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DATE: April 14, 2017
TO: Jorge Rousselin and Erica Leak, City of Austin
FROM: Ian Carlton, Abe Farkas, Emily Picha, Tadhg Fendt, and Robert Whelan
SUBJECT: Feasibility Lab Implementation **(Task 3.3C) – Hotel Evaluation**

ECONorthwest is conducting an analysis on how the City of Austin can best calibrate its density bonuses to produce affordable housing units. As part of this work, ECONorthwest has gathered assumptions for commercial and residential building types for the Mapcraft Incentives Lab model. Because hotel developments are so unique, ECONorthwest took a different approach for hotel development types. The purpose of this memo is to summarize research on how developers in the hotel industry in Austin, Texas would respond to additional incentives in their decision making process.

Summary of Findings

- **Density bonuses are valuable to developers if there are economies of scale to building more floor area of a certain real estate product.** Economies of scale for hotels are generally offset by the challenge of expanding the scope of hotels to serve additional market segments. A successful large hotel operation must offer more amenities to fill additional hotel rooms, thus negating many of the economies of scale of a larger hotel.
- **Some hotels will be able to profitably build additional rooms because other facilities provide the additional amenities that are required meet the hotel's desired occupancy levels.** For example, if a hotel developer can locate a new hotel next to a regional conference center, that developer can avoid the cost of providing large conference facilities and thus benefit from economies of scale. In those limited and unique instances, a hotel developer' may be able to absorb a fee in exchange for the right to build more rooms or facilities above existing entitlement levels.
- **Because of the unique nature of hotel development economics, negotiated density bonuses would be the optimal way for policymakers to implement a hotel-focused density bonus program.** Developing a one-size-fits-all policy prescription for hotels is likely to cause distortions in the market and lead to unintended consequences.

Methods and Data

ECONorthwest purchased monthly hotel market data from STR Global (STR), formerly Smith Travel Research. The data span from January 1987 through September 2016. The hotel industry uses STR data for benchmarking, market forecasting, and strategic planning. STR data serves as the basis for academic research on tourism and lodging, and STR is a partner with the Cornell University School of Hotel Administration's Center for Hospitality Research.[1]

[1] Macera, J. "Smith Travel Research renews partnership with Cornell Center for Hospitality Research." Cornell University Press Release. March 19, 2009.

Since Austin hotels compete with hotels in neighboring communities, ECONorthwest used STR data for all of Travis County. For context, while approximately 79% of county residents live in Austin, all but 4% of the county's hotels have Austin addresses. However, we could not determine the number within Austin's boundaries with the Smith Travel Research data. Only 2% of the hotel rooms are outside the boundaries.

STR data have the following limitations:

- While STR relies on data reported by hotels, not all hotels report data. Currently, hotels operating 92% of the hotel rooms in Travis County report to STR. Those that do not are usually small, independent hotels.
- Late reporting of changes in hotels occur. Therefore, STR data include approximations and they may revise these, albeit usually modestly.

ECONorthwest used the seasonally adjusted U.S. consumer price index (CPI) published by the U.S. Bureau of Labor Statistics. We used the CPI to convert nominal dollar values into 2010 dollars. After taking out inflation and stating in 2010 dollars, values are expressed in what we call real dollars which enable the comparison of quantities as if prices had not changed.

For hotel construction costs, we used a construction cost model from RS Means—a nationally recognized publication of construction cost data. General contractors use this RS Means software when estimating costs. RS Means captures the local labor, materials, and services costs for a standard building type. They do not include permits, taxes, fees, and land. Using this model, we calculated the cost of building a new high-rise hotel over seven stories built in the third quarter of 2016 in Austin using open shop labor. We acknowledge that using RS Means data for construction costs often require adjustments that account for local conditions, particularly in cities and regions experiencing rapid change in construction labor markets.

To establish the relationship between square feet of building area and number of rooms, we used data that we have collected for various cities of the number of hotel rooms and total building area. We used the area-to-room-count relationship to calculate the marginal cost of constructing an additional hotel room using the RS Means construction cost model.

Definitions

Below are definitions of the STR data and terminology used in this analysis:

1. **ADR**: The acronym ADR stands for average daily rate. It is room revenue divided by room nights sold.
2. **Real ADR:** We adjusted room rates by taking out inflation, since we are working with 29 years of data. Real ADR is the average daily room rate expressed in 2010 dollars as adjusted by the national CPI.

