuses may publish guidelines which describe criteria for student eligibility. The superintendent determines the corresponding high school course and number of high school credits the student will receive by passing the dual credit college course. According to state law, high school juniors and seniors are eligible to receive high school and postsecondary credit for the successful completion of an academic course offered by any postsecondary institution in a program accredited by a national or regional accrediting organization.

There is no statutory limit to the number of courses or credits received by students through dual credit, but individual campuses may place restrictions on the number of courses and credits which a student may receive via dual credit during any given academic term or time period. Dual credit students pay the university/college application fee the first time they apply to take a dual enrollment course at each campus. Dual credit students pay the current tuition rate per credit hour, along with pro-rated fees similar to those charged by the host institution for regular on-campus students. Counselors at participating high schools are informed annually of the current tuition/fee amounts charged by their service area North Dakota University System schools. Dual credit students are not eligible for federal financial aid. The college course section taught in the high school must meet the content and academic standards of the course sections taught on campus.

The dual credit course taught in the high school is a college course which offers high school credit and not a high school course which receives college credit. To ensure that college course standards are adhered to, the North Dakota University System college/university course syllabus is provided to the instructor and is used as the criteria and model for all such dual credit college courses taught in the

high school. The teaching of the course in the high school is monitored by the postsecondary institution offering the dual credit.

The monitoring of the dual credit course includes using the sponsoring college/university student evaluation document and procedure in order to solicit student feedback. All students enrolled in a course that is available as a dual credit college course taught within a high school will be expected to meet the academic requirements of the course irrespective of whether the student enrolls for college credit or not. In accordance with state statutes governing dual credit, high school students enrolled in a three-semester hour college course will be eligible to receive one-half of high school credit for a full semester course.

Dual credit courses taught in high schools carry the same college credit as the similar course taught on the campus of the sponsoring institution and do not have a special designation on the transcript as a dual credit course. All dual credit courses have equal transferability status within the North Dakota University System. As is the case with all adjunct instructors, the instructor offering the course must be approved by the academic administrators using the same criteria and procedure that they would employ on campus. Approved high school instructors teaching dual credit courses within the high school are considered to be adjunct instructors of the sponsoring college or university. Some dual credit college courses are taught in the high school by full-time faculty members.

This model has a fulltime faculty member teaching a college course section directly in the high school for which dual credit (both high school and college) could be received. This course could be delivered by the college professor directly within the high school or via interactive television, if there is a link to the high school. College faculty may teach college courses in a high school for which high school credit is granted (per the district superintendent's approval) without having state secondary certification.

Ohio

(Ohio Rev. Code Ann. § 3324.07; Ohio Rev. Code Ann. § 3365.09; Ohio Rev. Code Ann. § 3365.08; Ohio Rev. Code Ann. § 3365.07; Ohio Rev. Code Ann. § 3365.06; Ohio Rev. Code Ann. § 3365.05; Ohio Rev. Code Ann. § 3365.041; Ohio Rev. Code Ann. § 3365.04; Ohio Rev. Code Ann. § 3365.03; Ohio Rev. Code Ann. § 3365.01; Ohio Rev. Code Ann. § 3365.02; Ohio Rev. Code Ann. § 3365.10; Ohio Rev. Code Ann. § 3365.021)

The board of education of each school district must develop a plan with options including accelerated coursework, the Postsecondary Enrollment Option Program, and AP for the service of gifted students enrolled in the district. Plans for alternative schools must include, among other things, provisions for

accelerated learning programs in reading and mathematics. The state's Postsecondary Enrollment Options Program allows high school students to earn high school and college credit. High school students in a nonpublic school may participate in the program if the chief administrator of the high school notifies the department of education by April 1 prior to the school year in which the school's students will participate.

