

# STARS

University of Central Florida  
**STARS**

---

Dick Pope Sr. Institute Publications

Dick Pope Sr. Institute *for* Tourism Studies


---

11-7-2013

## The Economic Footprint of the Rosen College of Hospitality Management in the Metro Orlando Area

Robertico R. Croes  
[robertico.croes@ucf.edu](mailto:robertico.croes@ucf.edu)

Tadayuki Hara  
[tadayuki.hara@ucf.edu](mailto:tadayuki.hara@ucf.edu)

 Part of the [Economics Commons](#), [Higher Education Commons](#), and the [Tourism and Travel Commons](#)  
Find similar works at: <https://stars.library.ucf.edu/dickpope-pubs>  
University of Central Florida Libraries <http://library.ucf.edu>

This Report is brought to you for free and open access by the Dick Pope Sr. Institute *for* Tourism Studies at STARS. It has been accepted for inclusion in Dick Pope Sr. Institute Publications by an authorized administrator of STARS. For more information, please contact [STARS@ucf.edu](mailto:STARS@ucf.edu).

---

### Recommended Citation

Croes, Robertico R. and Hara, Tadayuki, "The Economic Footprint of the Rosen College of Hospitality Management in the Metro Orlando Area" (2013). *Dick Pope Sr. Institute Publications*. 19.  
<https://stars.library.ucf.edu/dickpope-pubs/19>



# **The Economic Footprint of the Rosen College of Hospitality Management in the Metro Orlando Area**

---

**Report prepared by:**

**The Dick Pope Sr. Institute *for* Tourism Studies**

*R. Croes, T. Hara*

**November 7, 2013**

## Contents

Executive summary .....	1
Introduction .....	2
Methodology.....	3
Results .....	4
Conclusion.....	8
References .....	10

## Executive summary

The report documents the economic value of the Rosen College of Hospitality Management (RCHM) to the Metro Orlando area. The purpose of estimating the economic value of the program is to calculate the increased economic activities in the Metro Orlando area as generated by college degree attainment through the RCHM. The report is the result of an assignment commissioned by the Dean of the RCHM.

The report assessed the economic impact of the alumni of the College during the period from 2000 to 2012. In that period, more than 5,000 students earned a degree either at the undergraduate or graduate level. The College was able to steadily increase the graduation growth rate, albeit at a slower pace since 2010.

The report is premised on a broad focus of the potential economic impact of alumni from the RCHM, i.e., the earned wage when integrated in the labor market. The report did not consider the productivity that college degree holders could spawn in the economy; nor did the report contemplate the social return of higher education.

The report follows an economic based approach by only considering the direct and indirect economic effects that the expenditures associated with the wage differentials infuse into the Metro Orlando area's economy. It treats the RCHM like any other firm sans consideration for any spillover effects that higher education may have on a region.

The total economic contribution of the College alumni surpassed \$531 million. This amount was triggered by the graduate wage totaling \$322 million over the period reviewed, which generated spillover effects in terms of \$96

million in business transactions of goods and services and \$113 million in increased households' income.

Additionally, the RCHM also supplies an economically valuable source of labor to the market in the form of interns. Based on the available data, the total economic value of RCHM interns in 2012 was estimated at \$17,189,647.

The total economic contribution of the RCHM in 2012 (graduates and interns taken together) amounted to \$69,263,647. This amount includes \$52,074,000 that stems from 789 graduates and 2,676 RCHM internship students that work on average 25.1 labor hours per week as interns.

The value of the RCHM is clearly manifested in the sizeable amount of graduates, interns supplying the labor market, the high number of degree attainment and the commensurate economic contribution of the alumni to the Metro Orlando area (Orange, Osceola and Seminole counties).

**Table 1 Summary of Key Indicators**

Amount of graduates	5, 136
Economic Base without multiplier	\$322,492,649
Economic Base with Multiplier	\$531,229,687
Government Taxes (federal, state and local)	\$64,440,767

## Introduction

College education has recently received heightened scrutiny. Heightened scrutiny is provoked by higher tuition costs combined with opportunity costs of college education and fewer job opportunities for graduates. These symptoms, which stem from the recession, have triggered the concomitant discussion of real benefits of obtaining a college degree.