3. **Census**: The number of hotel rooms in the market. This will change without having a new hotel opening, or closing an old hotel because hotels reconfigure. When a hotel is undergoing major repairs, rooms become unavailable and hotel owners call these "out of order" rooms. New rooms can come into the market because a hotel owner may take an office and convert it into a guestroom. Because of these minor changes, you often see the census of rooms change by one or two from month to month.
4. **Class:** STR divides hotels into six classes defined by the mix of features (are there conference facilities, restaurants, tennis courts?), quality of the rooms, and range of services (is there room service, a concierge, event planners?). The highest is luxury class and an example of that is Four Seasons. Second is upper upscale (Hyatt Regency), followed by upscale (Radisson), upper midscale (Holiday Inn), midscale (Best Western), and lastly economy (Days Inn). We rely on STR's class designations that are based on stated features and pricing. More accurate is the American Automobile Association (AAA) diamond system. We have used this for clients because it is the only rating we are aware of that relies on secret visits by hotel inspectors working for AAA that run through checklists and test the quality and attentiveness of staff. Regrettably, AAA does not rate every hotel property, so it cannot be used for a citywide analysis.
5. **Hotel:** As defined by STR, a hotel is a commercial lodging establishment that has, with some exceptions, at least 15 rooms available to transient guests (those staying for 29 days or less) and normally has at least 15 rooms. It can be a motel. Not included in this are most bed and breakfast places, sharing economy places, vacation rentals, and most hostels.
6. **Occupancy:** The percent of available rooms sold in a month.
7. **Regression:** All references to "regression" or "regression analysis" mean a method that uncovers mathematical relationships of actual data collected.
8. **Room Nights Available:** The number of room nights available for sale in a month. This equals the room census times the number of days in the month. The industry sometimes calls this supply, although that is an erroneous use of the term from an economic perspective.
9. **Room Nights Sold** (the industry sometimes calls this demand, although that is an erroneous use of the term from the perspective of economics): The number of guestroom nights bought during the month.
10. **Room Revenue**: The dollars paid for renting the room nights sold. This does not include taxes, food, meeting space, and other amenities. It is simply the room rate paid times the number of room nights sold in a month.

Market Overview

This section describes Austin's hotel market using the data available. All references to current conditions refer to data from September 2016. Unlike a typical report, this memo is in a question and answer format.

How many hotels are there and how many rooms do they have?

Currently, there are 194 hotels with 27,197 guestrooms in Travis County. The average hotel has 140 rooms and the median number of rooms is 120. Typical of prosperous, non-resort cities, Austin hotels skew toward upscale and are larger than average. This reflects the volumes and relative affluence of guests. Upscale properties have more rooms because they need to spread the costs of amenities across many rooms to stay price competitive. That is less important for luxury hotels where the emphasis is on personalized service.

Table 1: Hotels and Their Room Counts by Class, September 2016

Class	Guest Rooms	Hotels	Rooms per Hotel
Luxury Class	2,285	11	208
Upper Upscale Class	6,188	20	309
Upscale Class	6,144	39	158
Upper Midscale Class	4,723	41	115
Midscale Class	2,245	22	102
Economy Class	5,612	61	92
All of Travis County	27,197	194	140

Source: Smith Travel Research

How many hotels are under construction and how big are they?

STR data show there are nine hotels under construction as of September 2016. These hotels will add 2,081 rooms to the market and about half will be at the Fairmont, which is an unusually large luxury hotel.

Table 2: Hotels Under Construction by Class, September 2016

Class	Guest Rooms	Hotels	Rooms per Hotel
Luxury Class	1,048	1	1,048
Upper Upscale Class	-	-	-
Upscale Class	709	5	142
Upper Midscale Class	204	2	102
Midscale Class	-	-	-
Economy Class	120	1	120
All of Travis County	2,081	9	231

Source: Smith Travel Research

What kinds of hotels closed since 1987?

According to STR, Travis County saw 29 hotels close since 1987, which is one per year. All but one hotel was an economy or midscale property.

Table 3: Hotel Closures by Class, 1987-2016

Class	Hotels
Luxury Class	-
Upper Upscale Class	-
Upscale Class	1
Upper Midscale Class	-
Midscale Class	7
Economy Class	21
All of Travis County	29

Source: Smith Travel Research

What is Austin's hotel market like now?