After consulting with the board of regents, the state board of education adopted rules governing the program, including requirements that:

- School districts, community schools, or participating nonpublic schools provide information about the program to all students enrolled in grades eight through 11
- Students or their parents inform the district board of education, the governing authority of a community school, or the nonpublic school administrator of the student's intent to participate in the program.
- School districts and community schools provide counseling services to students in grades eight through 11 and to their parents before the students participate in the program to ensure that students and parents are fully aware of the possible risks and consequences of participation.

Counseling information must include program eligibility; the process for granting academic credits; financial arrangements for tuition, books, materials, and fees; criteria for any transportation aid; available support services; scheduling; consequences of failing or not completing a course and the effect of the grade in the course being included in the student's grade point average; the effect of participation on the student's ability to complete the school's graduation requirements; the academic and social responsibilities of students and parents; information about and encouragement to use the counseling services of the college.

The student and the student's parent sign a form stating that they have received the counseling required and that they understand the responsibilities associated with the program; also, a student may not enroll in any specific college course through the program if the student has taken high school courses in the same subject area and has failed to attain a cumulative grade point average of at least 3.0 on a 4.0 scale, or the equivalent, in those completed high school courses.

State law specifically refers to counseling for students in nonpublic schools. Chief administrators at these schools must provide counseling services to students in grades eight through 11 and to their parents before the students participate in the program to ensure that students and their parents are fully aware of the possible risks and consequences of participation.

This counseling must include explaining the fact that funding may be limited and that not all students who wish to participate may be able to do so. Students are eligible for the program if they are in 9th, 10th, 11th, or 12th grade. If a college accepts a student, it must send written notice to the student and others within 10 days after acceptance. In addition, within 10 days after each enrollment for a term, the college must send these individuals written notice of the courses and hours of enrollment of the student and the enrollment options.

Students may choose from the following enrollment options:

1. The student may receive only college credit. The college must notify the student about payment of tuition and fees, and the student is responsible for payment of all tuition and the cost of all textbooks, materials, and fees. If the student successfully completes the course, the college awards the student full credit, but the board of education or nonpublic school does not award high school credit.
2. The student may choose to receive both college and high school credit. If the student successfully completes the course, the college awards the student full credit, the high school awards the student high school credit, and the college is reimbursed. High school credit awarded for successfully completed courses count toward graduation requirements. A student in 9th grade may not enroll in courses to receive credit toward high school graduation for more than the equivalent of four academic school years. The department of education must pay each college for any participant enrolled in the college in the prior school year an amount computed by multiplying the tuition base by the participant's full-time equivalency percentage and multiplying the resulting amount by a percentage equal to the percentage of the participants' school day apportioned to the college. The college is paid this amount or, if it is less, the actual costs that would have been the responsibility of the participant, had the participant elected to receive only college credit.
3. A college that is reimbursed must furnish the participant with all textbooks and materials related to the course. Students in this program are ineligible for direct financial aid through state and federal programs. If a school district or community school provides transportation to resident students in grades nine through 12, a parent of a student eligible for free or reduced-price lunch may apply to the board of education for full or partial reimbursement for the costs of transportation to the college.

South Dakota

(SD Codified Laws § 13-28-37)

South Dakota's statute indicates that, with prior approval by the school district, any student in grades 10, 11, or 12 may apply to a higher education institution or a postsecondary vocational education institution. If approved and accepted, the student receives full credit toward high school graduation, as well as postsecondary credit for each postsecondary course. The resident school district may pay all or part of the tuition and fees, but the student is responsible for any tuition and fees not paid by the resident school district and for any other associated costs. If the student receives a failing course grade in a postsecondary course, then the student is no longer eligible to enroll in other postsecondary courses.

Wisconsin

(Wis. Stat. § 118.55)

Wisconsin state statute addresses dual/concurrent enrollment through its Youth Options Program. Any public school student enrolled in the 11th or 12th grade who is not attending a technical college may enroll in a higher education institution for the purpose of taking one or more nonsectarian courses. The student must indicate on the application whether he or she will be taking the course for high school credit or postsecondary credit. The student must also specify on the application whether, if admitted, the institution can disclose the student's grades, courses that he or she is taking, and attendance record to the public school in which the student is enrolled.

