

To Build or Not To Build? It's an Apartment Complex Question

Grant Ian Thrall

This column presents in-depth analysis of business geographics topics.

Choosing the right location for a housing project can make or break a venture. To find the optimal site, a business geographer or developer should conduct real estate market analysis that includes four steps — establishing a trade area, calculating competitive supply and demand, targeting the appropriate demographic niche, and recommending a decision (see Thrall, 1995; Wofford and Thrall, 1997).

Because about 30 percent of U.S. and Canadian households are apartments (Bourassa and Grigsby, 2000), this housing niche presents great opportunity. But the market segment has its own distinct flavor. Rather than being randomly distributed throughout a city, for instance, multifamily housing units tend to be clustered into geographic submarkets (Hoyt, 1939) and appeal more to specific demographic groups than other types of housing, such as single-family dwellings. Consequently, a developer

must consider a distinct set of variables when deciding where to site a new apartment complex.

Last fall, during a graduate seminar in business geography, I led a group of students through an exercise that involved assessing the market for a new apartment complex in Gainesville, Florida, on behalf of a client from the local community. We analyzed a University of Florida Foundation real estate holding for the possible development of a 600 unit, individual-room-lease apartment complex.

Economies of scale

For an apartment complex development to be profitable, vacancy rates must be kept to a minimum. A modest 600-unit apartment complex may cost \$40,000 per unit, meaning a total capital expenditure of \$24 million. A 10 percent vacancy rate translates into \$2.4 million of asset on which no returns are being made. Developers usually strive for a projected vacancy rate of no more than six percent when deciding to build.

To assess proposed sites, business geographers evaluate the *absorption rate* of a proposed apartment in a particular submarket. This rate is measured as the number of apartment units that can be rented within a particular price range. The submarket is a geographic area that identifies the location of the relevant competition and specifies where renters will likely seek accommodation.

Competing apartment developments can be identified in a variety of

ways, including geocoding databases of apartment addresses, visualizing the resulting mapped data, and evaluating the LSPs of the apartments themselves (see Thrall, 1998). Calculated using the address of the apartment complexes, LSPs can be used as surrogate measures of apartment type and target demographic niche.

The developer of our example project was considering building an off-campus complex midway between the UF and downtown Gainesville (which are about 1 mile apart) and near a large hospital owned by the university. The proposed 600-bedroom apartment complex would be built to accommodate individual-room leases, with each apartment pod comprising four bedrooms and four bathrooms. Management would lease each bedroom separately and each pod would

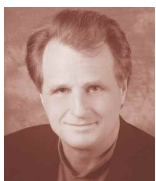
include a shared living room and kitchen.

The developer chose the individual-room-lease concept because it was thought by the developer to yield higher rent

per square foot than complexes in which each apartment unit had a separate lease. The target demographic niche encompassed all students enrolled at UF.

Establishing a trade area

Housing trade areas are most commonly established by using a rule of thumb. Geographers may, for instance, calculate a radial distance or drive time from one or several



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Glossary

LSP: Lifestyle segmentation profile

PIN: Parcel identification number

UF: University of Florida

major destinations, such as employment and shopping centers. The sectorial nature of most cities must also be considered (Hoyt, 1939). For example, if the target demographic population of a product is high-income households, then the trade area for that product would likely be the sector in which that population group resides.

The business geographer might begin by identifying the sector(s) where the target demographic group resides and then honing in on smaller submarkets within those sectors. Similar procedures are followed for moderate- and low-income housing.

Because the target population had been identified for us as students enrolled at UF, we based the primary trade area on where UF students live. To determine this, we acquired a student address database from the UF registrar's office.

We geocoded the addresses of all 45,398 UF students using CACI

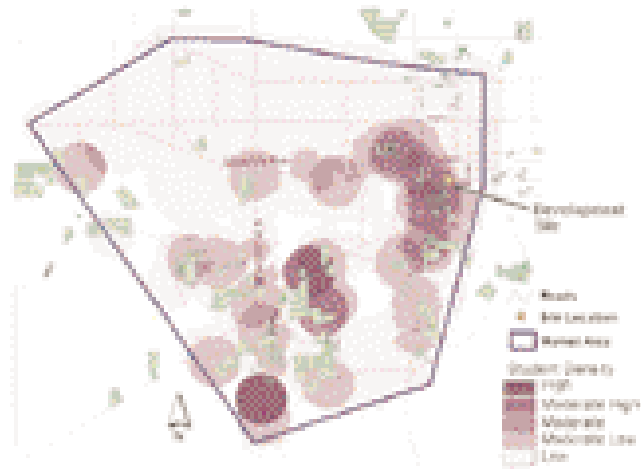


FIGURE 1 To derive the primary trade area for the proposed 600-unit apartment complex, we geocoded the addresses of more than 45,000 UF students, then used the kernel method to visualize student distribution.

Coder/Plus (www.caci.com) to derive latitude and longitude coordinates (Thrall 1998). We mapped student location as a point data file. Using ESRI's ArcView with the Spatial Analyst add-in, we applied the kernel method to visualize student density (Thrall and McMullin, 2000) and drew an envelope to inscribe the predominant locations of those students. The resulting trade area inscribed

more than 50 percent of all students enrolled at University of Florida, and about 80 percent of students whose resident addresses were geocoded. Figure 1 shows the derived primary trade area for all UF students.