The market is strong, but not uniquely so. Nationally, the last few years are considered golden years for hotels, which is why so many new hotels are being built. In the last twelve months, almost 7.2 million room nights out of about 9.7 million available were sold in Travis County. Room revenues broke a billion dollars. The average room sold for $147.52 a night. The occupancy rate was 74.4 percent.

Table 4: Travis County Hotel Market Conditions, 12-Months Ending Sept. 2016

Statistic	Oct. 2015 - Sept. 2016
Room nights available	9,665,035
Room nights sold	7,191,413
Room revenue	$1,060,878,961
ADR	$147.52
Occupancy rate	74.4%

Source: Smith Travel Research

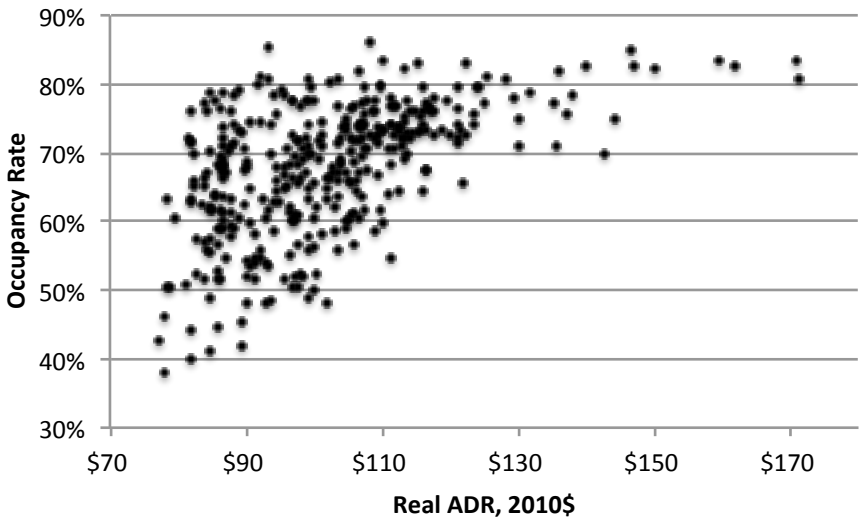
Is 74.4% occupancy good?

For Travis County 74.4% occupancy is high. Indeed, it is close to its 29-year peak. That happened when hotels sold 76.5% of their available rooms over the twelve months ending October 1995.

High occupancy rates are not necessarily good. For Travis County, such a high occupancy rate could be doing more harm than good. That is because high occupancy rates allow hotels to charge more for rooms. The highest real ADR in the 358 months of STR data occurred in March 2016. The average room went for $186.88 and 80.7% of the rooms were sold that month.

Figure 1 illustrates the historical relationship. The higher the occupancy rates, the higher real room rates are in the market.

Figure 1: Real ADRs Versus Occupancy Rates, Travis County Hotels Monthly Data, January 1987 to September 2016



Source: Smith Travel Research

But aren't high room rates a good sign?

Not necessarily, as there is a tradeoff. Higher ADRs are wonderful for hotel operator profits and raise more lodging taxes for every room sold (because Austin charges 9%) but they also discourage visitors from booking rooms. Visitors may shorten their stays or decide not to visit Austin at all.

Tourists and even business travelers are, after all, price sensitive. Economists measured this. Their research tells us that for every one percent increase in the cost of a room (ADR plus taxes), about 0.5% fewer room nights are sold. If historically high occupancy and room rates persist, the effect worsens.

Fewer visitors means there would be less spending in Austin, fewer sales taxes collected, and fewer jobs at stores, restaurants, museums, and entertainment venues.

What is normal occupancy?

To see what is considered normal for a hotel market, we can use what is known as the natural occupancy rate, a concept developed at Cornell University's School of Hotel Administration.[2] The natural occupancy rate is the level of balance where there is no strong pressure on hotels to raise or lower their ADRs beyond what is dictated by normal inflation.

For Travis County, the long-run equilibrium occupancy rate is 67.2%. When average market occupancies are well above the natural rate, hoteliers tend to build new capacity. Table 2 shows this is happening. There are nine hotels currently under construction and they alone will add 2,081 more rooms to the market in a year or so. During these times, hotels can charge more per room and still sell enough rooms to make additional profits.

