



LINCOLN MEMORIAL
UNIVERSITY



Duncan School of Law Library

The Economic Impact of Lincoln Memorial University Duncan School of Law on the State & Regional Economies

Prepared by:

Fred C. Eilrich

Assistant State Extension Specialist

Email: eilrich@okstate.edu

Gerald A. Doeksen

Regents Professor and Extension Economist

Email: gad@okstate.edu

Cheryl F. St. Clair

Associate State Extension Specialist

Email: cheryl@okstate.edu



**National Center for Rural Health Works
Oklahoma State University
Oklahoma Cooperative Extension Service
513 Ag Hall
Stillwater, OK 74078
Phone: 405-744-6083
Fax: 407-744-9835**

Website: www.ruralhealthworks.org

March 2012

**The Economic Impact of Lincoln Memorial University Duncan School of Law
on the State and Regional Economies**

Table of Contents

Executive Summary	i
I. Introduction.....	1
II. Research Methodology	2
III. Overview of LMU-Duncan School of Law (LMU-DSOL).....	3
A. College Revenues.....	3
B. College Expenditures	4
C. College Employment and Salaries	6
D. College Construction Expenditures	7
E. Student Enrollment and Non-university Spending	7
F. Visitor Days and Spending	9
IV. The Impact of LMU-DSOL on the Tennessee Economy in FY 2011	10
A. The Multiplier Effect	10
B. Economic Impact from Operational Activities	11
C. Economic Impact from Construction Activities	13
D. Economic Impact from Student Non-university Spending.....	15
E. Economic Impact from Visitor Spending	16
F. Summary of LMU-DSOL Impacts	17
V. The Impact of LMU-DSOL on the Primary Impact Region Economy in FY 2011	20
Appendix A Review of Literature Relative to Impact Studies	
Appendix B Model and Data to Estimate Employment and Income Multipliers	
Appendix C Dr. Doeksen's Professional Accomplishments	

The Economic Impact of Lincoln Memorial University Duncan School of Law on the State and Regional Economies

EXECUTIVE SUMMARY

Everyone is aware that Lincoln Memorial University-Duncan School of Law, hereafter referred to as LMU-DSOL, provides an outstanding quality educational program to its students. However, many are not aware of the economic contributions that LMU-DSOL makes to the State of Tennessee and to its primary impact region. The objective of this study is to measure the economic contributions that LMU-DSOL provides to the state and region. The economic contributions are measured in employment, income (wages, salaries, and benefits) and retail sales.

The College creates economic impact from four different activities. These include activities from (1) operations, (2) construction projects, (3) student non-university spending, and (4) visitor spending. The annual operations of the College involve the number of employees and the resulting wages, salaries, and benefits paid. In FY 2011, estimated employment for LMU-DSOL was 29 full and part-time employees and a payroll of \$2.3 million.

Construction activities occur only during the year the construction occurs. In FY 2011, the estimated construction costs are \$266,000. This generates 2.2 full and part-time jobs and approximately \$84,000 in payroll.

Students spend money off campus for such items as housing, food, gasoline, entertainment, etc. It is estimated that annual non-university spending was \$1.1 million in 2011. This will create 9.7 full and part-time jobs and over \$444,000 in payroll. Finally, visitors come to the campus and spend money in the region while visiting. Total visitor spending for FY 2011 was estimated at \$18,525. These expenditures will create 0.3 full and part-time jobs with associated payroll of \$7,778. LMU-DSOL admitted its first full-time students in fall 2011.

Therefore, the number of students and visitor activity is low and will increase as full enrollment in the program is reached.

Using a computer program developed specifically to measure the economic impact of the college, the study measured the direct economic contribution of LMU-DSOL activities and calculated the jobs and income that would be created in other businesses in FY 2011. The model was able to measure the economic impact of LMU-DSOL on the State of Tennessee as well as on its primary impact region. The impact results for the State of Tennessee are presented in **Executive Table 1**.

College operations create 29 full and part-time jobs. This activity has an employment multiplier of 1.68 which means that for every job created, another 0.68 job is created in other businesses due to the College and the its employees spending money. The total estimated impact of the LMU-DSOL operations is 48.7 jobs in FY 2011.

Likewise, the model can measure the economic impact of income (wages, salaries and benefits) on the economy. Projected payroll is \$2.3 million in FY 2011. The higher education sector income multiplier is 1.60 which means that for every \$1 of income paid by LMU-DSOL, another \$0.60 of income is generated in other businesses. Thus, the total income impact of LMU-DSOL's payroll will be \$3.7 million. The model also estimates retail sales and state sales taxes generated from this income. From LMU-DSOL operational activities, almost \$1.4 million in retail sales will be generated and about \$96,146 in state sales taxes will be collected with a seven percent sales tax.

When all of the activities are included, the FY 2011 total estimated impact of LMU-DSOL on the State of Tennessee economy is 70.4 full and part-time jobs, \$4.7 million in income (wages, salaries and benefits,) \$1.7 million in retail sales and \$121,000 in sales tax collections.

The model was also applied to what was identified as the primary impact region. This included Knox county and four adjacent counties; Anderson, Blount, Loudon, and Union in Tennessee. The economic impact in the region was slightly less than the state impact. Total estimated economic impact for FY2011 on the primary impact region was 68.4 jobs, \$4.6 million income and \$2.0 million in retail sales subject to state sales tax. The impact results for this new program will increase as the program becomes fully operational. The bottom line is that LMU-DSOL contributes greatly to the economies of the State of Tennessee and to its primary impact region. LMU-DSOL is extremely important for educational reasons as well as economic reasons.

Executive Table 1
Economic Impact of LMU Duncan School of Law on the State of Tennessee, FY 2011

Sector	Direct	Employment Multiplier	Total Impact	Direct	Income Multiplier	Total Impact	Sales Tax	
							Retail Sales	7 Cent Tax
College Operations	29.0	1.68	48.7	\$2,320,126	1.60	\$3,712,202	\$1,373,515	\$96,146
Construction	2.2	1.74	3.8	\$84,368	1.88	\$158,612	\$58,686	\$4,108
Student Spending ¹	9.7	1.80	17.5	\$444,415	1.79	\$795,503	\$294,336	\$20,604
Visitor Spending	<u>0.3</u>	1.42	<u>0.4</u>	<u>\$7,778</u>	1.68	<u>\$13,067</u>	<u>\$4,835</u>	<u>\$338</u>
TOTAL	41.2		70.4	\$2,856,687		\$4,679,384	\$1,731,372	\$121,196

¹Total expenditures include non-university spending only. Revenue from campus spending such as tuition, campus housing costs and books purchased at the campus bookstore are captured in LMU-DSOL auxiliary revenue.