The school board pays the institution of higher education, on behalf of the student, the actual cost of tuition, fees, books, and other necessary materials directly related to the course if the student attends an institution within the University of Wisconsin System. If the school board or state superintendent determines that there is no comparable course available at the secondary school, then the student is not responsible for any portion of the tuition and fees. A student's parent or guardian may apply for reimbursement for transportation costs if he or she is unable to afford it.

If a student fails or does not complete the course (one that is not comparable to any course at the high school) at the postsecondary institution or technical college, the student (if an adult) or the parent or guardian must reimburse the school board the amount paid on the student's behalf.

Appendix C

Funding Mechanisms for Dual Credit/Concurrent Enrollment Programs in Selected States

Illinois¹²

Who pays: "In Illinois, colleges receive state funds based on student enrollments, Accelerated College Enrollment (ACE) grant funds, and student tuition. Net revenue to the college depends on the size of its program, levels of expenditures to maintain the program, and the amount of tuition that is waived. Per administrative rule changes in 1996, high schools do not lose average daily attendance (ADA) funding from the state for students participating in college courses."

Funding authorization: "ACE [Accelerated College Enrollment] grants are primarily used to waive or reduce tuition paid by students to participate in dual credit courses. In the 2001-2002 year, 44% of colleges used ACE grant funds to completely waive tuition to students in these programs. Twenty-four percent of colleges reduced tuition charges between 25% and 75%, while an additional 32% used other tuition reduction formulas."

Indiana¹³

Who pays: The student.

Funding authorization: "Although Indiana does not directly allocate funds for dual enrollment, postsecondary institutions are allowed to count students enrolled in their courses for dual credit as part of their total enrollment data to the state. From this, the state will allocate funds to the postsecondary institution according to an enrollment formula, in which the institution has sole control over how funds are to be distributed and allocated among their departments and divisions."

¹² Office of Community College Research and Leadership, "Dual Credit in Illinois: Making it Work", Elisabeth Barnett, Douglas Gardner and Debra Bragg. March 2004.

¹³ Education Policy Briefs published by the Center for Evaluation and Education Policy, "Enriching the High School Curriculum Through Postsecondary Credit-Based Transition Programs," Jonathan A. Plucker, Rosanne W. Chien, & Khadija Zaman. Winter 2006.

Iowa¹⁴

Who pays: The school district pays unless the student does not successfully complete the college course(s), in which case the student must pay.

Funding authorization: "By law, all high schools in Iowa must pay for students to take dual enrollment courses if an equivalent course is not available at the high school. However, in order to support inter-institutional collaboration and encourage technical education, Iowa has developed a special funding formula for technically-oriented dual enrollment programs. The state reimburses rural high school at 1.48 times the average daily attendance rate for each student enrolled in the Metropolitan Counties, Iowa, Dual Enrollment program. The high school uses this additional funding to pay Iowa Community College for the costs it incurs in running the program, including the instructor's salary, books, supplies, and staff time for program administration. The 1.48 funding rural high school receives from the state does not cover the entire cost of the program, and so it must find additional money for the program elsewhere in its budget."

Kansas¹⁵

Who pays: The student.

Funding authorization: "Responsibilities for tuition and costs; credit for course work. (a) No school district shall be responsible for the payment of tuition charged to concurrent enrollment pupils by eligible education institutions or for the provision of transportation for such pupils to or from any eligible postsecondary education institution. (b) Each concurrent enrollment pupil shall be responsible for payment of tuition for enrollment at an eligible postsecondary education institution and for payment of the costs of books and equipment and any other costs of enrollment. (c) Each concurrent enrollment pupil who satisfactorily completes course work at an eligible postsecondary education institution shall be granted appropriate credit toward fulfillment of the requirements for graduation from high school unless such credit is denied by the school district in which the pupil is enrolled on the basis that high school credit is inappropriate for such course work."