When the opposite condition exists and hotels operate below the natural rate, they struggle financially. Some marginal properties close. Others abandon hopes of building new hotels. Gradually, the market moves back toward long-run equilibrium. In the market, you will see sharp reductions in ADRs and fierce competition between hotels.

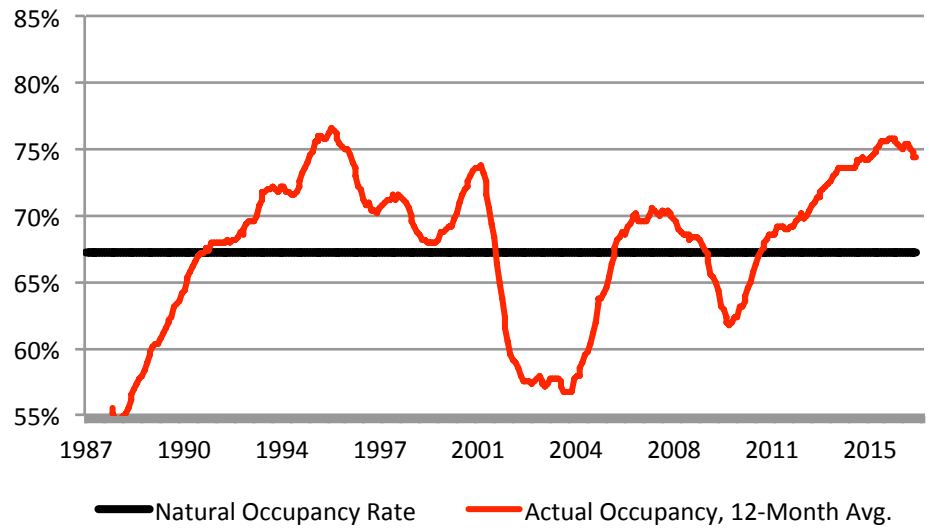
Why does hotel development occur cyclically?

Demand can shift quickly, but the supply of hotel rooms takes time to adjust to demand. The market gravitates to a balance, but imbalanced periods can persist for several years.

[2] deRoos, J.A. (1999) "Natural Occupancy Rates and Development Gaps – A Look at the U.S. Lodging Industry," Cornell Hotel and Restaurant Administration Quarterly Volume 40, No. 2, April 1999, 14-22.

Consider the time from 1990 to 2000 when hotels in Travis County were seeing occupancy rates running well above the natural rate. Illustrated in Figure 2, annual average occupancies were strong from 1990 to 2000 and this attracted investment in new hotels. Between 2000 and 2004, 19 new hotels opened which added 3,123 rooms to the market. After this, room demand flattened. Real ADRs fell about 17%. Occupancy rates dropped below 60% in 2004, which was well below the natural rate. This caused closures and the number of hotel properties in the county fell. It took five years before we saw the number of hotels go back to 2004 levels.

Figure 2: Travis County Hotel Occupancy Rates, 12-Month Moving Average and the Natural Occupancy Rate Since 1987



Source: Smith Travel Research

This phenomenon happens because once built, the cost of providing hotel rooms is low. Nationally, according to survey data from STR, the average upscale room was sold for $130 in 2015. Not counting overhead, the average operating cost of running that occupied room was about $32. That means, once a hotelier builds a hotel, no matter how expensive it was to construct, if the hotelier can at least get $33 a room night selling the upscale room, they can make a dollar toward fixed costs. On their accounting statements, they are still losing money but are better off selling at a low price than leaving the room unsold for the night.

