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Can We Have a High-End Retail Department Store?

By Christina M.L. Kelton, Ph.D. and Robert P. Rebelein, Ph.D.

HOW TO TELL IF YOUR REGION IS READY

High-end retail department stores are attractive targets for regional economic development. They bring in high-income shoppers from outside the region, and they prevent leakages by encouraging similarly mobile shoppers who live in the area to spend within the region. Because of their substantial fixed costs, high-end department stores generally locate in urban areas with relatively large populations. **This article explains how metropolitan-area data are used to determine just how large the population must be and to identify additional attributes of the population and area that are correlated with, and potentially necessary for, development of a successful high-end retail sector.** Population size, land area, and the percentage of households with at least $150,000 of income per year are strongly correlated with the presence of high-end retail department stores. A statistical model with these three variables can be used to estimate various population thresholds, depending on land area and income level, for high-end retail department stores; these threshold values can greatly inform economic development efforts.

can we have a

HIGH-END RETAIL DEPARTMENT STORE?

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THE QUESTION

Several years ago, we were asked by some economic development planners in the greater Cincinnati area what the "odds were" for attracting a high-end department store, particularly a Nordstrom branch, to the area. At the time, there was a rather small Saks Fifth Avenue store in downtown Cincinnati, yet no other high-end department store had a branch in the region. We are now able to answer this question and indeed can answer it more generally for any metropolitan area in the country. It is interesting that we can answer it at all, since individual stores make their own expansion plans across the country. Yet, the results of those individual decisions can be captured rather well by a relatively simple statistical model that we describe in this article.

Photograph by Dennis J. Ulm.

Nordstrom store in San Francisco. Nordstrom was founded in 1901 in Seattle, Washington, by John W. Nordstrom. Nordstrom sold only shoes until 1963 but now sells a full line of retail products.

There are two distinct perspectives on the value of high-end department stores to a community. On the one hand, it is possible that such stores contribute to economic development by either bringing in outside monies, by being part of the community's economic base, or preventing leakage of local shopping dollars. Attracting such stores would be part of the community's development strategy. On the other hand, the stores may be viewed as desirable because they represent successful economic development and validate the past efforts of community developers. These past efforts may or may not have included a retail strategy in particular.

Pittman and Culp (1995) argued that, in order to meet a rigorous definition of economic development, a new store, outlet, or shopping mall would have to create permanent new (net) jobs and income in the community, that is, increase permanently the amount of money available in the area. When retail brings outside expenditures into an area or becomes part of the basic sector of the economy, it counts as economic development. According to Pittman and Culp, it also counts when it entices residents not to leak their spending outside the community. However, if the new estab-

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HOW TO TELL IF YOUR REGION IS READY

High-end retail department stores are attractive targets for regional economic development. They bring in high-income shoppers from outside the region, and they prevent leakages by encouraging similarly mobile shoppers who live in the area to spend within the region. Because of their substantial fixed costs, high-end department stores generally locate in urban areas with relatively large populations. This article explains how metropolitan-area data are used to determine just how large the population must be and to identify additional attributes of the population and area that are correlated with, and potentially necessary for, development of a successful high-end retail sector. Population size, land area, and the percentage of households with at least $150,000 of income per year are strongly correlated with the presence of high-end retail department stores. A statistical model with these three variables can be used to estimate various population thresholds, depending on land area and income level, for high-end retail department stores; these threshold values can greatly inform economic development efforts.

lishment neither brings in outsiders to shop nor prevents spending leakage, then it would not contribute directly to economic development; current expenditures in the community would simply be redistributed among existing establishments to accommodate the new retail entrant.