¹⁴ U.S. Department of Education, Office of Vocational and Adult Education, Case Study Profiles, "Metropolitan Counties, Iowa, Dual Enrollment Program Profile."

¹⁵ Kansas Statutes Annotated 72-11a05.

Michigan¹⁶

Who pays: The school district.

Funding authorization: “Sec. 4. (1) The school district in which an eligible student is enrolled shall provide to the eligible student a letter signed by the student's principal indicating the student's eligibility under this act.

“(2) An eligible student may apply to an eligible postsecondary institution to enroll in 1 or more eligible courses offered by that eligible postsecondary institution and, if accepted, may enroll in 1 or more of those courses.

...

“(4) Unless otherwise agreed between the eligible postsecondary institution and the school district, after the expiration of the institution's drop/add period for the course, an eligible postsecondary institution shall send a bill to the eligible student's school district detailing the eligible charges for each eligible course in which the student is enrolled under this act.

“(5) Upon receiving the bill under subsection (4), the school district shall cause to be paid to the eligible postsecondary institution on behalf of the eligible student an amount equal to the lesser of the amount of the eligible charges or the prorated percentage of the state portion of the foundation allowance paid on behalf of that particular eligible student under section 20 of the state school aid act of 1979, Act No. 94 of the Public Acts of 1979, being section 388.1620 of the Michigan Compiled Laws, with the proration based on the proportion of the school year that the eligible student attends the postsecondary institution. A school district may pay more money to an eligible postsecondary institution on behalf of an eligible student than is required under this act, and may use local school operating revenue for that purpose. The eligible student is responsible for payment of the remainder of the costs associated with his or her postsecondary enrollment that exceed the amount the school district is required to pay under this act and that are not paid by the school district. As used in this subsection, ‘local school operating revenue’ means that term as defined in section 20 of Act No. 94 of the Public Acts of 1979.”

Minnesota¹⁷

Who pays: The student or the State.

¹⁶ Postsecondary Enrollment Options Act, 1996, Act 160, Immediate Effect April 8, 1996.

¹⁷ Minnesota Statutes 2006, section 122A.61.

Funding authorization: “Sec. 18. [124D.091] CONCURRENT ENROLLMENT PROGRAM AID

“39.3 Subd. 1. Accreditation. To establish a uniform standard by which concurrent enrollment courses and professional development activities may be measured, postsecondary institutions are encouraged to apply for accreditation by the National Alliance of Concurrent Enrollment Partnership.

“39.4 Subd. 2. Eligibility. A district that offers a concurrent enrollment course according to an agreement under section 124D.09, subdivision 10, is eligible to receive aid for the costs of providing postsecondary courses at the high school. Beginning in fiscal year 2011, districts only are eligible for aid if the college or university concurrent enrollment courses offered by the district are accredited by the National Alliance of Concurrent Enrollment Partnership, in the process of being accredited, or are shown by clear evidence to be of comparable standard to accredited courses.

“39.5 Subd. 3. Aid. An eligible district shall receive \$150 per pupil enrolled in a concurrent enrollment course. The money must be used to defray the cost of delivering the course at the high school. The commissioner shall establish application procedures and deadlines for receipt of aid payments.”

Missouri¹⁸

Who pays: The student.

Funding authorization: “(2) Missouri Fee Payment Program.

“(A) For the purpose of payments of AP exam fees, and/or Dual Credit Course fees, and/or International Baccalaureate (IB) fees through the Missouri Fee Payment Program, eligible students must be enrolled in an approved course, plan to take the appropriate exam and have either scored proficient or advanced on the same content area section of the Missouri Assessment Program (MAP) test.

“(B) Upon disbursement of funds, students will be expected to take the AP and IB exams or complete the Dual Credit Course on the prescribed dates and in conjunction with the other rules and regulations governing the test administration or course requirements and must have applied for any other applicable fee reductions in these respective programs.”

¹⁸ Missouri 5 CSR 50-200.050 Advanced Placement, Dual Credit Course, and International Baccalaureate Fee Payment Programs.