Several reports have devoted attention to the value of a college degree particularly in trying times. These reports concluded without any doubt that earning a college degree is worth the investment, particularly during trying times.<sup>1</sup> The value of a college degree includes private benefits, such as monetary benefits translated in a college wage premium directly accruing to the individual. Moreover, the return on educational investments has increased significantly over the past few decades.

The premiums from a college degree are also reflected in higher households' wealth accumulation over time compared to that of high school graduates. Non-monetary private benefits include more job opportunities, and better health conditions. Benefits from a college degree go beyond the pure individual benefits and extend to the positive effects towards society, such as increased productivity, reduction in criminal participation, and improvement in political participation.<sup>2</sup>

While these reports found that any degree is better than no degree, they also point out that not all degrees are equal. Some degrees do

confer greater benefits to individuals and society by providing higher wage premiums, job and career opportunities, higher social and economic impact of a better-educated workforce, and larger tax benefits to the governments. Because higher education exceeds the mere private benefits, it is important to monitor the impact and efficiency of public investment in higher education.

Cognizant of the relevance of higher education and the need for transparency in public funding, the Dean of the Rosen College of Hospitality Management has commissioned the Dick Pope Sr. Institute for Tourism Studies to conduct an economic impact study of the hospitality management program. The assignment covered the period from 2000 to 2012. The program was governed by the School of Hospitality Management till 2004, when the school became a full-fledged college within the UCF college structure.<sup>3</sup>

During the period under review, a total of 5,136 students graduated from the College, populating the labor market. This amount includes bachelors, masters and PhD degrees. For the purpose of this study, only those students with a bachelor degree were considered. The economic impact of the college graduates was estimated based on the median annual earnings for those holding a bachelor degree in hospitality management. The results of this exercise clearly demonstrate the economic value of the Rosen College of Hospitality Management, and implies similar pro-rated impacts of comparable hospitality management programs in the nation.

---

<sup>1</sup> See, for example, James, J. (2012). The College Wage Premium. *Economic Commentary*, The Federal Reserve Bank of Cleveland, Number 2012-10, August 8.

<sup>2</sup> Owen, S. and Sawhill, I. (2013). *Should every one go to College?* Brookings, Washington DC.

---

<sup>3</sup>Pizam, A., Okumus, F., and Hutchinson, J. (2013). Forming a long-term industry-university partnership. The case of the Rosen College of Hospitality Management. *Worldwide Hospitality and Tourism Themes*, 5(3), 244-254.

## Methodology

This study conducted desk research and empirical analysis to estimate the economic impact of the Rosen College of Hospitality Management Program. The desk research included literature review pertaining to the understanding of the private benefits of schooling and the social returns to education. For the empirical analysis, the study adopted an economic method of Input-Output analysis to estimate the economic value of the Rosen College of Hospitality Management (RCHM).

The main data sources for the empirical analysis are the Input-Output tables developed by multiple institutions including the U.S. Bureau of Economic Analysis (BEA) and Minnesota IMPLAN Group Inc. These tables show data from surveys of households and firms that generate estimates specific to tri-counties in Central Florida, i.e., Orange, Osceola and Seminole. For the formulation of the final demand vector, the households' survey data from the BEA were employed.

The economic value of the RCHM is centered on employing the median annual earnings for those holding a bachelor degree in hospitality management from the RCHM. The annual median wage of a hospitality management bachelor's degree references the state of Florida. The study used data from the U.S. Census for the state of Florida. The premium wage was estimated for each year starting in 2004. For example, the U.S. Census estimated that the annual median wage for a bachelor degree in the state of Florida in 2011 at \$43,706.<sup>4</sup> The expenditures distribution was

estimated from the BEA households' survey from

<http://www.bea.gov/iTable/iTable.cfm?reqid=9&step=1&acrdn=2#reqid=9&step=1&isuri=1>.

The final demand column vector is based on NAICS 2-digit (20X20 plus Value added) table.

Three effects of the annual median wage were estimated: direct, indirect and induced effects. The direct effects of the expenditure result from the premium wage earned by the graduate thus enabling the graduate to buy more goods and services from a range of suppliers. The indirect effects are the result of increased business transactions provoking the increase of purchases of intermediate goods and services from other suppliers. The induced effects are related to the additional income accrued to households which in turn are then spent on a variety of consumer goods and services, utilizing the framework of Social Accounting Matrix (SAM) in which the Household is treated as endogenous.