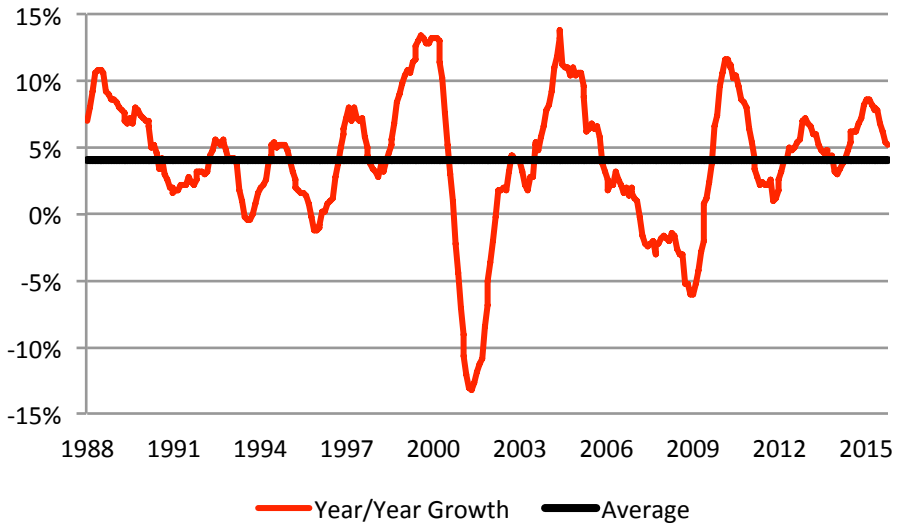
The reason why hotel markets drift away from their natural equilibrium for years is because supply cannot respond quickly to changes in demand. Once built, a hotelier is going to keep operating at a loss just to cover some of their fixed costs, so supply does not adjust down very fast. If demand jumps well ahead of supply, hotelier start planning to build new hotels, but it takes years for those hotels to get built.

Our analysis shows that if the Travis County hotel market had about 2,800 more hotel rooms over the last twelve months, it would have been close to its long-run equilibrium. But not exactly, because to sell 2,800 more rooms every day for the past year, hotels would have had to offer lower rates, especially off-season (December and January) and traditionally slow days of the week (Sunday). Lowering prices does bring in new guests.

What is the current state of the hotel development cycle?

Austin is adding 2,081 hotel rooms now, which would leave the market with an occupancy rate of about 69%. That is slightly higher than the long-run equilibrium. Demand growth, however, is slowing. Figure 3 shows that 8.5% more room nights were sold in 2015 than in 2014. But as of September 2016, this year-over-year growth rate is down to less than 5.25%. This reflects a national trend of visitors balking at paying high rates. Alternatives to commercial hotels are cutting into the market.

Figure 3: Growth Rate in Travis County Hotel Room Nights Sold, Year-Over-Year Growth and 1988 – 2016 Average, Monthly Data



Source: Smith Travel Research

The market is drifting back into balance, but unlike other cities we have studied recently, Austin does not appear to be overbuilding. So with luck, Austin's hotels should earn reasonable returns in the next few years. Of course, the outcome depends on the economy, which contributes to the volatility of visitor demand.

Overall, Austin may be at the end of a building phase in the hotel cycle. Austin is unlikely to see many new hotels developed beyond those already in the development pipeline. Further, Austin may anticipate seeing some proposed hotels fail to be constructed.

Density Bonus Economics

When in the building phase of the hotel development cycle, do hotel developers benefit from density bonuses? In other words, does building a bigger hotel benefit hotel developers and operators to the extent that they would pay a fee to do so? To answer this question, we must understand the scale economies of hotel properties.

Are there economies of scale in hotels?

Yes. Almost half the hotel buildings in Travis County have between 76 and 150 rooms. So, in a sense, the free market is telling us that the best size for a hotel is in that range. Table 5 shows the size range and number of rooms per hotel in Austin.

Table 5: Size Ranges of Travis County Hotels, Sept. 2016

Size Range	Hotels	Rooms	Average
Under 50	23	798	35
50 to 75 rooms	26	1,669	64
76 to 150 rooms	95	10,988	116
151 to 200 rooms	21	3,704	176
200 to 300 rooms	15	3,798	253
301 or more rooms	14	6,240	446
Total	194	27,197	140

Source: Smith Travel Research

However, it is less expensive to add more square feet of building, so why not make larger hotels? There can be any number of reasons, but one overriding one is the scope of who the hotel serves.

Once built, an owner must run the hotel. If a hotel has 140 rooms and the hotel serves, for example, business travelers because of its location, it probably has features that appeal to those customers. If the hotelier adds 100 more rooms, they would likely find it hard to capture more business travelers, as their demand is finite. Recall that location is critically important to guests, as they are unfamiliar with the city and disinclined to stay far from where their business takes them. But if the hotel has added 100 rooms, it needs an expanded scope. But to what segments? If the target market is families, the hotel might need a pool, arcade, and budget restaurant. But those guests would conflict with business travelers.

Expanding a hotel's scope is both costly and potentially reduces the hotel's appeal in aggregate. Thus, while on paper a larger hotel might make sense, the realities of marketing matter. There are diseconomies to expanding a hotel's scope.