Nebraska¹⁹

Who pays: The student.

Funding authorization: “All public high schools must comply with the provisions of the Public Elementary and Secondary Student Fee Authorization Act, Sections 79-2,125 to 79-2,135, (RRS). The Act requires that all K-12 education must be free in the public schools. However, students may be charged tuition by the college for college credit. If dual enrollment arrangements between schools and colleges make it impossible or very difficult for a student to take a course as a high school course only and without cost for college tuition, such arrangements might be considered a violation of the Student Fee Authorization Act and Article VII, Section I of the Nebraska Constitution, on which the Act is based.”

North Dakota²⁰

Who pays: The student.

Funding authorization: “15.1-25-03. Costs of attendance - Responsibility of student. The student and the student's parent or legal guardian are responsible for all costs of attendance at a postsecondary institution under this chapter. For purposes of this section, "costs" includes tuition, fees, textbooks, materials, equipment, and other necessary charges related to the course in which the student has enrolled.”

Ohio²¹

Who pays: “If the student receives only college credit, he or she is responsible for payment of all costs. If the student successfully completes the course and receives both high school and postsecondary credit, the college is reimbursed.”

Funding authorization: “To the state: In 2004-05, the state redirected \$17.8 million in state foundation funds from local school districts to postsecondary institutions to pay for courses taken by PSEO students. These are not additional expenses in the budget, but funds that would have been expended

¹⁹ Comprehensive Plan for Postsecondary Education in Nebraska, April 2006.

²⁰ North Dakota Century Code Ch. 15.1-25, Postsecondary Enrollment.

²¹ "The Promise of Dual Enrollment: Assessing Ohio's Early College Access Policy," A Joint Publication by KnowledgeWorks Foundation and the Western Interstate Commission for Higher Education. 2007.

at the high school and now are going to support dual credit. Additional costs to the state in 2004-05 included a set-aside of \$1.5 million for PSEO classes taken by students in nonpublic high schools. Additionally, the State Share of Instruction (SSI) allocation, which is the state funding to public postsecondary institutions based on average enrollments, amounted to \$10.9 million for PSEO students. The state's costs for administering the policy and paying transportation costs for qualifying students are unknown.

“To colleges: PSEO reimbursements from the state do not appear to replace the total revenue postsecondary institutions usually generate through student payments for tuition, books and fees. While Ohio paid \$19.3 million in PSEO reimbursements in 2004-05, institutions reported that the expected revenue for tuition, books and materials for those students totaled \$28.6 million, leaving a gap of \$9.3 million. At public colleges, costs not covered by tuition and fees is covered in part by SSI allocations, but an undetermined amount is absorbed by the institutions.

“To local school districts: Local school districts lose state foundation funds for every PSEO course students take – in 2004-05, that amount was \$17.8 million. (Districts may be reimbursed a portion of that by students who do not successfully complete the course, though that amount is not known.) Potential additional costs such as administrative overhead and expenses for meeting the policy's communication and counseling requirements are not reported.

“To students and families: Students and their families pay for courses when students seek only college credit or don't complete the course successfully; most also pay for transportation to and from campus. In a few cases, institutions may require additional fees. None of these costs can be established.”

South Dakota²²

Who pays: “The school district may pay all or part of the tuition and fees, but the student is responsible for any tuition, fees, and costs not paid by the school district.”

Funding authorization: “13-28-37. Postsecondary enrollment--Responsibility for costs--Failing grade eliminates eligibility. Any student in grades ten, eleven, or twelve may apply to an institution of higher education or a postsecondary vocational education institution as a special student in a course or courses offered at the institution of higher education or postsecondary vocational education institution. The student shall obtain the school district's approval of the postsecondary course or courses prior to enrolling. If approved, the student shall receive full credit toward high school graduation as well as

²² South Dakota Codified Laws SL 1990, Ch 122, § 5; SL 1996, Ch 119; SL 2003, Ch 100, § 1.

postsecondary credit for each postsecondary course. The resident school district may pay all or part of the tuition and fees for a course approved for credit toward high school graduation in accordance with this section. The student is responsible for any tuition and fees not paid by the resident school district and for any other costs involved with attending a postsecondary institution.