The study does not consider the impact of social returns to higher education and non-state funded expenditures.<sup>5</sup> This report is based on

---

Earnings at the 25<sup>th</sup> percentile were \$33,000, while earnings at the 75<sup>th</sup> percentile were \$72,000. See, Carnevale, A., Strohl, J., and Melton, M. (2009). *What's It Worth? The Economic Value of College Majors*. Center on Education and the Workforce of the Georgetown University, <http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/whatsitworth-select.pdf>. Therefore the application of \$40,000 as the average wage for a bachelor's degree in hospitality management is reasonable.

<sup>5</sup> There is a large literature documenting social returns to higher education. See, for example, Moretti, E. (2004). Estimating the Social Return to Higher Education: Evidence from Longitudinal and Repeated Cross-Sectional Data. *Journal of Econometrics* 121, 175-212.

---

<sup>4</sup> The median wage of a hospitality management bachelor's degree is \$50,000 per year, according to a recent study conducted by the Center on Education and the Workforce of the Georgetown University.

IMPLAN<sup>6</sup> (Impact Analysis for Planning) to measure the three effects from the premium wage. Data for this study were collected from IMPLAN 2010 Florida county-level data, where tri-county data are aggregated as one region, and the analyses are made with IMPLAN 3.1. version. Further discussion regarding the I-O analysis can be found in Hara (2008) and Croes & Severt (2007).

## Results

A total of 5,136 students earned a degree from the hospitality management degree program during the period under review. The amount of degrees both at the undergraduate and graduate levels is: 4,888 students earned a bachelor degree, and 237 students earned a master degree and another 10 earned a PhD degree since 2003 and 2005 respectively. Table 1 reveals the total amount of graduates per academic year. It should be noted that the number of graduates for spring 2013 is not included in the study.

**Table 2 Rosen College Graduates Since 2000**

Year	Total Graduates
2000-2001	71
2001-2002	60
2002-2003	14
2003-2004	211
2004-2005	257
2005-2006	320
2006-2007	411
2007-2008	494
2008-2009	607
2009-2010	705
2010-2011	735
2011-2012	789
2012-2013	462
<b>Grand Total</b>	<b>5136</b>

Note: Graduates in spring 2013 are not reflected in total graduates during 2012-2013.

Graduation rates are an important instrument for university programs because these rates reflect the effectiveness of the program in moving students in a timely manner from the moment of enrollment to matriculation. The amount of graduates increased steadily over the period under review as displayed in Figure 1. There are two outliers in this series, i.e., the negative growth rates during the academic years 2001-2003 when there was a decline in the number of graduates, and the academic year 2003-2004 which experienced an exponential growth exceeding a factor of 14. The other interesting graduation pattern of the RCHM is the unabated growth since 2003. However, the growth rate seems to be slowing down manifesting single digits growth since 2010.

The graduation rate of the program has been impressive since 2000. The average annual graduation growth rate is estimated at 118%. If

<sup>6</sup> IMPLAN (Impact analysis for Planning) was developed by the USDA Forest Service in cooperation with the Federal Emergency Management Agency and the USDI Bureau of Land Management. In 1993, the Minnesota IMPLAN group Inc. was formed to privatize and maintain IMPLAN data sets and software. In this study, we will only use regional economic data from the IMPLAN database and the software, in order to analyze the impact with a series of matrix operations, thereby ensuring maximum flexibility and transparency. At the same time this allows for developing an Economic Impact Model that can be manipulated in Microsoft Excel.

the outlier revealed in the academic year 2002-2003 and the 2013 spring graduates data is excluded (due to incomplete data), the annual average graduation growth rate of the program is estimated at 6.7%. This means that the program has been relatively successful in powering a steady increase in college degree attainment.

**Figure 1 Number of Graduates 2000 to 2012**



Through its graduates the RCHM has a total economic contribution exceeding \$531 million in output to the tri-county region of Orange, Seminole and Osceola as revealed in Table 4. The previous amount is the result of the earned wages of the RCHM graduates over the period under review that totaled \$322.5 million. The indirect contribution added up to \$96.1 million, while the induced effects equaled to \$112.6 million (see Tables 3 and 4). The multiplier effect of the college wage totaled 1.67. The level of output generated by the earned wages caused by the RCHM alumni generated a total amount of \$64.4 in taxes as shown in Table 6.

