Journal of Quality Assurance in Hospitality & Tourism, 14:391–411, 2013

ISSN: 1528-008X print/1528-0098 online
DOI: 10.1080/1528008X.2013.802578

Routledge
Taylor & Francis Group

SPECIAL REPORT

Improving the Quality of Hotel Feasibility Studies: Evaluating Potential Opportunities for Hotel Development and Acquisition in University Towns

JOHN W. O'NEILL
School of Hospitality Management, The Pennsylvania State University, University Park, Pennsylvania, USA

Hotel developers and purchasers searching for new opportunities have been advised to consider hotels in university towns because, among other reasons, universities provide a stable source of lodging demand. This study analyzes the performance and stability since 1990 of hotels in 27 cities dominated by a major university. This study finds that lodging demand in university towns is more stable than U.S. averages. This study also evaluates factors that lodging feasibility analysts should consider when studying proposed hotel development or acquisition in markets dominated by a university. Significant predictors of lodging demand include city employment and population trends, as would be expected. Interestingly, university grant funding and graduate student population also should be considered by feasibility analysts because of their strong predictive capability. The results of this study may be generalizable for analysts evaluating university-related lodging demand in general, not just in university towns.

KEYWORDS acquisition, demand, development, feasibility, lodging, university

Address correspondence to John W. O'Neill, Ph.D., Director, School of Hospitality Management, The Pennsylvania State University, 233 Mateer Building, University Park, PA 16802. E-mail: jwo3@psu.edu

INTRODUCTION AND LITERATURE REVIEW

As the United States emerges from economic recession, hoteliers are seeking new development and acquisition opportunities. Recent articles in the hotel trade press have promoted the benefits of hotel development and acquisition in university towns because while business travel suffers noticeable declines during economic recessions, universities are reported to provide relatively more stable and dependable sources of lodging demand and they generate guests for a broad variety of reasons (Nessler, 2010; Esposito, 2009). In particular, universities tend to generate lodging demand both on weekdays and weekends (Esposito, 2009). As a result, hotel development and acquisition proximate to universities has been reported to be relatively less risky than in non-university locations (Esposito, 2009). While universities are not completely immune to economic downturns, and may lay off employees, they almost never go out of business (Esposito, 2009).

Some hotel operators have reported that their hotels located proximate to universities, and particularly state universities, fared better than similar properties located elsewhere during the previous recession (Esposito, 2009). Other operators have emphasized that in university towns, the university is usually, by far, the primary lodging demand generator, so operational success is generally driven based on having a location as proximate to the university campus as possible (Esposito, 2009). Although it is often assumed that a risk involved in developing or acquiring a hotel in a university town is that university lodging demand is seasonal, that is largely a misconception because universities tend to generate significant summer demand as well as fall, winter, and spring visitation (Esposito, 2009).

Hotel demand reacts to changing conditions in the general economy as well as the local economy (Crogel, 2005). Macroeconomic factors in the general economy such as oil crises and currency restrictions can simultaneously affect lodging demand in multiple local hotel markets, or even entire countries (Witt & Witt, 1990). This research project endeavors to analyze the veracity of recent sentiment regarding hotel performance in university towns on a local level because there is a lack of real, empirical research regarding the topic. Furthermore, no previous research has evaluated how to project lodging demand in small cities, or how to evaluate lodging demand generated by universities, though previous research has evaluated lodging demand in major metropolitan markets (Canina & Carvell, 2005). One proprietary consulting report indicated that factors to consider in evaluating the feasibility of lodging development in a university town include the size of the university in terms of total student population, the quantity of existing lodging supply in the town, and the quantity of additional lodging supply under construction or under consideration (Suzuki, 2008).

Previous literature has suggested that, in general, factors that should be considered in evaluating the feasibility of hotel development in a given market include population trends (Rushmore & Baum, 2001; Witt & Witt, 1990) and employment trends (Rushmore & Baum, 2001; Hiemstra & Ismail, 1993). Early research studying lodging demand modeled the hotel industry cycle as a function of the general economic cycle and focused on the timing of cycles, but not the fundamental factors causing changes in demand (Choi, Olsen, Kwansa, & Tse, 1999). Other early research evaluated hotel room rates as a predictor of lodging demand but concluded that analyzing room rates as such creates a simultaneity problem (Wheaton & Rossoff, 1998). Hiemstra and Ismail (1990) considered hotel room rates as predictors of lodging demand, but specifically in the context of the effects of hotel room taxes on demand. Palakurthi and Parks (2000) considered macro-level, socio-demographic factors as influencers of lodging demand.

More recent research has indicated that macro factors influencing lodging demand include gross domestic product (PricewaterhouseCoopers, 2011), personal income, corporate income, and consumer confidence, as well as hotel average daily rates (ADRs), although ADR has been particularly found to be an influencing factor in lodging elasticity of demand where demand that can be captured by one hotel tends to be a function of prices (ADRs) of alternative lodging choices (Canina & Carvell, 2005), although fluctuations in hotel ADRs do not generally result in fluctuations in lodging demand on a market level (Enz, Canina, & Lomanno, 2009). Furthermore, recent research indicates that on a macro level, lodging demand tends to be a predictor of ADR rather than the other way around. For example, as the U.S. economy slipped into recession in 2008, hoteliers resisted discounting, but by 2009, as demand continued to weaken, ADR declined over nine percent (Smith, 2009). Other recent research concluded that when projecting quarterly lodging demand on a macro level, time-series forecasting techniques, including neural networks, may be optimal methods (Cho, 2003). In other words, when using the quarterly data that are available for macro analyses, the strongest predictor of lodging demand in one quarter is lodging demand in the prior quarter.

Previous research has found that different types of markets have different sensitivities to the determinants of demand (Domke-Damonte & Morse, 1998). Other research has indicated that the costs of traveling to a given lodging market can influence lodging demand in that market (Witt & Witt, 1990; Witt & Martin, 1987; Summary, 1987). These studies suggest it may be advisable for researchers conducting studies regarding lodging demand to evaluate relatively homogeneous markets. This research project focuses on evaluating local economic factors as predictors of local lodging demand, specifically in the context of university-generated demand in relatively homogeneous markets.