Source: Employment, spending and income data from LMU-DSOL; Multipliers and coefficients from 2011 IMPLAN Data, Minnesota Implan Group Inc., Retail sales data from Tennessee Department of Revenue, U.S. Department of Commerce, Bureau of Economic Analysis.

The Economic Impact of Lincoln Memorial University Duncan School of Law on the State and Regional Economies

INTRODUCTION

Colleges and universities are many things to many people. Viewed through the lens of economics, however, they are key to the viability of local, state, regional and national economies. From this perspective, they are sources of jobs and income to their employees and students. They are also large consumers which create additional jobs and income to suppliers of materials, services, equipment and capital structures. They provide entertainment and cultural opportunities. They produce skilled labor, enhance the lifetime income of graduates and increase the productive capacity of the economy. They contribute to the fund of knowledge through extension and technology transfer activities. They also spin off and attract research and industrial enterprises (**Appendix A.**)

The objective of this study is to estimate the impact that Lincoln Memorial University Duncan School of Law, hereafter referred to as LMU-DSOL, has on various levels of the economy. More specifically, the report will:

1. Present financial, student and other data reflecting LMU-DSOL activities,
2. Measure the economic impacts that LMU-DSOL operational and construction activities as well as student and visitor spending have on the State of Tennessee's economy through increased;
 - employment
 - wages, salaries and benefits
 - retail sales

3. Measure the economic impacts that LMU-DSOL operational and construction activities as well as student and visitor spending have on the primary economic impact region including five counties in Tennessee through increased;
 - employment
 - wages, salaries and benefits
 - retail sales

RESEARCH METHODOLOGY

This report focuses primarily on the impacts to jobs and income (wages, salaries and benefits) created on an annual basis by the LMU-DSOL, its employees, its students, and its visitors to the campus. A review of previous literature relative to impact studies is given in **Appendix A**. Data for this study are from for FY 2011 representing the first year of the full-time day program. These impacts are concentrated on the local community, but also spill over to the surrounding counties and to the state. Much of the revenue is used to hire faculty, staff and maintenance employees. Most of the income provided directly through these jobs is spent and re-spent, creating additional jobs and income. As a result, the total number of jobs and the total income attributable to LMU-DSOL are larger than the number of jobs and wages and salaries that come directly from the system itself. The revenue that is not used to hire employees is used to procure various goods and services. The businesses use this revenue to hire employees, pay salaries and purchase materials. This additional economic activity is called the multiplier effect.

To calculate the economic impacts noted above, a widely-accepted input-output model and data from IMPLAN were utilized to estimate the direct, secondary and total impacts of LMU-DSOL on the economy of the State of Tennessee and a primary impact region including Knox County and the four adjacent counties of Anderson, Blount, Loudon and Union in Tennessee. The economic impact in this report will be quantified as total employment including direct, secondary and total jobs and the associated wages, salaries and benefits. Detailed information on the model used in this report can be found in **Appendix B**. This study is directed by Dr. Gerald A. Doeksen, a renowned economist from Oklahoma State University, who is widely recognized for his research regarding economic impact studies of universities, health systems and industrial changes (**Appendix C**).

OVERVIEW OF LMU DSOL

Lincoln Memorial University (LMU) leaders announced plans to pursue a Doctor of Juris Prudence program to further their mission to serve the underserved of Appalachia by providing educational opportunities. In March 2009 LMU-DSOL began accepting its inaugural class and by August had initiated a part-time evening program. Students started attending in the fall of 2009 in Knoxville Tennessee. In the fall of 2010, LMU-DSOL added a full-time day program and is not yet reached full enrollment.

College Revenues

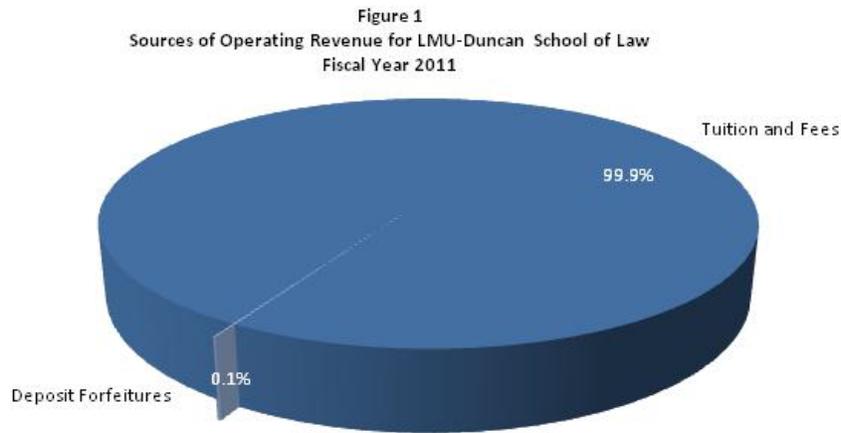
LMU-DSOL finances its day-to-day operations with revenues derived primarily from tuition and fees. Student fees include registration, information technology, student activities, etc. Total revenues for LMU-DSOL by major funding source are shown in **Table 1**. In FY 2011, the system's income was \$3.7 million.

Figure 1 further illustrates the revenue sources for LMU-DSOL. Over 99 percent of estimated FY 2011 revenues will be generated from tuition and fees. The remaining revenues will come from deposit forfeitures.

Table 1
Sources of Operating Revenues for LMU Duncan School of Law, FY 2011

Source	Revenue	Percent
Tuition and Fees	\$3,744,869	99.9
Deposit Forfeitures	\$2,600	0.1
TOTAL Operating Revenue	\$3,747,469	100.0

Source: LMU-DSOL financial reports



College Expenditures

Total expenditures by category for FY 2011 are given in **Table 2**. **Figure 2** illustrates the proportions of college expenditures by category. Employee wages, salaries and benefits is the largest category utilizing 68.5 percent of total expenditures.