This economic contribution is only associated with the earned wages by education as indicated previously in the study and represents all the business transactions in goods and services (\$96.1 million), additional households'

incomes (\$112.6 million) and government taxes (\$64.4 million). Arguably, the RCHM spawns effects beyond the usual form of economic impact through its role as a source for human capital formation. Human capital formation affects future output and income, but these future effects remain outside of the scope of this report.

**Table 3 Direct and Indirect Economic Impact of Rosen College of Hospitality Management over Regional Economy (Orange, Osceola and Seminole Counties Combined)**

Industrial Sectors	Direct	Indirect
Agriculture	\$0	\$109,137
Mining	\$0	\$45,593
Construction	\$0	\$3,841,394
Manufacturing	\$0	\$4,734,822
TIPU	\$0	\$5,520,689
Trade	\$55,400,686	\$3,334,739
Service	\$267,091,963	\$76,299,543
Government	\$0	\$2,241,484
<b>Total</b>	<b>\$322,492,649</b>	<b>\$96,127,400</b>

Source: Made by the authors based on IMPLAN output

**Table 4 Induced Economic Impact of Rosen College of Hospitality Management over Regional Economy (Orange, Osceola and Seminole Counties Combined)**

Industrial Sectors	Induced	Total
Agriculture	\$167,937	\$277,074
Mining	\$35,532	\$82,125
Construction	\$1,113,315	\$4,954,710
Manufacturing	\$3,978,601	\$8,713,423
TIPU	\$4,064,465	\$9,585,154
Trade	\$19,335,938	\$78,071,363
Service	\$82,253,976	\$425,645,481
Government	\$1,658,874	\$3,900,357
<b>Total</b>	<b>\$42,373,711</b>	<b>\$531,229,687</b>



Additionally, the RCHM also provides interns to the labor market resulting in a significant economic value. Internships have a dual function. First, internships provide a hands-on training experience for students through experiential learning thereby enhancing their professional growth and competitive skills. Second, internships provide a means for employers to reduce their search costs of labor supply.

The study includes an estimation of the economic value of internships in 2012. In 2012, 2,676 RCHM students provided an average of 25.1 labor hours per week. The total average earnings for this labor equated to \$9.34 in hourly pay, amounting to \$11,358,134. The total economic contribution is therefore estimated at \$17,189,647 (see Table 6). The total economic value of the RCHM interns exceeds the annual E&G budget of \$7.6 million that RCHM receives from the state.<sup>7</sup>

Adding the earned wages with the economic value of interns exceeds the \$550 million in total economic contribution of the college. Arguably, the economic contribution would be larger than the amount referenced earlier if the value of internships was accounted for over the same time period under review. Unfortunately, data availability prevented a complete estimation of the economic value of internship.

---

<sup>7</sup> The RCHM, while representing about 6% of the total UCF students' population, only receives 1.8% of the E&G budget (\$412 million) allocated to UCF from the state.