Are there economies of scale in hotel construction costs?

Yes. Construction costs per square foot go down as more rooms are added, but the total building area goes up. So, there are no economies of scale on a per room basis beyond a few dozen rooms in size.

We ran a construction cost model (RS Means) for a ten-story hotel built in Austin in the third quarter of 2016. It is for a reinforced concrete hotel at open shop labor rates at current building costs. We assumed 31% of the hard costs for contractor and architectural fees, but excluded land, permits, site work, furnishings, and other location specific features. This is simply the cost of having a general contractor build the hotel.

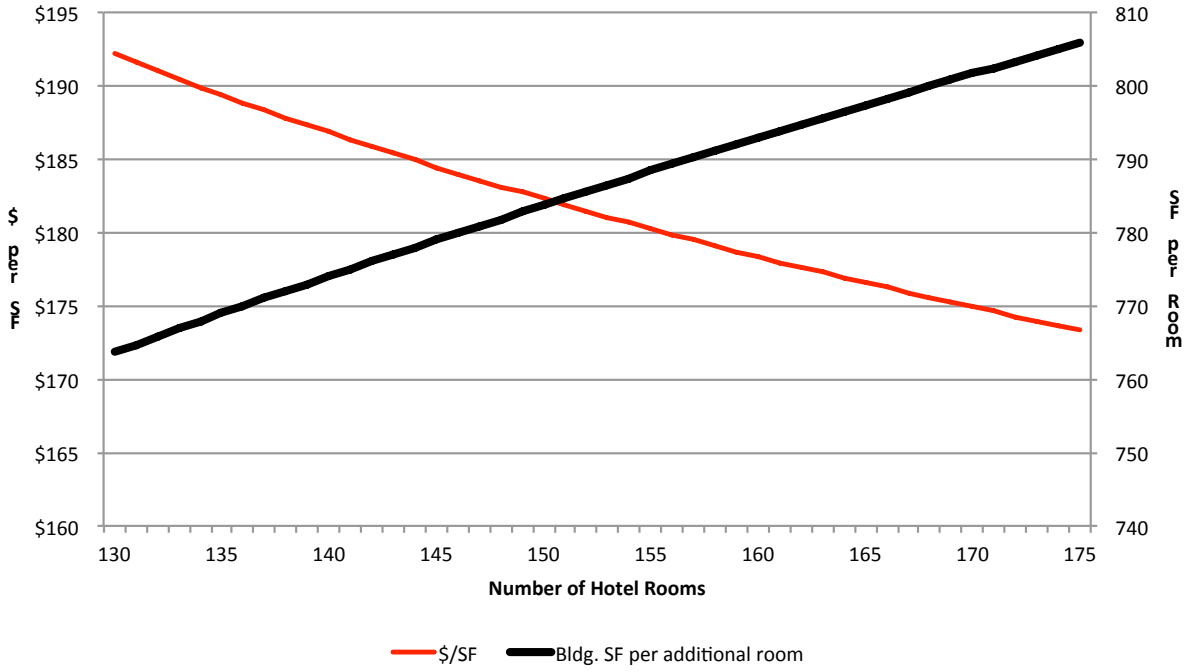
We ran the model for a 130-room hotel, which averages 84,200 SF. We then ran versions of the model that added one additional guestroom each time, using data collected on hundreds of existing hotel buildings. With the addition of each room, the ratio of building exterior and foundation to rentable space declines. The building itself may become more energy efficient. Our model found the following:

- **131 rooms:** The model shows that it costs approximately $192 per SF to build one extra guestroom.

- **150 rooms**: Going from 149 to 150 rooms, the cost per SF drops $10 to $182.
- **175 rooms**: The 175th room addition costs $173 per SF. It costs $19 less per SF to build the 175th room than the 130th room.

But there is an offsetting effect. We found that with more rooms, the total building square feet per guest room does not decline, but rather it increases. At first this seems illogical, because it would seem as though you get economies of scale for common areas. However, our data show that hotels with 175 rooms operate better with more guest amenities and back-of-house space. At the larger size, it becomes more cost effective to have in-house laundry, or a parking garage, or a dedicated employee dining room and kitchen. Expand your scope and you may need an additional bar, a pool, or 24/7 café. Also, as hotels increase in size, they offer larger suites. These components require more space per room as the hotel expands. A 130-room hotel might get away without having conference space, a 175-room hotel needs this space to help sell rooms. As shown in Figure 4, total building size increases faster than the number of rooms and faster than per SF building costs fall.