POTENTIAL PROBLEMS IN EVALUATING LODGING DEMAND IN UNIVERSITY TOWNS

Universities are unique, and therefore, evaluating lodging demand generated by them deserves special attention. Unlike many areas where the majority of employment growth has been in relatively small businesses, university towns are dominated by one significant employer that generates the majority of lodging demand in the city. However, even though a university may be a single major employer, it is composed of a diversity of parts and activities.

In particular, undergraduate and graduate students are all students, but their behavior and many of their related activities may be quite different. While undergraduate and graduate students may both generate lodging demand due to such activities as campus visits and graduation ceremonies, the volume of such lodging demand would be far greater from undergraduate students. At the same time, graduate students may be much more actively involved in research activities that generate visitation for entirely different reasons. There is no evidence that any previous literature regarding hotel development in university towns has suggested analysts should consider not just trends in overall student population, but also trends in both undergraduate and graduate student populations separately.

Also, while previous literature has indicated that analysts should consider area employment trends, there is no evidence that it has suggested separate consideration of both the city and the university's employment trends, which may be related to very different sorts of activities. Finally, there is no evidence that any previous literature has recommended considering trends in the university's grant funding which has become a significant activity at major research universities around the world. These issues raise a question regarding whether or not such factors should be included in an analysis of lodging demand pertaining to any potential hotel development project or acquisition opportunity in a university town.

The intent of this study was to investigate the nature of lodging demand (annual occupied room nights) generated by universities by considering trends in cities dominated a major university serving as the primary lodging demand generator. Since it would be infeasible in an exploratory study such as this one to quantify the precise amount of demand generated by a university in any given city, small cities with relatively large universities were investigated, because in such areas, there was a reasonable level of confidence that the university served as the primary lodging demand generator. This approach allowed relative isolation of university demand to the extent feasible. Thus, the conclusions of this study may be generalizable to other market areas or neighborhoods that hotel developers or analysts believe are dominated by the presence of a university.

Larger cities that may have major universities were excluded due to the inherent difficulty in isolating university-related demand in such areas. For

example, proposed hotel developments or acquisitions in Greenwich Village (New York) or Brentwood (Los Angeles) probably would be influenced by the sites' proximity to NYU and UCLA, but it would be infeasible to isolate the local lodging demand generated by each of those universities due to the sites' and competitive markets' proximity to other significant lodging demand generators located in those major metropolitan areas. On the other hand, analysts studying potential hotel acquisition or development in such local markets of major metropolitan areas would certainly want to evaluate the nature of lodging demand of such important generators as the nearby universities, and may require guidance regarding the factors about those universities that should be investigated. This study endeavors to reveal not only the dynamics of lodging demand in relatively small university cities, but also to assist hoteliers and analysts with evaluating demand trends of universities, in general.

Smaller colleges were excluded for the same reason—because of their tendency not to function as the primary demand generator in their communities. Furthermore, in small towns with small colleges, the data needed for an empirical study such as this one are generally unavailable, as will be discussed in greater detail later. As a result, the sample was restricted to cities which all had populations between 10,000 and 150,000; and the universities were all research-oriented institutions with student populations over 10,000, over 2,000 employees, and over $50,000,000 in annual grant funding. After considering the universities in all of the major NCAA conferences plus the Ivy League, a total of 30 cities/universities were identified as having these specific characteristics.

Consistent with previous literature suggesting that university-related demand is generally accommodated relatively close to the university campus, data for all variables represented city level figures, as opposed to county or MSA data, because the intent of this study was to isolate as much as possible the effects on the communities of the universities, and to minimize the effects of outside factors. The cities represented all regions of the United States, and in all of these cities, the major university operated as the largest employer.

STUDY SAMPLE

This research project employed data obtained via primary research through contacting the staff at a number of American universities. In addition, data pertaining to hotel performance were graciously provided by Smith Travel Research. Data regarding employment were obtained from the U.S. Bureau of Labor Statistics, and population data were obtained from the U.S. Census Bureau, using both on-line sources and interviews with Bureau of Labor Statistics and Census Bureau representatives. It was found that reliable and complete data could be obtained for a 20-year period from 1990 through 2009.

Specifically, hotel performance data, including annual city occupancy, average daily rate (ADR), room revenue per available room (RevPAR), supply of guest rooms, guest room demand (annual occupied room nights), and room revenues, were acquired from Smith Travel Research (STR) for the 30 university towns for a 20-year period of 1990 through 2009. Smith Travel Research operates with strict limitations regarding the hotel performance data they will provide to researchers. Specifically, in this instance, hotel performance data could not be provided for three of the cities for which they were requested because the inventory of guest rooms was too small to maintain STR's confidentiality standards. Those cities were Iowa City, IA (University of Iowa), Pullman, WA (Washington State University), and Storrs, CT (University of Connecticut), leaving a total of 27 cities/universities for analysis. Relevant data regarding those cities/universities are presented in Table 1.

Table 2 presents a summary of hotel operating data for each of the 27 cites included in the study. The cities had between 560 and 4,163 (1,853 mean) available hotel rooms. Citywide occupancy ranged between 41.50 and 62.48 percent (51.70% mean), ADR was between $69.51 and $124.18 ($85.48 mean), and RevPAR was between $33.54 and $70.32 ($44.42 mean) for 2009. The sample contained a total of 614 hotels with 53,730 guest rooms. Mean hotel size was 88 guest rooms.

Hotel density was calculated as the number of hotel rooms in the city divided by city population for each of the 27 cities/university areas. It was found that hotel density ranged from .012 to .075 in each of the cities. Mean hotel density was .034. In other words, there were an average of 0.034 hotel rooms per resident in each of the cities studied. It is likely that the variances in hotel density by city may be attributed to other factors in addition to population, and particularly in these cities, the size and scope of the local university.

COMPARING UNIVERSITY TOWN LODGING PERFORMANCE TO OVERALL U.S. AND SIMILARLY SIZED TOWNS

The historical performance of hotels in the university towns was compared to the overall performance of U.S. hotels since 1990 to evaluate the relative stability of the university town lodging markets. A summary of relevant data is presented as Table 3. University town occupancies and ADRs have historically been below U.S. averages. Specifically, university town occupancies have consistently ranged between 91.8% and 98.7% of U.S. averages. University town ADRs have shown relatively greater discounts compared to U.S. averages, ranging between 76.4% and 87.3% of U.S figures.