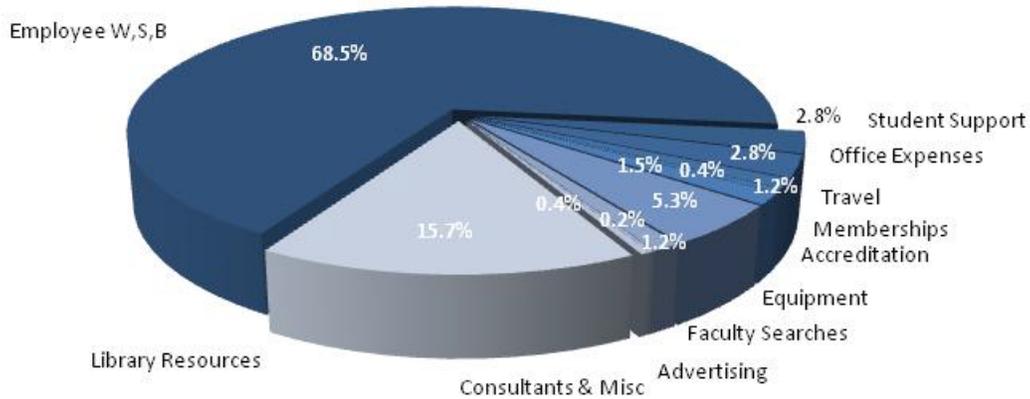
Expenditures for library resources are 15.7 percent. Student support expenditures including scholarships and federal assistance will be about 2.8 percent or \$95,769. Total expenditures projected for FY 2011 are \$3.4 million.

Table 2
Total Expenditures by Category for LMU Duncan School of Law, FY 2011

Funding Category	Expenditures	Percent
Employee Wages Salaries and Benefits	\$2,320,126	68.5
Student Support	\$95,769	2.8
Office Expenses	\$93,660	2.8
Travel	\$40,502	1.2
Memberships	\$15,012	0.4
Accreditation	\$49,206	1.5
Equipment	\$180,323	5.3
Faculty Search	\$40,017	1.2
Advertising	\$6,411	0.2
Consultants and Misc.	\$13,564	0.4
Library Resources	<u>\$533,965</u>	<u>15.7</u>
TOTAL Expenditures	\$3,388,555	100.0

Source: LMU-DSOL financial reports

Figure 2
Total Expenditures by Category for LMU-Duncan School of Law
Fiscal Year 2011



College Employment and Salaries

Employment and wages, salaries and benefits are detailed below in **Table 3**.

There are 12 full-time faculty and other professionals on the payroll in FY 2011. Wages, salaries and benefits for professionals totaled \$1.2 million. In addition wages, salaries and benefits for 15 full-time staff were estimated at \$1.1 million. Total estimated employee expenses for the 29 full and part-time employees are \$2.3 million.

Table 3
Number of Faculty, Staff and Student Employees at LMU Duncan School of Law,
FY 2011

Category	Full-time	Part-time	Wages Salaries Benefits
Professional	12	0	\$1,170,787
Staff	15	0	\$1,132,699
Student	<u>0</u>	<u>2</u>	<u>\$16,640</u>
TOTAL Employment	27	2	\$2,320,126

Source: LMU Academic Affairs

College Construction Expenditures

Construction is another important activity. Slightly more than \$303,000 was spent on new construction and building improvements in the last two fiscal years (**Table 4.**) For this FY 2011 analysis, only \$266,000 are included. Construction operations impact the local community and surrounding region as contractors purchase building materials and employ construction workers, many of whom travel from other towns and spend part of their wages on food, drink and lodging.

Table 4
Total Construction Expenditures for LMU Duncan School of Law
From FY 2010 to 2011

Fiscal Year 2011	\$266,000
Fiscal Year 2012	<u>\$37,800</u>
TOTAL Construction Expenditures	\$303,800

Source: LMU financial reports

Student Enrollment and Non-university Spending

LMU-DSOL welcomed its first class of students in the August 2009. During 2011, LMU-DSOL full-time enrollment was 51 in the spring 2011 semester and 82 in fall 2011. All of the students live off campus (**Table 5**).

Student spending can be a challenge to estimate due to the wide-range of spending patterns and number of commuter students. Estimated total student spending is provided in **Table 6**. These costs represent only the non-university portion of student spending for the full-time students enrolled in the fall and spring semesters. Tuition, fees, campus housing costs and a large portion of book purchases are paid directly to the

college and are captured through college revenues. This method was believed to best approximate student expenditures. Those students that enroll in the summer will spend additional money in the community during that time. It was estimated that the 51 students enrolled in the spring spent \$434,979 away from campus and the 82 fall 2011 students spent \$699,378 for a total of over \$1.1 million.

Table 5
Estimated Student Enrollment for LMU Duncan School of Law, 2011

Student Category	Spring 2011	Summer 2011	Fall 2011
New Students	0	0	55
Continuing Students	<u>149</u>	<u>63</u>	<u>135</u>
TOTAL Student Enrollment	149	63	190
TOTAL Full Time Enrollment	51	0	82
Students in Campus Housing	0	0	0

Source: LMU enrollment statistics

Table 6
**Components of LMU Health Sciences Division Duncan School of Law
Non-university Student Spending for 2011¹**

	Spring 2011	Fall 2011
Students Living Off-Campus		
Full-time Students	51	82
Spending per Student	<u>\$8,529</u>	<u>\$8,529</u>
TOTAL Student Expenditures	\$434,979	\$699,378

¹Total expenditures include non-university spending only. Revenue from campus spending such as tuition, campus housing costs and books purchased at the campus bookstore are captured in LMU-DSOL auxiliary revenue.

Source: Based on proposed student budget available on LMU website,
<http://www.lmunet.edu>

Visitor Days and Spending

Colleges attract a large number of visitors each year for various events and activities. Parents bring their sons and daughters to enroll, help them with their living arrangements and attend some of their activities. Alumni revisit the campus for athletic events and to attend banquets and other special events. In addition, several visitors are brought to campus by administrators and faculty to attend conferences and other miscellaneous meetings. Each time a visitor comes to campus, they spend money at the local restaurants and often buy gas before they leave. Some of the activities require an overnight stay which generates revenue for the local motels. These are all local expenditures that occur due to the college's presence. Data in **Table 7** show that in 2011, the estimated 152 visitors to LMU-DSOL spent \$18,525 while participating in on-campus activities.