“If a failing final course grade is received in a postsecondary course under this section, the student receiving the failure is no longer eligible to enroll for postsecondary courses under this section.”

Wisconsin²³

Who pays: “If a student fails or does not complete the course at the postsecondary institution or technical college, the student or parent or guardian must reimburse the school board the amount paid on the student’s behalf.”

Funding authorization: “(2) (a) Except as specified under s. PI 40.056, par. (b) and sub.(1) (b), a pupil taking a postsecondary course or courses at a technical college for high school credit under this chapter is not responsible for any portion of the tuition and fees for the postsecondary course.

“(b) A pupil taking a course at a technical college for high school credit under this chapter shall pay the cost of equipment associated with the course. That equipment will become the property of the pupil and includes but is not limited to tools, calculators, instruments and microcomputers.

“(3) Except as specified under sub. (1) (b), the school board of the school district in which a pupil is enrolled and attending a technical college for any postsecondary course that is taken and approved by the school board for high school credit shall pay the technical college district board, in 2 installments payable upon initial enrollment and at the end of the semester for those courses taken for high school credit, an amount equal to the cost of tuition, course fees and books for the pupil at the technical college.

“(4) The school board which purchases a book or books under sub. (3), for a pupil may require the pupil to relinquish the book or books to the school board after completion of the postsecondary course. (5) If a pupil who is attending a technical college under this chapter is a child with a disability, as defined in s. 115.76 (5), Stats., the payment under sub. (3) shall be adjusted to reflect the cost of any special services required for the pupil as determined jointly by the school district.”

²³ Wisconsin Administrative Code, PI 40.055.

Appendix D - Documentation

About the IMPLAN Input-Output Model

The traditional indicators which economists use for measuring the economic importance of an activity include the size of its workforce and payroll, its capital investment and its local purchase of goods and services. Economists call these the 'direct expenditures' or 'direct effects'.

Direct effects refer to the operational characteristics (employment, payroll, sales) of the sectors that we studied. Indirect effects measure the value of supplies and services that were purchased directly by the sector from businesses and firms within the region. Induced effects occurred when workers in the direct and indirect industries spent their earnings on goods and services from other vendors within the region. Induced effects are also often called 'household effects'. The total economic impact effect is the aggregate of the direct, indirect, and induced effects. It is the total effect on the economy of transactions that are attributable to the direct economic activity of the sectors.

But the workers and the vendors who receive those direct expenditures don't bury them in a mattress. They will spend some of the money, save some of it and thus begins the journey by which the dollars travel through many hands before they finally leave the economic region. Economists call this phenomenon the 'multiplier effect'. The multiplier factor is calculated by dividing the sum of the direct, indirect and induced effects by the direct effect.

The multiplier effect for any economy or industry is examined using an 'input-output analysis'. The tool was devised by the 1973 Nobel Prize winning economist Wassily Leontief. It uses a matrix that measures inter-industry relations in an economy, and shows how the output of one industry becomes the input for another. The most widely used regional input-output economic impact tool is the IMPLAN model developed and distributed by Minnesota IMPLAN Group, Inc. (MIG). According to MIG, the model is currently in use by more than 1,000 public and private institutions.

Mechanics of the Input-Output Model

An input-output model is essentially a generalized accounting system of a regional economy that tracks the purchases and sales of commodities between industries, businesses, and final consumers. Successive rounds of transactions stemming from the initial economic stimulus (such as a new plant or community business) are summed to provide an estimate of direct, indirect, induced (or consumer-related) and total effects of the event. The impacts are calculated using the IMPLAN Input Output

modeling system, originally developed by the US Forest system and currently maintained by the Minnesota IMPLAN Group.