TABLE 1 Universities and Cities

University	City	State	City Population	Employment		Student Population			Grant Funding
				City	University	Undergraduates	Graduates	Total	
Iowa State University	Ames	Iowa	56,814	46,749	8,609	22,521	4,860	27,381	$227,696,000
University of Michigan	Ann Arbor	Michigan	112,852	168,054	21,353	26,208	19,217	45,425	$1,016,565,913
University of Georgia	Athens	Georgia	114,983	98,277	9,291	26,142	8,743	34,885	$622,130,957
Auburn University	Auburn	Alabama	57,883	52,400	4,701	25,599	4,558	30,157	$98,803,123
Virginia Tech University	Blacksburg	Virginia	42,885	17,781	9,489	23,558	7,312	30,870	$232, 261, 804
Indiana University	Bloomington	Indiana	71,939	35,377	8,155	32,490	9,857	42,347	$492,440,449
Montana State University	Bozeman	Montana	39,282	20,622	2,686	10,840	1,924	12,764	$98,431,691
University of Illinois	Champaign	Illinois	80,286	39,490	11,505	31,209	10,708	41,917	$428,700,000
University of Virginia	Charlottesville	Virginia	42,218	20,542	12,206	15,476	8,879	24,355	$308,536,000
Clemson University	Clemson	South Carolina	13,002	28,094	3,808	15,346	3,765	19,111	$177,868,000
Texas A&M University	College Station	Texas	86,679	43,566	8,644	38,810	9,893	48,703	$220,679,198
University of Missouri	Columbia	Missouri	102,324	53,637	13,176	23,869	7,445	31,314	$193,667,000
Oregon State University	Corvallis	Oregon	51,560	24,601	4,443	17,557	3,317	20,874	$454,448,000
Colorado State University	Fort Collins	Colorado	138,733	83,938	5,517	21,204	3,671	24,875	$259,556,835
University of Florida	Gainesville	Florida	116,616	55,597	12,291	33,015	16,298	49,313	$544,890,302
Cornell University	Ithaca	New York	30,013	14,599	9,444	13,931	4,689	18,620	$507,278,492
University of Wyoming	Laramie	Wyoming	28,850	15,726	2,848	8,440	1,903	10,343	$69,962,785
University of Kansas	Lawrence	Kansas	92,048	47,738	5,515	20,811	6,188	26,999	$213,919,640
Kansas State University	Manhattan	Kansas	52,863	28,147	7,754	18,778	4,787	23,565	$141,217,643
University of Montana	Missoula	Montana	68,876	35,271	2,664	13,072	1,849	14,921	$67,117,678
West Virginia University	Morgantown	West Virginia	30,333	15,484	5,311	21,720	7,178	28,898	$154,543,000
University of Mississippi	Oxford	Mississippi	17,636	6,889	2,904	11,948	1,664	13,612	$94,928,620

(*Continued*)

TABLE 1 (Continued)

University	City	State	City Population	Employment		Student Population			Grant Funding
				City	University	Undergraduates	Graduates	Total	
University of Notre Dame	South Bend	Indiana	104,215	40,249	17,251	8,425	3,380	11,805	$61,347,391
Mississippi State University	Starkville	Mississippi	24,324	18,671	4,504	14,135	3,857	17,992	$180,713,308
Pennsylvania State University	State College	Pennsylvania	39,898	30,904	17,410	35,251	5,519	40,770	$584, 934, 000
Oklahoma State University	Stillwater	Oklahoma	46,156	21,517	4,586	18,514	4,002	22,516	$130,653,000
University of Alabama	Tuscaloosa	Alabama	93,138	38,681	5,366	23,676	4,211	27,887	$72,929,797
MEAN			64,024	39,743	7,927	20,795	6,066	26,860	268,096,902
	Totals		1,856,684	1,152,543	229,880				
	City Emp/City Pop		62.1%						
	Univ Emp/City Emp		19.9%						

Note: Data represent 2009 figures.

Sources: universities listed, U.S. Census Bureau, U.S. Bureau of Labor Statistics

TABLE 2 Hotel Operating Data

University	City	Guest Rooms	Occ	ADR	RevPAR
Iowa State University	Ames	1,413	50.38	$77.91	$39.25
University of Michigan	Ann Arbor	3,473	58.27	$84.45	$49.21
University of Georgia	Athens	2,183	49.53	$86.94	$43.06
Auburn University	Auburn	1,143	46.45	$89.44	$41.54
Virginia Tech University	Blacksburg	797	51.37	$98.31	$50.50
Indiana University	Bloomington	2,029	55.17	$92.07	$50.79
Montana State University	Bozeman	1,890	54.57	$81.48	$44.47
University of Illinois	Champaign	2,054	56.07	$76.90	$43.12
University of Virginia	Charlottesville	3,183	62.48	$102.02	$63.74
Clemson University	Clemson	867	46.47	$74.04	$34.41
Texas A&M University	College Station	2,799	57.34	$92.10	$52.81
University of Missouri	Columbia	3,650	46.17	$72.65	$33.54
Oregon State University	Corvallis	798	50.50	$87.13	$44.00
Colorado State University	Fort Collins	2,534	44.97	$77.96	$35.06
University of Florida	Gainesville	4,163	53.85	$84.06	$45.27
Cornell University	Ithaca	1,526	56.63	$124.18	$70.32
University of Wyoming	Laramie	1,545	46.00	$73.13	$33.64
University of Kansas	Lawrence	1,091	53.30	$75.39	$40.19
Kansas State University	Manhattan	913	61.70	$79.86	$49.27
University of Montana	Missoula	3,027	54.49	$81.60	$44.46
West Virginia University	Morgantown	1,826	62.02	$83.86	$52.02
University of Mississippi	Oxford	560	47.94	$98.97	$47.44
University of Notre Dame	South Bend	2,921	41.50	$84.74	$35.17
Mississippi State University	Starkville	806	50.30	$81.96	$41.22
Pennsylvania State University	State College	2,642	56.85	$101.01	$57.42
Oklahoma State University	Stillwater	1,071	43.10	$79.05	$34.07
University of Alabama	Tuscaloosa	2,825	52.76	$69.51	$36.67

Note: Data represent 2009 figures.
Source: Smith Travel Research.