Table 7
Estimated Annual Expenditures from Visitors to LMU Duncan School of Law
FY 2011

	Visitors	Daily Spending	Total Expenditures
Student Visitors and Parent Activities	95	\$156	\$14,820
Alumni Activities	0	\$109	\$0
College Activities	0	\$109	\$0
Faculty and Staff Visitors	<u>57</u>	\$65	<u>\$3,705</u>
TOTAL Visitor Expenditures	152		\$18,525

Source: Visitor days was obtained from LMU Enrollment Management and Student Services and estimated daily spending was based on University of Arizona research and LMU-DSOL officials

THE IMPACT OF LMU-DSOL ON THE TENNESSEE ECONOMY IN FY 2011

As stated earlier, this report focuses on the economic impact as it relates to jobs, and wages, salaries and benefits resulting from activities associated with LMU-DSOL.

These activities are divided into the following categories

1. Operations;
2. Construction;
3. Student Non-university Spending; and
4. Visitor Spending.

The previous section clearly documents that the direct activities of these categories are significant. However, this does not tell the complete story. Secondary economic impacts are created when the medical college and its employees, construction firms and their employees, students, and visitors all spend money. These secondary benefits are measured by economic multipliers.

The Multiplier Effect

To further illustrate the multiplier effect, consider the opening of a new law school. The law school purchases goods and services from other businesses and the dollars flowing to those businesses increase. Likewise, the law school will hire employees who purchase goods and services locally. The purchases of the law school and its employees will create additional jobs and wages and salaries throughout the local economy.

A multiplier from an input-output model such as IMPLAN can measure the effect created by an increase or decrease in economic activity. For example, an employment multiplier of 1.75 indicates that if one job is created by the law school, then an additional

0.75 job is created in other businesses due to the law school and employee spending. The model calculates employment and income multipliers.

Economic Impact from Operational Activities

The economic impact from activities related to operations is presented in **Table 8**. Employment (full and part-time) and income (payroll including wages, salaries, and benefits) from operational activities were obtained from LMU-DSOL. These activities occur every year. Projected LMU-DSOL employment was 29 employees in FY 2011 (**Table 4**). The higher education sector employment multiplier is 1.68. This means that for every job in the college, another 0.68 job is created in other businesses in the state. The secondary employment generated in the state from LMU-DSOL is estimated at 19.7 jobs. LMU-DSOL had an estimated total impact of 48.7 jobs in the State of Tennessee in FY 2011.

Data on the income from employees are also presented in **Table 8**. Data from LMU-DSOL indicate that total income will be \$2.3 million from operational activities. Using the higher education sector income multiplier of 1.60, LMU-DSOL will generate secondary income of \$1.4 million for a total impact of \$3.7 million.

Table 8
Employment, Income and Retail Sales Impact of LMU Duncan School of Law
on the State of Tennessee from Operational Activities, FY 2011

Category	Amount
Employment Impact	
LMU-DSOL Employment	29.0
Higher Ed. Sector Employment Multiplier	1.68
Secondary Employment Impact	<u>19.7</u>
TOTAL Employment Impact	48.7
Income Impact	
LMU-DSOL Income	\$2,320,126
Higher Ed Sector Income Multiplier	1.60
Secondary Income Impact	<u>\$1,392,076</u>
TOTAL Income Impact	\$3,712,202
Retail Sales and Sales Tax Impact	
Retail Sales	\$1,373,515
State Sales Tax (7%)	\$96,146

Source: Employment and income data from LMU-DSOL; 2011 IMPLAN Data, Minnesota Implan Group Inc., Retail sales data from Tennessee Department of Revenue, U.S. Department of Commerce Bureau of Economic Analysis.

Income also has an impact on retail sales. The retail sales capture ratio can be used to estimate the impact of operational activities on retail sales. This ratio indicates the percent of personal income spent on items that generate sales tax. Data from the Tennessee Department of Revenue indicate that 37.0 percent of the income is spent in retail stores that collect state sales taxes. Thus, it is estimated that almost \$1.4 million would be generated in retail sales from operations. Given the current 7.0 percent state sales tax rate in Tennessee, an estimated state sales tax collection of \$96,146 will occur as a result of the retail sales from operational activities.

Economic Impact from Construction Activities

Universities often must spend a significant amount on construction activities. This impact is often overlooked. It must be remembered that these impacts only occur during the year of construction and are not recurring. In FY 2011, LMU-DSOL spent \$266,000 on construction projects and for FY 2012 the projected amount is \$37,800. From IMPLAN, the statewide ratios for employment and wages generated per million dollars of construction were used to estimate employment and income for each fiscal year. The FY 2011 construction activities will be highlighted. The capital investment of \$266,000 is estimated to create 2.2 full and part-time jobs and over \$84,000 in wages, salaries and benefits (**Table 9**). The total employment impact from LMU-DSOL construction activities is presented in **Table 10**.

Table 9
Employment and Income Generated from LMU Duncan School of Law
Capital Investment Projects, FYs 2011 and 2012

Year	Capital Investment	Full-time and Part-time Employees	Wages, Salaries and Benefits
FY 2011	\$266,000	2.2	\$84,368
FY 2012	\$37,800	0.3	\$11,505

Source: LMU-HSD, 2011; 2011 IMPLAN Data, Minnesota Implan Group Inc.

The construction employment multiplier of 1.74 indicates that 0.74 job will be created in other businesses in the state due to construction activities. Those jobs in other businesses are referred to as secondary jobs. The estimated secondary employment

impact for FY 2011 was 1.6 jobs, resulting in a total employment impact of 3.8 jobs from construction activities.

Table 10
Employment Impact of LMU Duncan School of Law on the State of Tennessee
from Construction Activities, FYs 2011 and 2012

Year	Direct Employment	Construction Employment Multiplier	Secondary Employment Impact	Total Employment Impact
FY 2011	2.2	1.74	1.6	3.8
FY 2012	0.3	1.74	0.2	0.5

Source: 2006 IMPLAN Data, Minnesota Implan Group Inc.