**Table 5 Summary of Various Federal, State and Local Tax Estimates generated by College Wage Premium**

<b>Total Federal Tax</b>	<b>Employee Compensation</b>	<b>Proprietor Income</b>	<b>Indirect Business Tax</b>	<b>Households</b>	<b>Corporations</b>	<b>TOTAL Federal Tax</b>
Social Ins Tax- Employee Contribution	\$8,142,819	\$720,848				
Social Ins Tax- Employer Contribution	\$10,580,408					
Indirect Bus Tax: Excise Taxes			\$2,774,782			
Indirect Bus Tax: Custom Duty			\$1,170,841			
Indirect Bus Tax: Fed NonTaxes			\$0			
Corporate Profits Tax					\$3,919,076	
Personal Tax: Income Tax				\$12,914,365		
<b>Total Federal Tax</b>	<b>\$18,723,227</b>	<b>\$720,848</b>	<b>\$3,945,623</b>	<b>\$12,914,365</b>	<b>\$3,919,076</b>	<b>\$40,223,139</b>
<b>Total State and Local Tax</b>	<b>Employee Compensation</b>	<b>Proprietor Income</b>	<b>Indirect Business Tax</b>	<b>Households</b>	<b>Corporations</b>	<b>TOTAL State and Local Tax</b>
Dividends					\$14,503	
Social Ins Tax- Employee Contribution	\$39,920					
Social Ins Tax- Employer Contribution	\$70,767					
Indirect Bus Tax: Sales Tax			\$5,790,630			
Indirect Bus Tax: Property Tax			\$15,131,279			
Indirect Bus Tax: Motor Vehicle Lic			\$23,158			
Indirect Bus Tax: Severance Tax						
Indirect Bus Tax: Other Taxes			\$911,621			
Indirect Bus Tax: S/L NonTaxes			\$1,351,914			
Corporate Profits Tax					\$207,454	
Personal Tax: Income Tax						
Personal Tax: NonTaxes (Fines-Fees)				\$443,481		
Personal Tax: Motor Vehicle License				\$50,984		
Personal Tax: Property Taxes				\$114,623		
Personal Tax: Other Tax (Fish/Hunt)				\$19,503		
<b>Total State and Local Tax</b>	<b>\$110,687</b>	<b>\$0</b>	<b>\$23,256,392</b>	<b>\$628,591</b>	<b>\$221,958</b>	<b>\$24,217,628</b>

Source: made by authors using IMPLAN Data of Orange, Osceola and Seminole Counties, FL

**Table 6: Summary of Economic Impact of Annual Internship Rosen College of Hospitality Management over Regional Economy in 2012 (Orange, Osceola and Seminole Counties Combined)**

Industrial Sectors	Direct	Indirect	Induced	Total
Agriculture	0	2,167	5,308	7,476
Mining	0	1,469	1,155	2,624
Construction	0	130,901	35,186	166,088
Manufacturing	0	161,451	125,772	287,223
TIPU	0	152,791	128,480	281,271
Trade	622,508	106,430	611,073	1,340,012
Service	9,856,764	2,523,138	2,599,703	14,979,605
Government	0	72,909	52,440	125,349
<b>Total</b>	<b>10,479,273</b>	<b>3,151,256</b>	<b>3,559,118</b>	<b>17,189,647</b>

*Source: Made by the authors based on IMPLAN output*

## Conclusion

A college degree represents on average better job opportunities, better health and long-lasting benefits. College degrees not only provide private benefits, they power the economy through higher productivity and higher social returns by way of higher wages and lower criminal participation rates and lower social costs.

The RCHM degree programs have performed impressively during the period under consideration. More than five thousand students earned a degree from the RCHM either at the undergraduate or graduate levels. The growth in graduation rate, an important measurement of a university program's effectiveness, reveals steady growth, albeit at a slower pace since 2010. This graduation growth rate suggests that the program has not only been effective in terms of increased enrollments but also in increased retention. More students are graduating in a timely manner from the RCHM.

The RCHM plays an important role in the hospitality industry in the Metro Orlando area. It infuses a weighty economic contribution through the presence of its alumni, and contributes significantly to the human capital and intellectual foundation for the area's economic future. Vis a vis it provides the Metro area with highly educated and skilled workers, business owners and entrepreneurs, and research and development in the hospitality industry. RCHM is critical to the economic future of the area through its economic footprint and formation of human capital.

The total economic contribution exceeds \$550 million. The key finding is that this amount greatly surpassed the amount received from the state to support higher education provided in hospitality management by the RCHM.

## References

Croes, R. and Severt, D. (2007). Evaluating short-term tourism economic effects in confined economies: conceptual and empirical considerations. *Tourism Economics* 13(2), 289- 307.

Hara, T. (2008). *Quantitative tourism industry analysis: introduction to input-output, social accounting matrix modeling, and tourism satellite accounts*. Oxford, Butterworth-Heinemann.

Isard, W., Ed. (1998). *Methods of Interregional and Regional Analysis*. Regional Science Studies Series. Aldershot, Ashgate.

Miller, R. E. and P. D. Blair (1985). *Input-output analysis: foundations and extensions*. Englewood Cliffs, N.J., Prentice-Hall.

Miller, R. E. and P. D. Blair (2009). *Input-output analysis: foundations and extensions*. Cambridge England; New York, Cambridge University Press.

Miller, R. E., et al. (1989). *Frontiers of input-output analysis*. New York, Oxford University Press.