TABLE 3 University Town Lodging Performance Compared to United States

	University Towns				United States				University Towns/ United States	
Year	Occ	Change	ADR	Change	Occ	Change	ADR	Change	Occ	ADR
1990	58.9%		$48.63		63.2%		$58.22		93.3%	83.5%
1991	58.2%	−1.3%	$49.57	1.9%	61.8%	−2.2%	$58.07	−0.3%	94.2%	85.4%
1992	58.7%	0.9%	$50.01	0.9%	62.6%	1.3%	$58.90	1.4%	93.8%	84.9%
1993	61.1%	4.2%	$51.23	2.5%	63.5%	1.4%	$60.52	2.8%	96.3%	84.7%
1994	63.1%	3.2%	$53.13	3.7%	64.7%	1.9%	$62.83	3.8%	97.5%	84.6%
1995	62.5%	−1.0%	$54.22	2.1%	65.0%	0.5%	$65.80	4.7%	96.1%	82.4%
1996	60.5%	−3.2%	$56.80	4.8%	65.1%	0.2%	$69.91	6.2%	92.9%	81.2%
1997	59.2%	−2.1%	$58.59	3.1%	64.5%	−0.9%	$75.31	7.7%	91.8%	77.8%
1998	59.0%	−0.3%	$61.25	4.6%	64.0%	−0.8%	$78.62	4.4%	92.2%	77.9%
1999	59.4%	0.7%	$62.84	2.6%	63.3%	−1.1%	$81.82	4.1%	93.9%	76.8%
2000	59.8%	0.6%	$65.03	3.5%	63.2%	−0.2%	$85.10	4.0%	94.6%	76.4%
2001	57.9%	−3.2%	$66.07	1.6%	59.7%	−5.5%	$83.90	−1.4%	96.9%	78.7%
2002	58.2%	0.6%	$66.93	1.3%	59.0%	−1.2%	$82.68	−1.5%	98.7%	80.9%
2003	57.9%	−0.5%	$67.58	1.0%	59.2%	0.3%	$82.79	0.1%	97.9%	81.6%
2004	59.4%	2.5%	$69.52	2.9%	61.3%	3.5%	$86.25	4.2%	96.9%	80.6%
2005	60.2%	1.3%	$73.65	5.9%	63.0%	2.8%	$91.05	5.6%	95.5%	80.9%
2006	59.9%	−0.4%	$78.93	7.2%	63.2%	0.3%	$97.96	7.6%	94.8%	80.6%
2007	60.2%	0.4%	$83.97	6.4%	62.8%	−0.6%	$104.23	6.4%	95.8%	80.6%
2008	57.6%	−4.4%	$86.87	3.5%	59.9%	−4.6%	$107.18	2.8%	96.1%	81.0%
2009	52.4%	−8.9%	$85.44	−1.6%	54.7%	−8.7%	$97.87	−8.7%	95.8%	87.3%
AAGR	−0.6%		4.0%		−0.7%		3.6%			
CAGR	−0.6%		3.0%		−0.8%		2.8%			

Notes: AAGR = average annual growth rate.
CAGR = compound annual growth rate.
Source: Smith Travel Research.

Given the relatively tight range of university town occupancies relative to (divided by) the U.S. figures, of 91.8% to 98.7%, it appears that university towns operate with somewhat more stable occupancies than the U.S. overall. Notably, since 1990, university town occupancy rate declined by an average annual rate of .6% (compound annual rate of .6%, as well), while U.S. occupancy rate declined by a marginally higher average annual rate of .7% (compound annual rate of .8%). On the other hand, during the recessionary period of 2001 to 2003, the gap between university town and U.S. occupancies narrowed as university town occupancies averaged a relatively high 97.8% of U.S. figures. Similarly, during the last three years of analysis (2007 to 2009), university town occupancies averaged a relatively high 95.6% of U.S. figures, compared to the first three years of analysis (1990 to 1992) when university town occupancies averaged a relatively lower 93.8% of U.S. figures. These trends suggest that, albeit slight, there may be a long-term narrowing of the gap between university town and U.S. occupancy rates.

Hotel performance in university towns was also compared to performance in 30 similarly sized U.S. cities. Since the university towns had a mean population of approximately 64,000 and a population range of about 13,000 to 139,000, Smith Travel Research randomly selected 30 small U.S. towns representing all U.S. regions, and with approximately the same mean population and population range as the university towns, i.e., the two sets of cities each had the same mean population and population range to the nearest 1,000 residents. These 30 small towns had a total of 617 hotels with 52,696 guest rooms and an average size of 85 guest rooms each. Thus, these small U.S. towns were not only comparable to the university towns in size, but also comparable in the overall number of hotels and size of hotels (university towns had a total of 614 hotels with 53,730 guest rooms and a mean hotel size of 88 guest rooms).

Since 1990, small town occupancy rate declined by an average annual rate of .6% (compound annual rate of .6%), comparable to university towns. However, mean university town occupancies were lower than small town occupancies, ranging from 90.8 to 97.8% of average small town occupancies. Thus, other than the fact that university town occupancies were lower than average small town occupancies, the overall occupancy trends of university towns were somewhat similar to those of average small towns, as shown in Table 4.