Table 11
Income and Retail Sales Impact of LMU Duncan School of Law on the State of
Tennessee from Construction Spending, FYs 2011-2012

Year	Direct Income	Construction Income Multiplier	Secondary Income Impact	Total Income Impact	Retail Sales	Sales Taxes
2011	\$84,368	1.88	\$74,244	\$158,612	\$58,686	\$4,108
2012	\$11,505	1.88	\$10,124	\$21,629	\$8,003	\$560

Source: Construction data from LMU-DSOL; 2011 IMPLAN Data, Minnesota Implan Group Inc., Retail sales data from Tennessee Department of Revenue, U.S. Department of Commerce Bureau of Economic Analysis.

The impact on income is presented in **Table 11**. The construction income multiplier is 1.88, which means that for each dollar of wages and salaries paid to construction workers, another \$0.88 of wages will be generated in other businesses in the state. The estimated secondary income for FY 2011 was \$74,244 and the total income

from construction activities was \$158,612. Retail sales are estimated at \$58,686 with a 7.0 percent state sales tax generating \$4,108 from construction activities.

Economic Impact of Student Non-university Spending

When students attend classes at the law school, they spend money for housing, food, entertainment, etc. The money they spend locally, outside of the university, stimulates additional economic activity that in turn generates jobs and income in other businesses. Student non-university expenditures were estimated in a previous section. Using ratios of expenditures to employment and income from IMPLAN, the employment and income generated from non-university spending were estimated. **Table 12** contains the estimates.

Jobs created from this student spending were estimated at 9.7. The employment multiplier for retail trade and services was utilized to measure the multiplier impact. The employment multiplier for this sector was 1.80. Thus, 7.8 secondary jobs were created in other businesses and the estimated total employment impact from student non-university spending is 17.5 jobs.

Income generated from these student expenditures is estimated at \$444,415. The income multiplier for retail trade and services was utilized to estimate the secondary income impact of \$351,088. The total income impact from student non-university spending was \$795,503. This income generates \$294,336 in retail sales and \$20,604 in state sales tax.

Table 12
Employment, Income and Retail Sales Impact of LMU Duncan School of Law on
the State of Tennessee from Student Spending, FY 2011

Category	Amount
Employment Impact	
Jobs from Student Non-university Spending	9.7
Retail Trade and Services Employment Multiplier	1.80
Secondary Employment Impact	<u>7.8</u>
TOTAL Employment Impact	17.5
Income Impact	
Income from Student Non-university Spending	\$444,415
Retail Trade and Services Income Multiplier	1.79
Secondary Income Impact	<u>\$351,088</u>
TOTAL Income Impact	\$795,503
Retail Sales and Sales Tax Impact	
Retail Sales	\$294,336
State Sales Tax (7%)	\$20,604

Source: Student spending data from LMU-DSOL; 2011 IMPLAN Data, Minnesota Implan Group Inc., Retail sales data from Tennessee Department of Revenue, U.S. Department of Commerce Bureau of Economic Analysis.

Economic Impact from Visitor Spending

LMU-DSOL activities attract many visitors to campus. These visitors spend dollars that contribute to the local economy. Data in **Table 7** estimates that 152 visitors spent \$18,525 in FY 2011. These data were converted to jobs and income based on ratios of expenditures to jobs and income from IMPLAN. The impact of visitor spending is presented in **Table 13**.

Jobs created in businesses due to visitor spending were estimated at one-third full-time employee. The total impact on employment was almost a one-half full-time position generated due to visitor spending at LMU-DSOL.

Table 13
Employment, Income and Retail Sales Impact of LMU Duncan School of Law
on the State of Tennessee from Visitor Spending, FY 2011

Category	Amount
Employment Impact	
Jobs from Visitor Spending	0.3
Retail Trade and Services Employment Multiplier	1.42
Secondary Employment Impact	<u>0.1</u>
TOTAL Employment Impact	0.4
Income Impact	
Income from Visitor Spending	\$7,778
Retail Trade and Services Income Multiplier	1.68
Secondary Income Impact	<u>\$5,289</u>
TOTAL Income Impact	\$13,067
Retail Sales and Sales Tax Impact	
Retail Sales	\$4,835
State Sales Tax (7%)	\$385

Source: Visitor data from LMU-DSOL; 2011 IMPLAN Data, Minnesota Implan Group Inc., Retail sales data from Tennessee Department of Revenue, U.S. Department of Commerce Bureau of Economic Analysis.

Income generated from visitor spending was estimated at \$7,778. The estimated secondary impact was \$5,289 using the retail trade and services sector income multiplier of 1.68. This yielded a total income impact from visitor spending of \$13,067. This income resulted in retail sales of \$4,835 and state sales taxes of \$338 with a 7.0 percent rate.

Summary of LMU-DSOL Impacts

In summary, LMU-DSOL's total impact as it relates to jobs, income, retail sales and sales tax on the State of Tennessee economy is presented in **Table 14**. Total estimate for FY 2011 was 41.2 direct jobs. When including the secondary impacts, the total employment impact will be 70.4 jobs. The direct income activities were estimated at over \$2.8 million with the total income impact from LMU-DSOL on the State of

Tennessee of almost \$4.7 million. These dollars resulted in over \$1.7 million in retail sales and \$121,000 in state sales taxes. These impacts will increase as the program reaches capacity particularly the impact from student and visitor expenditures.

Table 14
Economic Impact of LMU Duncan School of Law on the State of Tennessee, FY 2011

Sector	Employment			Income			Sales Tax	
	Direct	Multiplier	Total Impact	Direct	Multiplier	Total Impact	Retail Sales	7 Cent Tax
College Operations	29.0	1.68	48.7	\$2,320,126	1.60	\$3,712,202	\$1,373,515	\$96,146
Construction	2.2	1.74	3.8	\$84,368	1.88	\$158,612	\$58,686	\$4,108
Student Spending ¹	9.7	1.80	17.5	\$444,415	1.79	\$795,503	\$294,336	\$20,604
Visitor Spending	<u>0.3</u>	1.42	<u>0.4</u>	<u>\$7,778</u>	1.68	<u>\$13,067</u>	<u>\$4,835</u>	<u>\$338</u>
TOTAL	41.2		70.4	\$2,856,687		\$4,679,384	\$1,731,372	\$121,196

¹Total expenditures include non-university spending only. Revenue from campus spending such as tuition, campus housing costs and books purchased at the campus bookstore are captured in LMU-DSOL auxiliary revenue.