Calculating competitive supply

Because of the uniqueness of the individual-room-lease concept, we calculated the supply of apartment units

FIGURE 2 We analyzed the competitive environment by mapping the existing supply of similar housing units.



pipeline data, see Thrall, 2000.)

The permits data revealed that about 2,702 apartment bedrooms were in the pipeline within the primary trade area. Some of them, of course, will never make it to the final stage of certificate of occupancy; however, for the decision-making process, we mapped all the apartment complexes in the pipeline.

Determining demand

Students at UF generally prefer to live on campus during their first two years. Freshmen and sophomores generally live off campus only if campus housing is not available. Thus, student preference was an important factor to consider when analyzing the apartment siting.

We selected students from the UF data file (which contains information about each student's grade level and gender, among other factors) who resided at addresses of individual-room-lease apartment complexes.

Figure 3 is the resulting breakdown of students by year in college who choose to reside in individual-room-lease apartments. It reveals that graduate students have a bias against individual-room-lease apartments. We had hypothesized that more women than men would reside in individual-room-lease apartments; however, the data demonstrated that the same proportion corresponded with the university's overall enrollment.

We also calculated the proportion of UF students residing in the primary trade area by year in university. We found that the further along students were in school, the more likely they were to live outside the primary trade area (see Table 1). About 46 percent of graduate students reside outside the primary trade area shown in Figure 1.

To forecast future housing needs, we obtained projected student enrollment data from the university registrar's office. The university anticipates significant increases in graduate student enrollment during the next five years, while undergraduate enrollment will have a very small increase or perhaps even a decrease. A decline of 229 students is projected for the

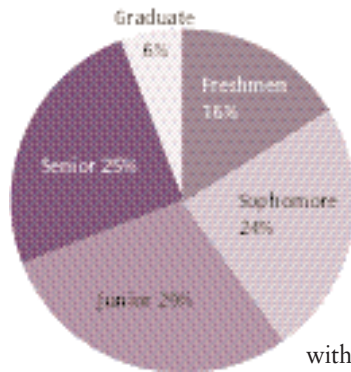


FIGURE 3 To further break down market demand, we analyzed the composition of students by grade level. Research revealed that undergraduates were more likely consumers of the type of apartment complex the developer proposed.

with similar lease plans within the primary trade area.

We obtained information about competing apartment complexes from various sources. The Alachua County appraiser's office provided assessment records of all real property as well as a boundary geographic data file.

Various guides to apartment living in Gainesville and the surrounding area helped us to identify which complexes in the area were individual-room-lease

apartments. We aggregated these data, which included the name and address of the apartment complex, the total number of bedrooms, the per-bedroom rate, square footage, and age of each complex. Because the proposed new apartment complex would also need to offer competitive amenities, we aggregated data about each competing complex as well. This included information about whether each apartment unit had a washer and dryer, if apartments were furnished, if utilities were included in the rent, and whether the complex had a tennis court, computer lab, Internet access, and swimming pool. The developer of our 600-room unit did not plan to

include a pool, tennis courts, or computer lab.

Figure 2 shows the location of the existing competitive supply of all apartments as well as individual-room-lease apartments within the primary trade area. We constructed this map by importing the county appraiser's parcel boundary file for all properties within Alachua County. Each parcel included a PIN. We linked the Alachua County property assessment file to the parcel data file by way of the common PIN field. We then used the State of Florida Department of Revenue codes for apartments to select those parcels that were apartments. This process revealed a competitive existing supply of 6,478 individual-lease rooms in the primary trade area.

Pipeline data. Next, we reviewed city of Gainesville and Alachua County "First Step" and building permit records to determine the supply of apartments in the pipeline. Pipeline supply comprises projects that are not yet on the market, but are at some stage of planning or development. The relevant supply is the supply that exists at the time the new development is completed, and for a reasonable time horizon thereafter. Therefore, competitive projects in the pipeline must be considered. (For more on pipeline, and commercial

TABLE 1 Students within and outside of the primary trade area

	Number in market area	Percent residing outside primary trade area	Students with an Alachua County address
Freshmen	6,010	9	6,534
Sophomores	4,132	15	4,765
Juniors	5,703	27	7,251
Seniors	5,247	32	6,900
Graduates	4,387	46	6,419
Other	210	58	331
Total	25,689	25	32,200

lower division (freshman and sophomores). Upper division enrollment (juniors and seniors) is expected to increase by only 452 students. If trends continue, only 46 percent of the increase in graduate students would be expected to reside within the primary trade area.

Recommendation to client

Based on our analysis of trade area, demand, and supply, we recommended against this development. Our analysis demonstrated that there is too much similar product in the pipeline. The competitive supply will likely be increasing as the target group declines. Therefore, vacancy rates will likely increase, and declines in rental rates will probably follow.

We recommended that, should the developer decide to proceed, the amenity package be improved to compete with existing supply. We also advised that the developer change the target demographic niche to attract a wider segment of the population, especially graduate students — who the study revealed prefer other forms of housing over the individual-room-lease design — as well as entry-level professionals. The change in target demographic niche would require a different architectural design and a change in management of the completed apartment complex. We also suggested that the developer consider a mixed use (retail with apartments) development.

GIS analysis for this project was fast compared with other methods. The improved decision making enabled by this GIS-based real estate market analysis might have saved the developer from making a \$24 million error in judgment.

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