To test the relative volatility of university town occupancies, the means, standard deviations and volatility indices were analyzed. Between 1990 and 2009, university town occupancy had a mean of 59.2%, with a standard deviation of 2.2 occupancy points and a volatility index of 3.6% . A volatility index is a type of coefficient of variation that is a relative measure of dispersion that measures the scatter in the data relative to the mean and is expressed as a percentage. It is calculated as the standard deviation divided

TABLE 4 University Town Lodging Performance Compared to Small Towns

	University Towns				Small Towns				University Towns/ Small Towns	
Year	Occ	Change	ADR	Change	Occ	Change	ADR	Change	Occ	ADR
1990	58.9%		$48.63		63.5%		$51.34		92.8%	94.7%
1991	58.2%	−1.3%	$49.57	1.9%	61.4%	−3.3%	$50.69	−1.3%	94.7%	97.8%
1992	58.7%	0.9%	$50.01	0.9%	63.7%	3.7%	$51.01	0.6%	92.2%	98.0%
1993	61.1%	4.2%	$51.23	2.5%	64.2%	0.8%	$52.53	3.0%	95.2%	97.5%
1994	63.1%	3.2%	$53.13	3.7%	65.0%	1.3%	$54.99	4.7%	97.0%	96.6%
1995	62.5%	−1.0%	$54.22	2.1%	66.0%	1.5%	$57.58	4.7%	94.7%	94.2%
1996	60.5%	−3.2%	$56.80	4.8%	65.7%	−0.4%	$60.88	5.7%	92.0%	93.3%
1997	59.2%	−2.1%	$58.59	3.1%	65.2%	−0.8%	$64.59	6.1%	90.8%	90.7%
1998	59.0%	−0.3%	$61.25	4.6%	64.8%	−0.5%	$67.67	4.8%	91.0%	90.5%
1999	59.4%	0.7%	$62.84	2.6%	64.7%	−0.3%	$70.10	3.6%	91.9%	89.6%
2000	59.8%	0.6%	$65.03	3.5%	64.5%	−0.3%	$73.17	4.4%	92.7%	88.9%
2001	57.9%	−3.2%	$66.07	1.6%	60.9%	−5.6%	$73.27	0.1%	95.1%	90.2%
2002	58.2%	0.6%	$66.93	1.3%	59.5%	−2.3%	$74.19	1.3%	97.8%	90.2%
2003	57.9%	−0.5%	$67.58	1.0%	59.9%	0.7%	$74.75	0.8%	96.7%	90.4%
2004	59.4%	2.5%	$69.52	2.9%	63.8%	6.4%	$77.53	3.7%	93.1%	89.7%
2005	60.2%	1.3%	$73.65	5.9%	65.0%	2.0%	$82.59	6.5%	92.5%	89.2%
2006	59.9%	−0.4%	$78.93	7.2%	64.7%	−0.5%	$89.22	8.0%	92.6%	88.5%
2007	60.2%	0.4%	$83.97	6.4%	63.9%	−1.2%	$94.71	6.2%	94.2%	88.7%
2008	57.6%	−4.4%	$86.87	3.5%	60.4%	−5.5%	$96.77	2.2%	95.2%	89.8%
2009	52.4%	−8.9%	$85.44	−1.6%	56.5%	−6.5%	$88.16	−8.9%	92.8%	96.9%
AAGR	−0.6%		4.0%		−0.6%		3.8%			
CAGR	−0.6%		3.0%		−0.6%		2.9%			

Notes: AAGR = average annual growth rate.
CAGR = compound annual growth rate.
Source: Smith Travel Research.

by the mean, and as a relative measure, a volatility index is particularly useful for comparing the variability of two or more batches of data (Berenson & Levine, 1993).

During the same time period, U.S. occupancy had a mean of 62.2% with a standard deviation of 2.6 occupancy points and a volatility index of 4.1%. Since university town occupancy had a lower standard deviation and volatility index than U.S. occupancy, it suggests that university town occupancy is less volatile and more stable than the overall U.S. Between 1990 and 2009, small town occupancy had a mean of 63.2%, with a standard deviation of 2.5 occupancy points and a volatility index of 4.0%. Thus, university town occupancy is less volatile than average small town occupancy, as well. A comparison of university town, small town, and overall U.S. occupancies is presented as Figure 1.

Compared to occupancy, university town ADR exhibits greater disparity relative to the overall U.S. figures, representing between 76.4% and 87.3% of U.S. numbers between 1990 and 2009. That discount is not surprising considering the relatively remote locations and small sizes of the towns that fit the criteria for this study of being dominated by a major university. Simply put, none of the towns are near major metropolitan areas, and, all other things being equal, smaller cities operate with relatively lower ADRs than larger ones. At the same time, university town ADR appears to exhibit greater stability than U.S. ADR. Notably, since 1990, university town ADR increased by an average annual rate of 4.0% (compound annual rate of 3.0%), while U.S. ADR increased by a lower average annual rate of 3.6% (compound annual rate of 2.8%). Specifically, university town ADR has increased every year since 1990, except for 2009 when it decreased by 1.6% versus an 8.7% decline in the U.S. In addition, university town ADR continued to increase every year during the recessionary period between 2001 and 2003.

Since 1990, small town ADR increased by an average annual rate of 3.8% (compound annual rate of 2.9%), slightly less than university towns.

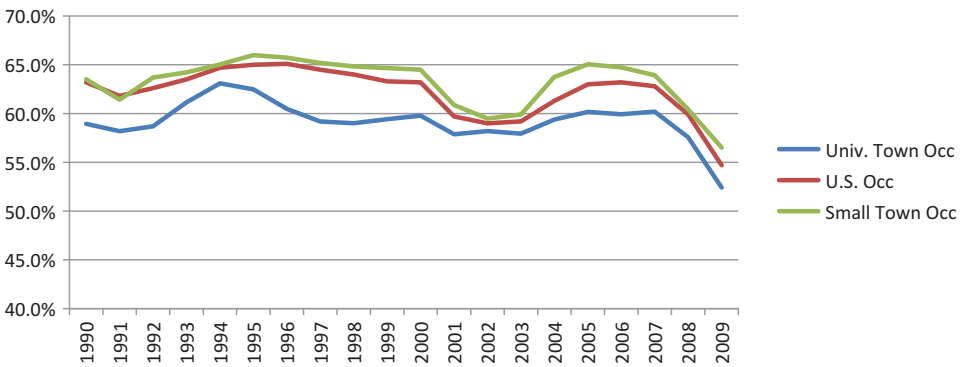

FIGURE 1 Occupancy Trends – University Towns vs. Overall U.S. and Small Towns (color figure available online).