Source: Employment, spending and income data from LMU-DSOL; Multipliers and coefficients from 2011 IMPLAN Data, Minnesota Implan Group Inc., Retail sales data from Tennessee Department of Revenue, U.S. Department of Commerce Bureau of Economic Analysis.

THE IMPACT OF LMU-DSOL ON THE PRIMARY IMPACT REGION ECONOMY IN FY 2011

LMU-DSOL is located in Knoxville Tennessee which is designated as part of a Metropolitan Statistical Area (MSA). An MSA is defined by the United States Office of Management and Budget as an area or group of counties that have a high degree of economic and social integration with a highly populated core area, in this case, Knoxville. Thus, it was decided to measure the economic impact of the law school on its primary impact region. Most of the economic impact will occur in this region (**Figure 3**). The region consists of Knox County and the four adjacent counties of Anderson, Blount, Loudon and Union.

The methodology presented in the previous section was utilized to estimate the economic impact of LMU-DSOL on the impact region. Again, the study analyzed the impact relative to four activities. These include the economic activity resulting from LMU-DSOL:

1. Operations;
2. Construction;
3. Student Non-university Spending; and
4. Visitor Spending.

Construction activity only occurs during the construction year, whereas the other activities occur every year. Since the same methodology was used as in the previous section, only the summary impact table is presented. Data relative to the employment, income, and retail sales are presented in **Table 15**.

LMU-DSOL had 29 employees and the regional higher education sector employment multiplier is 1.63. This means that for each job created at LMU-DSOL,

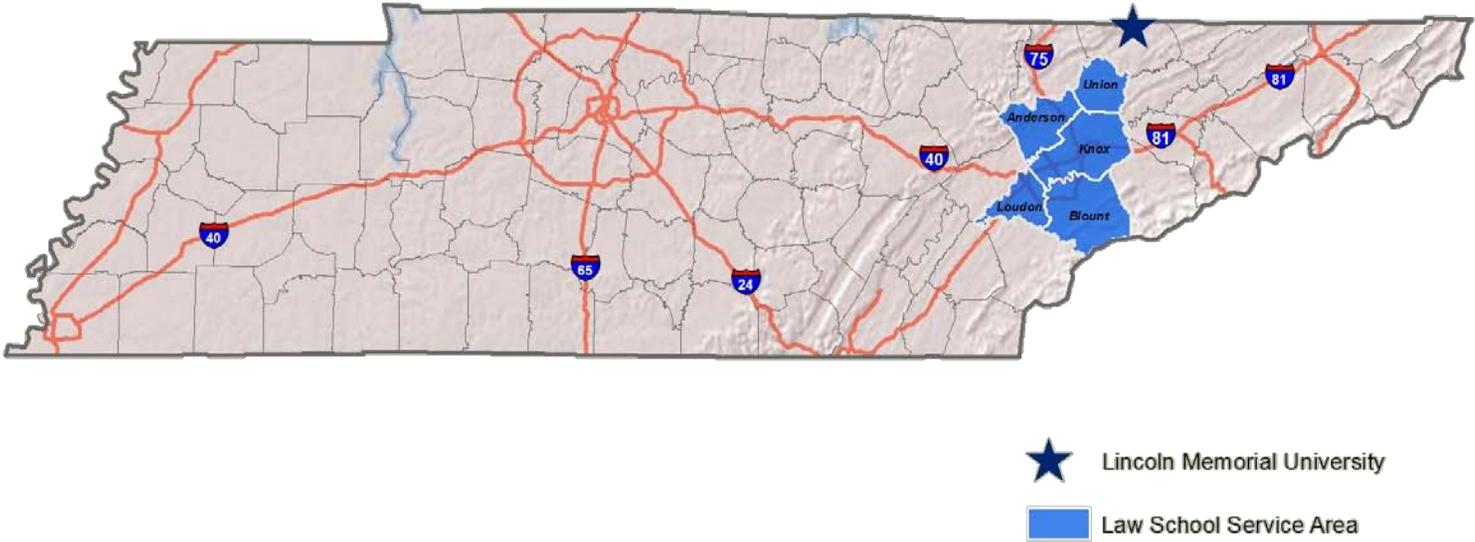
another 0.63 jobs will be created in other businesses due to LMU-DSOL and its employees spending money in the primary impact region. The total estimated employment impact from LMU-DSOL operations is 47.3 jobs.

The economic impact of construction, student spending and visitor spending activities was also measured and yielded a total impact of 68.4 jobs in the region. FY 2011 income for LMU-DSOL operations was \$2.3 million. With the region's higher education sector income multiplier of 1.58, the total impact on income in the primary impact region due to operational activities will be \$3.7 million. In total, when including all activities of LMU-DSOL, the total estimated income impact in the region was approximately \$4.6 million.

By applying the regional sales capture ratio of 44.2 percent to the income impacts generated from all four activities, it was estimated that the impact on retail sales was over \$2.0 million. Due to the different tax rates throughout the region, sales tax collections were estimated at one percent to illustrate the impact. A one-cent sales tax rate would collect over \$20,000.

Everyone understands the tremendous educational contributions that LMU-DSOL provides to the State of Tennessee and to its primary impact region. This study clearly documents that LMU-DSOL also has a significant economic impact on both the State of Tennessee and the school's primary impact region.

Figure 3
Primary Impact Region for Lincoln Memorial-Duncan School of Law



Data Sources: Lincoln Memorial University (1/2012)



Map created by
Peton Consulting
February, 2012

Table 15
Economic Impact of LMU Duncan School of Law on the Primary Impact Region, FY 2011

Sector	Employment			Income			Sales Tax	
	Direct	Multiplier	Total Impact	Direct	Multiplier	Total Impact	Retail Sales	1 Cent Tax
College Operations	29.0	1.63	47.3	\$2,320,126	1.58	\$3,665,799	\$1,620,283	\$16,203
Construction	2.2	1.70	3.7	\$84,368	1.82	\$153,550	\$67,869	\$679
Student Spending ¹	9.7	1.75	17.0	\$444,415	1.79	\$795,503	\$351,612	\$3,516
Visitor Spending	<u>0.3</u>	1.39	<u>0.4</u>	<u>\$7,778</u>	1.64	<u>\$12,756</u>	<u>\$5,638</u>	<u>\$56</u>
TOTAL	41.2		68.4	\$2,856,687		\$4,627,608	\$2,045,402	\$20,454

¹Total expenditures include non-university spending only. Revenue from campus spending such as tuition, campus housing costs and books purchased at the campus bookstore are captured in LMU-DSOL auxiliary revenue.