Figure 4: Cost per Square Foot for Constructing a 10-Story Hotel in Travis County Compared to the Extra Square Feet of Building Needed for Each Additional Hotel Guestroom, 3rd Quarter 2016



Source: RS Means and ECONorthwest

What about operating costs?

Larger hotels have some economies of scale in operations, but not many. Housekeeping is over half the total payroll cost of an upscale hotel. Adding rooms does not lower it. The same is also true for the costs of staffing bars and restaurants. A larger hotel may save some administrative costs, but as a hotel becomes larger more money is needed for marketing. To fill those extra rooms, you need staff selling to groups.

For upscale hotels, the differentiator is personal service. That raises, not lowers, operating costs per available room. Upscale hotels also have the problem of having laid out a lot more money for furniture, fixtures, and equipment. To cover those higher capital costs, upscale hotels must strive for a higher occupancy rate, which can be challenging and costly.

Implications/Conclusions

Our review of the data and experience studying the economics of the lodging industry allows us to make the following observations:

1) **There are no obvious economies of scale for hotels.** While construction costs per square foot falls some as more rooms are built, that hotel requires more space for amenities and back-of-the-house support operations to support the additional rooms. Indeed, ECONorthwest's construction cost model shows the cost per additional room rises for properties with 130 or more rooms.
2) **Hotels have diseconomies of scope.** If a hotelier decides to build more rooms, they will have to fill those rooms by reaching into other market segments. That is not easy. Attracting guests in new segments requires expanding the scope of the hotel—for example, by adding conference rooms or a banquet hall. As a result, building costs go up. This means that beyond a minimum viable scale, hotel developers may choose to build two smaller hotels targeting different markets rather than build an incrementally larger single hotel. That is why brands such as Starwood and Hilton have several different styles of hotel. Each brand targets unique segments.
3) **The exception to the economies of scope problem can happen near an amenity that draws visitors.** If a hotel is across the street from a convention center, for example, a developer can more easily add rooms catering to meeting guests without bearing the high cost of constructing meeting space in that hotel.
4) **The adverse impacts from taxing investment are greater than taxing operations.** A transient room tax is a tax on operations. It affects a guest's decision on whether to stay in the city on a given night. A regulatory fee on incremental hotel room construction is a tax on investment. It reduces the number of rooms built, which could impair the City's capacity to accommodate visitors for years. That has negative fiscal implications.
5) **Any appreciable regulatory fee charged per incremental "bonus hotel room" increases the construction cost per room.** This may preclude the development of some hotel rooms that would otherwise be delivered by the market. Essentially, such a fee is a tax on investment.

6) **The incremental profitability of each additional room can impact hotel performance.** Each additional room built competes with the other rooms in a hotel. For example, suppose a hotel has 140 rooms. A hotelier can sell 75% of room nights annually and sell 100% of them 50 days a year. Now suppose they add a 141st room. On the margin, that additional room might sell 50 times a year (on the 50 nights they would otherwise sell-out the hotel). That means the occupancy rate of the new room is 14% (50 nights divided by 365 days a year). Would a visitor pay more for the 141st room than the other 140 rooms? Probably not. Would it cost less to build than the prior 140 rooms? Perhaps. At 14% occupancy, it is likely to be an unprofitable investment in additional rooms. That said, in some instances, an incremental room could be profitable.

7) **Austin competes with surrounding communities and destinations throughout the country.** If a hotel developer identified a viable market location near the City's boundary and faces a City of Austin fee requirement, they may choose to develop their hotel property just outside the city. Other developers may choose another city or to forgo building a hotel altogether.

8) **Overall, a density bonus structure (including a fee) raises the cost of new hotel room supply**. When faced with higher costs, consumers, which in this case are hotel developers, buy less overall. This means that in some cases, developers may build the hotel rooms outside the city or choose not to build at all. A reduction in hotel rooms developed relative to demand will drive room rates up. This can cause the market to self-correct and lead to fewer overnight visitors, less convention business, and lower levels of hospitality industry work. Other businesses, their employees, and suppliers would be worse off than they otherwise would have been without the fee. That reduces tax revenues. The number of "bonus" hotel rooms and associated fee revenues may be relatively meager in comparison.

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