However, mean university town ADRs were lower than small town ADRs, ranging from 88.5% to 97.5% of average small town ADRs. Since the university towns selected for this study were by definition in remote locations (to isolate university-related demand as much as possible, as previously discussed), and the similarly sized small towns were not necessarily in remote locations, the relatively lower ADR of university towns is not surprising. Other than that university town ADRs were lower than average small town occupancies, the overall ADR trends of university towns were similar to those of average small towns, except that in 2009, small town ADR declined by 8.9% while university town ADR declined by only 1.6% (the only year of ADR decline in university towns). Similarly, in 1991, while small town ADR declined 1.3%, university town ADR actually increased 1.9%.

ADR volatility was tested in a similar fashion as occupancy volatility. Between 1990 and 2009, university town ADR had a mean of $64.51, with a standard deviation of $12.26 and a volatility index of 19.0%. During the same time period, U.S. ADR had a mean of $79.45 with a standard deviation of $15.53 and a volatility index of 19.5%. Since university town ADR had a lower standard deviation and volatility index than U.S. ADR, it suggests that university town ADR is relatively less volatile and more stable than the overall U.S. Between 1990 and 2009, small town ADR had a mean of $70.29, with a standard deviation of $14.84 and a volatility index of 21.1%. Thus, university town ADR is less volatile than average small town ADR, as well.

A comparison between university town, small town, and overall U.S. ADR is presented as Figure 2. In summary, university town occupancy rates and ADRs are lower but more stable than similarly sized small towns and the overall U.S.

Similar analyses were conducted using rooms revenues per available room (RevPAR). Between 1990 and 2009, university towns exhibited greater RevPAR growth than both similarly sized small towns and the overall U.S. Specfically, university town RevPAR increased at an average annual rate of

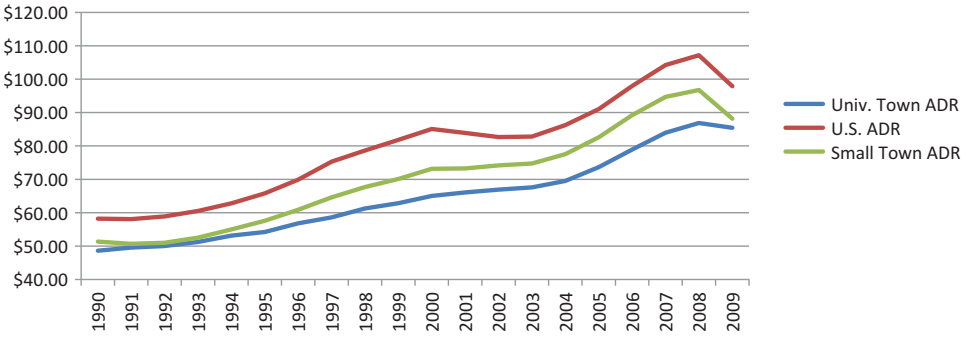

FIGURE 2 ADR Trends – University Towns vs. Overall U.S. and Small Towns (color figure available online).

3.0% (2.4% compounded annually) from $28.66 in 1990 to $44.78 in 2009. At the same time, small town RevPAR increased at an average annual rate of 2.8% (2.3% compounded annually) from $32.60 in 1990 to $49.80 in 2009, while overall U.S. RevPAR increased at an average annual rate of 2.4% (2.0% compounded annually) from $36.80 to $53.53. As with occupancy and ADR, university town RevPAR also exhibited less volatility and greater stability than similarly sized small towns and the overall U.S. Thus, university towns have exhibited relatively high growth and low volatility in RevPAR.

ANALYZING UNIVERSITY TOWN LODGING DEMAND GROWTH

Regression analyses were conducted using all of the data from 1990 through 2009 for all of the available predictor (independent) variables of city population, city employment, university employment, number of undergraduate students, number of graduate students, total students, and grant funding, and the response (dependent) variable of lodging demand expressed as number of occupied room nights in the city per year. All variables were found to be significant predictors of lodging demand ($p < .001$). Overall, city employment was found to be the strongest predictor of lodging demand, with a regression coefficient of .978 (F [1, 18] = 367, $p < .001$), i.e., changes in city employment predicted a very high 97.8% of changes in lodging demand. This high regression coefficient is not necessarily surprising, however, because city employment is well known as a strong indicator of area commerce. Specifically, each person employed in a university town was associated with approximately 10.5 occupied room nights in the regression equation derived from this study.

Surprisingly, perhaps, grant funding was also found to be strong predictor of lodging demand, with a regression coefficient of .953 (F [1, 18] = 357, $p < .001$). Specifically, each $1,000 in grant funding was associated with 14.4 additional occupied room nights. Grant funding appears to be a good indicator of commerce generated by universities themselves. In particular, grant funding includes research dollars captured by university faculty and staff from such sources as corporations, foundations, associations, and state and federal agencies. Grant funds may be used for research, training, and outreach. Grant funding typically results in visitation to campus from corporate, foundation, association, and governmental representatives. In addition, grants often result in the development of campus symposia, conferences, and training sessions, which can generate significant visitation and room night demand.

Interestingly, the number of graduate students was also a strong predictor of lodging demand, with a regression coefficient of .931 (F [1, 18] = 121, $p < .001$). Specifically, each graduate student was associated with 68.1 occupied room nights. Similar to grant funding, the graduate student population

appears to be an indicator of university-related commerce, though in the case of graduate students, it would be activities primarily related to research activities at the universities included in the sample in this study. At such universities, graduate students generally work on research projects, and larger, more complex projects require more graduate student support. While university graduate students in such areas as the sciences and humanities are often involved in research activities, graduate students in other areas, such as business, may not. Thus, the high regression coefficient related to graduate students probably captures more than merely research activities, and may also capture lodging demand related to other graduate-student-related activities such as campus visits by prospective students and by employment recruiters.

Trends in the city population, number of undergraduate students, and university employment were also found to be significant predictors of lodging demand. Of the variables studied in this project, the total student population by year was found to be the relatively weakest predictor of lodging demand growth. That finding is particularly interesting considering that a proprietary consulting report recommended consideration of trends in total student population when projecting future lodging demand in university towns (Suzuki, 2008). The findings of this study suggest that the separation of student population into graduate and undergraduate students provides greater analytical precision for evaluation and forecasting purposes. Further, this study suggests that other university-related factors (such as grant funding) and other city factors (such as employment trends) possess superior predictive capacity related to lodging demand. Table 5 presents a summary of each of the predictors evaluated in this study.