Source: Employment and income data from LMU-DSOL; Multipliers and coefficients from 2011 IMPLAN Data, Minnesota Implan Group Inc., Retail sales data from Tennessee Department of Revenue, U.S. Department of Commerce Bureau of Economic Analysis.

Appendix A

Review of Literature Relative to Impact Studies

Appendix A

Review of Literature Relative to Impact Studies

For many years, researchers have been interested in quantifying the benefits, beyond the provision of degrees, of universities and colleges. One of the first detailed guides to measure the economic benefits of a college or university to the local community was requested by the American Council on Education (ACE) in 1968.^[2] Based on some previous impact studies, Caffrey and Isaacs identified four primary groups that generated economic activity through spending. These four categories were: 1. the college, 2. faculty and staff, 3. students, and 4. visitors to the college. They developed several models and sub-models to estimate the spending. These models have provided the foundation for numerous economic impact studies since and are still being adopted today. For example, the Association of American Medical Colleges has been measuring the economic impact of their member institutions on the individual states in which they were located for a number of years. The results are based on adaptations of the ACE models with the latest study completed in 2006.^[3]

Since the development of the ACE models, technology has simplified the process for deriving multipliers. The original ACE model depends upon numerous surveys to faculty, staff, students, local businesses and community residents and relies heavily upon proportional spending calculations to estimate indirect economic impact. It is a difficult model to implement and is less applicable to some colleges such as community colleges.^[4] The proportion of money spent locally can be difficult to estimate. More recently, computer models have been created utilizing input-output analysis that not only make estimating the multiplier effect more reasonable, but allow different multipliers to be created for local, regional or state impacts (**Appendix B**). Two frequently used

computer models are the Regional Input-Output Modeling System (RIMS II) published by the U.S. Bureau of Economic Analysis and MicroIMPLAN developed by the United States Forest Service. These computer models have been used to estimate the impact of universities, medical schools, hospital construction and physician clinics, just to name a few.^[5-11] For example, a detailed study estimating the impacts of the University of Nevada School of Medicine (UNSOM) on the Nevada economy was complete using the IMPLAN model.^[5] The study includes estimates of the employment and payroll impacts of UNSOM medical education, patient care activities and construction in 2006. In 2001, the National Association of State Universities and Land-Grant Universities surveyed its members for their most recent economic impact reports. They published a summary analysis based on data from 96 member institutions and 10 member university systems.^[12]

Appendix A References

- [1] Wong, P. and Bedroussian, A., "Economic Benefits of Proposed University of Central Florida College of Medicine," Milken Institute, Mar. 2006.
- [2] Caffrey, J. and Isaacs, H., "Estimating the Impact of a College or University on the Local Economy," American Council on Education, 1971.
- [3] Umbach, T., "The Economic Impact of AAMC-Member Medical Schools and Teaching Hospitals 2005," Association of American Medical Colleges, Washington D.C., 2006.
- [4] Head, R., "The Economic Impact of Piedmont Virginia Community College upon its Service Region (1996-1997)", Office of Institutional Research, Piedmont Virginia Community College, Charlottesville, Virginia, Research Report No. 2-98, Nov. 1997.
- [5] Packham, J., Price, S. and Harris, T., "The Impact of the University of Nevada School of Medicine on the Nevada Economy," University Center for Economic Development, University of Nevada Reno, Nevada Cooperative Extension Service, Technical Report UCED 2006/07-16, Apr. 2007.
- [6] Eilrich, F., Doeksen, G. and St .Clair, C., "The Economic Impact of a Rural Primary Care Physician and the Potential Health Dollars Lost to Out-migrating Health Services," National Center for Rural Health Works, Oklahoma State University, Jan. 2007.
- [7] Doeksen, G, et al., "The Economic Impact of the New Hospital on the Economy of Drumright, Creek County Oklahoma," Oklahoma Cooperative Extension Service, Oklahoma State University, Jan. 2005.
- [8] "The Contribution of Arizona State University to the Arizona Economy: FY 2002," Center for Business Research, L. William Seidman Research Institute, W.P. Carey School of Business, April 2003
- [9] Fox, A. and Fuji Noe, G., "Morehouse School of Medicine Economic Impact Study," Office of Planning and Institutional Research, Morehouse School of Medicine, Feb. 2003.
- [10] Gilmer, R., Hodgins, R., and Schiflett, M., "Economic Impact of Texas Medical Center on Southeast Texas," Houston Business: A Perspective on the Houston Economy, Federal Reserve Bank of Dallas, Houston Branch, Oct. 2001.
- [11] Charney, A. and Pavlakovich, V., "The University of Arizona: An Investment in Arizona's and Pima County's Future: Economic & Revenue Impact Analysis, 1997-98," Eller College of Business and Public Administration, University of Arizona, Sept. 1999.

[12] NASULGC, "Shaping the Future: The Economic Impact of Public Universities,"
National Association of State Universities and Land Grant Colleges, Office of Public
Affairs, Aug., 2001.

Appendix B

Model and Data Used to Estimate Employment and Income Multipliers

Appendix B

Model and Data Used to Estimate Employment and Income Multipliers

A computer spreadsheet that uses state IMPLAN multipliers was developed to enable community development specialists to easily measure the secondary benefits of the health sector on a state, regional or county economy. The complete methodology, which includes an aggregate version, a disaggregate version, and a dynamic version, is presented in Measuring the Economic Importance of the Health Sector on a Local Economy: A Brief Literature Review and Procedures to Measure Local Impacts (Doeksen, et al., 1997). A brief review of input-output analysis and IMPLAN are presented here.