The model is capable of providing many types of reports on regional data and interactions among sectors. For economic studies, several of the more important indicators are: 1) total output, 2) personal income, 3) value added, and 4) jobs.

- Total output for most industries is simply gross sales. For public institutions we normally include all public and private spending, all direct sales and subsidies received in order to isolate the economic value of their output.
- Personal income includes the wages and salaries of employees, along with normal proprietor profits.
- Value added or contribution to state gross domestic product is the measure of the economic product that an industry or collection of industries produce. It is simply the payments that are made to labor (wages and salaries), business owners (proprietors or simple partnerships), investors (paid as interest, dividends, or rents), and the indirect tax payments made to government that are part of production activity.
- Jobs, the fourth measure, represent the number of positions in the economy, not the number of employed persons.

We also get detailed breakdown of this data into direct, indirect, induced, and total economic effects. Direct effects refer to the operational characteristics of the firm that we are studying. Indirect effects measure the value of supplies and services that are provided to the direct firm by industries in the region. Induced effects accrue when workers in the direct and indirect industries spend their earnings on goods and services in the region. Induced effects are also often called household effects. Total effects are the sum of direct, indirect, and induced effects. They are the total of transactions attributable to the direct activity that we are measuring.

The term multiplier is also often used when referring to economic effects or economic impacts. A multiplier is simply the total effects divided by the direct effects. It tells how much the overall economy changes per unit change in the direct effects (a dollar of output, a dollar of personal income, a dollar of value added, or a job). Multipliers help us to anticipate the potential change in the regional economy attributable to a change in direct activity in a particular industry. Firms with strong linkages to area supplying businesses or that pay relatively high earnings may yield high multipliers. Firms that are

otherwise not connected strongly locally or that pay lower than average wages will have lower multipliers. Urban areas with their more developed economies have, on the average, much higher multipliers than rural areas.

The research staff for this study employed the latest version of the IMPLAN model, modified by staff at Iowa State University to calibrate the magnitude of these secondary impacts in Iowa.

About the Research Team

Strategic Economics Group has been serving businesses and government in Iowa and the Midwest since 2001 as the region's only locally owned economic research consulting firm. In addition to both state and local governmental entities, our clients have included American Home Mortgage Corporation, Catholic Health Initiative, Chamber Alliance, Des Moines Area Community College, Drake University, Federal Reserve Bank of Chicago, Greater Dallas County Development Alliance, Greater Des Moines Partnership, Hubbell Realty, Iowa Area Development Group, Iowa Association for Business and Industry, Iowa Association of Electric Cooperatives, Iowa Association of Realtors, Iowa Credit Union League, Iowa Department of Economic Development, Iowa District Export Council, Iowa Farm Bureau Federation, Iowa Legislature, Iowa Student Loan Liquidity Corporation, Iowa Utility Association, Mediacom Communications, Mid-American Energy, OpportunityIowa, Principal Financial, Project Destiny, StrategicAmerica, Treasurer of Iowa, Urban Caucus, U.S. Small Business Administration, West Metro Regional Airport Authority.

Harvey Siegelman is the President and Senior Economic Analyst with Strategic Economics Group. Prior to forming this research-based consulting firm, Siegelman had served for two decades as the State Economist of Iowa and as an Adjunct Professor of Economics at Drake University in Des Moines, Iowa. Harvey's specialty areas have included project management, economic development and strategic planning, state and local government finance and macroeconomic analysis.

Prior to his appointment as State Economist, he was a health planner, a labor market analyst and an economics professor.

Daniel Otto is a Senior Economic Analyst with Strategic Economic Group and Professor of Economics at Iowa State University in Ames, Iowa. Otto's specialty areas have included community and rural economic development, economic impact analysis, and government finance economics.

His recent activities have included economic development workshops, analysis of community facilities and services, income and employment, economic impact studies, and workshops on public policy issues for rural areas. He has also worked with developing data bases, economic forecasting, and input-output modeling activity.