Since hotel feasibility studies[1] are usually conducted at the market level, each predictor variable was evaluated for each city for the period 1990 through 2009. These analyses revealed grant funding to be the strongest predictor of lodging demand growth in more cities than any other predictor variable studied in this project. The nine cities where grant funding served as the best predictor of lodging demand were Ames, IA, Bozeman, MT, Charlottesville, VA, College Station, TX, Laramie, WY, Lawrence, KS,

TABLE 5 Predictors of Lodging Demand

Predictor	Regression Coefficient
City Employment	0.978
Grant Funding	0.953
Graduate Students	0.931
City Population	0.930
Undergraduate Students	0.914
University Employment	0.894
Total Students	0.864

Note: $p < .001$ for all regression coefficients.

TABLE 6 Strongest Predictors of Lodging Demand by City

University	City	State	Strongest Predictor	Regression Ceofficient
Iowa State University	Ames	Iowa	City Population	0.767
University of Michigan	Ann Arbor	Michigan	City Employment	0.879
University of Georgia	Athens	Georgia	City Employment	0.784
Auburn University	Auburn	Alabama	City Employment	0.830
Virginia Tech University	Blacksburg	Virginia	Undergraduate Students	0.460
Indiana University	Bloomington	Indiana	University Employment	0.846
Montana State University	Bozeman	Montana	Grant Funding	0.786
University of Illinois	Champaign	Illinois	City Population	0.874
University of Virginia	Charlottesville	Virginia	University Employment	0.861
Clemson University	Clemson	South Carolina	Graduate Students	0.619
Texas A&M University	College Station	Texas	City Population	0.825
University of Missouri	Columbia	Missouri	City Population	0.581
Oregon State University	Corvallis	Oregon	Graduate Students	0.548
Colorado State University	Fort Collins	Colorado	City Population	0.521
University of Florida	Gainesville	Florida	Undergraduate Students	0.784
Cornell University	Ithaca	New York	Graduate Students	0.708
University of Wyoming	Laramie	Wyoming	Grant Funding	0.571
University of Kansas	Lawrence	Kansas	Grant Funding	0.640
Kansas State University	Manhattan	Kansas	City Employment	0.842
University of Montana	Missoula	Montana	City Employment	0.932
West Virginia University	Morgantown	West Virginia	City Population	0.897
University of Mississippi	Oxford	Mississippi	Grant Funding	0.637
University of Notre Dame	South Bend	Indiana	City Employment	0.568
Mississippi State University	Starkville	Mississippi	Grant Funding	0.711
Pennsylvania State University	State College	Pennsylvania	Undergraduate Students	0.650
Oklahoma State University	Stillwater	Oklahoma	City Employment	0.885
University of Alabama	Tuscaloosa	Alabama	Undergraduate Students	0.556

Note: $p < .001$ for all regression coefficients.

Missoula, MT, Oxford, MS, and Starkville, MS. These cities represent many northern, southern, eastern, and western regions of the U.S. City employment was the strongest predictor of lodging demand growth in seven cities, and city population was the best predictor in four cities. The number of graduate students and undergraduate students were the strongest predictors in three cities each. University employment was found to be the strongest predictor in one city while total student population was not the strongest predictor in any of the cities. As with the aggregated analyses, separating student population into graduate and undergraduate students would be advisable for analytical purposes. A summary of the strongest predictors by city is presented as Table 6.

LIMITATIONS

Though this study identified factors that have high correlation with lodging demand in university towns, correlation does not necessarily indicate causation. Causation cannot be completely proven in an exploratory study such as this one. Further, since the regression coefficients are below 100 percent (i.e., 1.000), there are other factors not included in this study that generate or contribute to lodging demand. Certainly, one of those factors would be macroeconomic indicators such as trends in gross domestic product (GDP) as measured in larger geographic areas than the small towns which are the focus of this particular study. It is important to note that this study focused on local economic factors that typically would be collected by hotel developers and analysts conducting hotel feasibility studies or acquisition studies for particular sites. It is also important to note that there are multiple factors that could determine the feasibility of a proposed hotel on a specific site. The demand drivers evaluated in the subject study would be among those factors, but would not be all of the factors.

Other local factors that could influence lodging demand in a university town could include athletic demand. Athletic demand was not evaluated in the present study because, unlike the factors included herein, research revealed there exists no metric allowing reasonable comparison between one university and another. For example, while all local hotel rooms are sold out for virtually all men's football games in cities such as South Bend and Blacksburg, there is no single sport generating significant visitation for all of the cities included, making infeasible such a comparison among different cities. Sports such as men's football and basketball are consistent generators of lodging demand in many university towns (but not all of the cities included in this study), and in some cases, fluctuations in attendance may result in fluctuations in lodging demand. However, in cases such as football demand in many cities such as South Bend and Blacksburg, virtually every football stadium seat and every hotel room has been sold out during home football events throughout the 20-year period of analysis used in this study resulting in a low level of variance and poor predictive capacity for such

sporting event attendance, even in cities where a single sport is a significant generator of lodging demand. In theory, total annual attendance at university sporting events could be studied in a project such as this one; however, it is inconsistently tracked from university to university because, among other reasons, not all such attendance is paid. In short, it was found that university sporting event attendance was not a viable predictor of lodging demand across markets, unlike the other predictors evaluated herein.

Another local factor that could influence lodging demand would be the presence of a university-affiliated research park. Conceivably, research parks of a greater scope could generate relatively more lodging demand. However, though many of the universities in this study have research parks, some do not. Therefore, it was not possible to evaluate the effects of different sizes or types of research parks on lodging demand, nor is it advisable to recommend that research parks be consistently evaluated in any particular fashion by lodging demand analysts in prognosticating future lodging demand trends.

Other factors that could influence whether or not any proposed hotel project is feasible include the local real estate development process of approvals, debt funding and financing availability, the culture of any particular hotel development or operating organization, and the supply and demand situation in the local market, along with other variables. The analysis of such variables is beyond the scope of this study.