A Review of Input-Output Analysis

Input-output (I/O) (Miernyk, 1965) was designed to analyze the transactions among the industries in an economy. These models are largely based on the work of Wassily Leontief (1936). Detailed I/O analysis captures the indirect and induced interrelated circular behavior of the economy. For example, an increase in the demand for health services requires more equipment, more labor, and more supplies, which, in turn, requires more labor to produce the supplies, etc. By simultaneously accounting for structural interaction between sectors and industries, I/O analysis gives expression to the general economic equilibrium system. The analysis utilizes assumptions based on linear and fixed coefficients and limited substitutions among inputs and outputs. The analysis also assumes that average and marginal I/O coefficients are equal.

Nonetheless, the framework has been widely accepted and used. I/O analysis is useful when carefully executed and interpreted in defining the structure of a region, the interdependencies among industries, and forecasting economic outcomes.

The I/O model coefficients describe the structural interdependence of an economy. From the coefficients, various predictive devices can be computed, which can be useful in analyzing economic changes in a state, a region or a county. Multipliers indicate the relationship between some observed change in the economy and the total change in economic activity created throughout the economy.

MicroIMPLAN

MicroIMPLAN is a computer program developed by the United States Forest Service (Alward, et al., 1989) to construct I/O accounts and models. Typically, the complexity of I/O modeling has hindered practitioners from constructing models specific to a community requesting an analysis. Too often, inappropriate U.S. multipliers have been used to estimate local economic impacts. In contrast, IMPLAN can construct a model for any state, region, county, or zip code area in the United States by using available state, county, and zip code level data. Impact analysis can be performed once a regional I/O model is constructed.

Five different sets of multipliers are estimated by IMPLAN, corresponding to five measures of regional economic activity. These are: total industry output, personal income, total income, value added, and employment. The total impact of a change in the economy consists of direct, indirect, and induced impacts. Direct impacts are the changes in the activities of the impacting industry such as the addition of another physician and corresponding medical staff to the medical service area. The increased purchases of inputs by the new physician clinic as a result of the direct impact are the indirect impact on the business sectors.

Two types of multipliers are generated. Type I multipliers measure the impact in terms of direct and indirect effects. However, the total impact of a change in the economy consists of direct, indirect, and induced changes. Both the direct and indirect impacts change the flow of dollars to the state, region, or county's households. Subsequently, the households alter their consumption accordingly. The effect of the changes in household consumption on businesses in a community is referred to as an induced effect. To measure the total impact, a Type II multiplier is used. The Type II multiplier compares direct, indirect, and induced effects with the direct effects generated by a change in final demand (the sum of direct, indirect, and induced divided by direct). IMPLAN also estimates a modified Type II multiplier, called a Type SAM multiplier, which also includes the direct, indirect, and induced effects. The Type SAM multiplier further modifies the induced effect to include spending patterns of households based on a breakdown of households by nine different income groups.

Minnesota IMPLAN Group, Inc. (MIG)

Dr. Wilbur Maki at the University of Minnesota utilized the I/O model and database work from the U. S. Forest Service's Land Management Planning Unit in Fort Collins to further develop the methodology and to expand the data sources. Scott Lindall and Doug Olson joined the University of Minnesota in 1984 and worked with Maki and the model.

As an outgrowth of their work with the University of Minnesota, Lindall and Olson entered into a technology transfer agreement with the University of Minnesota that allowed them to form MIG. At first, MIG focused on database development and provided data that could be used in the Forest Service version of the software. In 1995,

MIG took on the task of writing a new version of the IMPLAN software from scratch. This new version extended the previous Forest Service version by creating an entirely new modeling system that included creating Social Accounting Matrices (SAMs) – an extension of input-output accounts, and resulting SAM multipliers. Version 2 of the new IMPLAN software became available in May of 1999. For more information about Minnesota IMPLAN Group, Inc., please contact Scott Lindall or Doug Olson by phone at 651-439-4421 or by email at info@implan.com or review their website at www.implan.com.

Appendix B References

- Miernyk, W.H. "The Element of Input-Output Analysis," New York, NY, Random House, 1965.
- Doeksen, G.A., Johnson, T. and Willoughby, C., "Measuring the Economic Importance of the Health Sector on a Local Economy: A Brief Literature Review and Procedures to Measure Local Impacts, Southern Rural Development Center," SRDC Pub. No. 202, 1997.
- Minnesota IMPLAN Group, Inc., "User's Guide, Analysis Guide, Data Guide," IMPLAN Professional Version 2.0 Social Accounting and Impact Analysis Software, 2nd Ed., Jun 2000.

Appendix C

Dr. Doeksen's Professional Accomplishments

Appendix C

Dr. Doeksen's Professional Accomplishments

Dr. Doeksen has 40 years of experience working with economic impact models. He has applied impact models to a variety of situations and also has advanced the theory of impact models. Dr. Doeksen's Master's thesis and Ph.D. dissertation both utilized input-output analysis, which is the most frequently used impact model. Both his thesis and dissertation received national awards.

Dr. Doeksen's early work in input-output analysis is referenced in textbooks such as Harry W. Richardson's book titled Input-Output and Regional Economics. He is given credit for groundbreaking work related to aggregation and size of multipliers.

Over the years, Dr. Doeksen has over 60 journal articles and publications regarding impact analysis. He has been involved with over 350 economic impact studies. These include such applications as to measure the economic impact of a university hospital, critical access hospital, golf course, manufacturing plant, large urban health clinic, medical program on a state's economy, dental practices, recreational facility, hotel, agricultural services, agricultural programs, etc. Results were used by local, state and federal policy makers to influence and justify political action. In addition, Dr. Doeksen is constantly being invited to speak at state, regional, national, and international conferences. He makes over 30 speaking engagements each year. Dr. Doeksen has recently received a lifetime achievement award from the Southern Agricultural Economics Association and the Bonnie Teeter Lifetime Achievement Award from the Southern Rural Development Center. Finally the Oklahoma Rural Health Association named his community development assessment model as the program of the year.

Dr. Doeksen's latest work with impact models is the founding of the National Center for Rural Health Works. The Center has been in operation over 10 years and its primary purpose is to train professionals in other states to measure the impact of health services on the rural economies. The Center is funded by the Federal Office of Rural Health Policy. Programs have been started in over 32 states. Dr. Doeksen continues to operate as Director and is continually developing new applications of the economic impact models.

In summary, Dr. Doeksen is nationally known for his economic impact studies and research applications. These applications relate to rural economies, many of which focus on various segments of the health sector.