Another limitation of this study is that not all of the lodging demand in each of the cities is university-generated. Even though much of the commercial lodging demand in the subject cities is derived from companies with research roots in the local university, such as Accuweather from Penn State's meteorology department, or ACSI LLC (formerly American Consumer Sentiment Index) from Michigan's business school, some amount of commercial and other lodging demand accommodated in each city is not university-related, and that amount may vary by city. Every reasonable attempt was made to control for this limitation by applying the previously discussed strict criteria for inclusion of cities resulting in a sample of cities where the local university is at least the primary lodging demand generator to assist developers and analysts not only with evaluating hotel feasibility and lodging demand in university towns, but possibly with evaluating university-related lodging demand in other markets, as well.

In a practical sense, one of the limitations in developing hotels in university towns may be the lack of available sites, particularly sites that are proximate to the university, i.e., the primary demand generator in the competitive market area.

CONCLUSIONS

Support was found for the notion raised in trade journals that lodging demand in university towns is more stable than other market areas, and

this study found that condition to be the case with occupancy rate, ADR, and RevPAR. This situation is particularly notable regarding ADR, not only because university town ADR varies less than U.S. ADR and ADR in other similarly sized cites, but also because unlike other small cities and the overall U.S., university town ADR decreased in only one year between 1990 and 2009 (in 2009).

The relative stability of hotel performance in university towns may be due to the fundamental underlying factors that are drivers of hotel demand. Factors that lodging analysts should consider when evaluating a proposed hotel development project in a university town certainly include city employment and population trends. That finding of this study confirms the conclusion of earlier work (e.g., Rushmore & Baum, 2001), and may be applicable to analysts studying lodging demand in cities without a major university, as well.

Additionally, grant funding, a factor that has not been evaluated in previous research, should be considered by analysts because of its strong predictive capability. Similarly, trends in graduate student population should be considered, as well, because they appear to have similar predictive abilities as grant funding trends.

Undergraduate student population trends are also worthy of consideration by analysts studying potential hotel development in university towns. However, it is important to note that this study found undergraduate student population trends should not only be considered separately from the number of graduate students, but these trends should be evaluated separately from the total student population as well. These conclusions should be beneficial in providing guidance to hotel developers and analysts considering university town hotel development or acquisition, and they may be generalizable to evaluating university-related lodging demand, in general. The results of this study suggest that, based on historical performance over a 20-year period, hotels developed or acquired that are proximate to major universities may be expected to exhibit relatively strong RevPAR growth and stable operating performance.

NOTE

1. Such documents prepared by public accounting firms, and/or for transactions regulated by the Securities and Exchange Commission, may be referred to as "market studies with prospective financial analyses."

REFERENCES

Berenson, M. L., and Levine, D.M. (1993). *Statistics for Business and Economics*. (2nd Ed.). Englewood Cliffs, NJ: Prentice-Hall.

Canina, L., and Carvell, S. (2005). Lodging demand for urban hotels in major metropolitan markets. *Journal of Hospitality & Tourism Research*, *29*(3), 291–311.

Choi, J., Olsen, M. D., Kwansa, F. A., and Tse, E. (1999). Forecasting industry turning points: The U.S. hotel industry cycle model. *International Journal of Hospitality Management*, *18*(2), 159–170.

Cho, V. (2003). A comparison of three different approaches to tourist arrival forecasting. *Tourism Management*, *24*, 323–330.

Corgel, J. B. (2005), September. Hotel real estate markets. *Journal of Portfolio Management*, *32*, 91–99.

Damonte, L. T., Domke-Damonte, D. J., and Morse, S. P. (1998). The case for using destination-level price elasticity of demand for lodging services. *Asia Pacific Journal of Tourism Research*, *3*(1), 19–26.

Enz, C. A., Canina, L., and Lomanno, M. (2009). Competitive pricing decisions in uncertain times. *Cornell Hospitality Quarterly*, *50*(3), 325–341.

Esposito, L. (2009, September 7-20). University markets help steady hotels in recession. *Hotel Business*, *18*(7), 9–72.

Hiemstra, S. J. and Ismail, J. A. (1990). Impacts of room taxes on the lodging industry. *Hospitality Research Journal*, *14*(2), 231–241.

Hiemstra, S. J. and Ismail, J. A. (1993). Incidence of the impacts of room taxes on the lodging industry. *Journal of Travel Research*, *31*(4)22–26.

Kim, Y. and Uysal, M. (1998). Time-dependent analysis for international hotel demand in Seoul. *Tourism Economics*, *4*(3), 253–263.

Nessler, D. (2010, September 7-20). Tertiary markets may represent best growth opportunities: College towns, state capitals offer stability. *Hotel Business*, *15*(9), 2–41.

Palakurthi, R. R. and Parks, S. J. (2000). The effect of selected socio-demographic factors on lodging demand in the U.S.A. *International Journal of Contemporary Hospitality Management*, *12*(2), 135–142.

PricewaterhouseCoopers. (2011, January). Stronger economy to fuel second year of lodging recovery. *Hospitality Directions*, 2–3.

Rushmore, S. and Baum, E. (2001). *Hotels & motels: Valuations and market studies*. Chicago: Appraisal Institute.

Smith, R. A. (2009). Pricing power evaporates. *Cornell Hospitality Quarterly*, *50*(3), 286–288.

Summary, R. (1987). Estimation of tourism demand by multivariable regression analysis: Evidence from Kenya. *Tourism Management*, *26*(1), 67–82.

Suzuki, A. (2008). Ten considerations when developing an on-campus or college hotel. *Pinnacle Perspective* (proprietary consulting report).

Wheaton, W. C. and Rosoff, L. (1998). The cyclic behavior of the U.S. lodging industry. *Real Estate Economics*, *26*(1), 67–82.

Witt, S. F. and Martin, C. A. (1987). Econometric models for forecasting international tourism demand. *Journal of Travel Research*, *25*(3), 23–30.

Witt, C.A. and Witt, S. F. (1990). Appraising and econometric forecasting model. *Journal of Travel Research*, *28*(3), 30–34.