In the extreme, a large retail-entertainment complex has the potential of drawing visitors nationwide. In May 1996, the *New York Times* reported that the Mall of America attracted more visitors than Disney World, the Grand Canyon and Graceland combined (McDowell, 1996). Over two and a half million international visitors visited the Mall that year. Economic impact for the state of Minnesota was estimated at $1.4 billion in 1996. Approximately 10,000 new jobs in the Minneapolis – St. Paul metropolitan area were attributed to the Mall (555 Group website). Contributing substantially to the Mall's success are three high-end department stores: Macy's, Bloomingdale's, and Nordstrom. The fiscal impact of the Mall has been substantial as well.

Courtesy of Mall of America®.

Mall of America is the nation's largest retail and entertainment complex with 520 stores, 50 restaurants, a family amusement park, a 1.2 million gallon aquarium, and 14 movie screens. It has three high-end retail department stores including Bloomingdale's, Macy's, and Nordstrom. (See http://www.mallofamerica.com/)

The retail sector has evolved over time such that retail's leakage-prevention role has become almost as important as its role in attracting outside monies. Shoppers have many alternatives including discount centers, outlet malls, mail order, and the Home Shopping Network. Lackey and Eckenstahler (1995) reported on the results of a consulting project for a Michigan community, where it was found that nearly $300 million was being spent annually outside the area, equating to approximately 3,500 full-time jobs. As a result of that study, the community added a retail component to its economic development strategy to mitigate this leakage. Retailers found the study helpful as well in their expansion decisions. Williams (1997) emphasized also the role that retail had in economic development in preventing the drainage of income out of an area. With less money seeping out of the economy (Williams noted that "many economies leak like a sieve"), less external income generation is needed to reach the same level of economic prosperity.

Furthermore, some communities rely on sales taxes as a major source of revenue. Important sales-tax generators, such as new car dealers, regional malls, furniture stores, and major discount stores are very desirable economic development targets from a fiscal perspective (Devine, 1994). The less tangible benefits of retail development include building community spirit that spills over into higher values for surrounding real estate. In the 1980s and 1990s, many cities saw downtown malls develop near other downtown amenities such as concert halls, theaters, museums, convention centers, and sports complexes (West and Orr, 2003).

Even if developers do not consider a new retail establishment to be of as much importance as, say, a new manufacturing establishment in a high-paying, export sector such as biotechnology, they may still view a high-end department store as desirable, perhaps as recognition of successful past economic development efforts. As an area grows in population and employment opportunities, it aspires to some of the shopping advantages of wealthy communities. All of the national retail chains described in this article are classy; they have long histories and traditions and signal to shoppers both high quality and excellent customer service. When part of a community, they signal prosperity.

It is one thing to recognize the potential of high-end retail as an engine for (or reward from) economic development. It is quite another to implement a successful recruiting strategy for high-end department stores. Economic developers may only marginally influence retail investment decisions. Retailers base their location decisions on the sales they expect to generate within a local trade area. P.G. Lewis (2001) wrote "because retail activity probably cannot be increased spontaneously by government promotion and the distribution of retail is fairly stable, one might conclude that retailers are locating pretty much where they would have in the absence of incentives." Nevertheless, developers can facilitate the retail decision process especially by providing general demographic information to potential retailers and pointing out details about their areas that the retailers may have overlooked (Harald, 1995). If close to the population threshold required, the community may have success with a locational incentive package.

HIGH-END RETAIL DEPARTMENT STORES

To answer the question ("can we have a high-end retail department store?") posed to us, we studied the locations of five national high-end department stores (Bloomingdale's, Macy's, Neiman Marcus, Nordstrom, and Saks) to determine empirically their locational drivers. Bloomingdale's, with annual sales of $2 billion, was founded in 1860 by Joseph and Lyman Bloomingdale in New York's Lower East Side. In 1886, it moved to 59th Street and Lexington, and, by the 1920s, covered an entire city block. In 1961, it came up with the first designer shopping bags.

Macy's, with its flagship store in New York as well, now has over 100 stores nationwide. The first Macy's Thanksgiving Day Parade occurred in 1924, a tradition begun by Macy's employees. Federated Department Stores currently owns both Bloomingdale's and Macy's.

Neiman Marcus was founded in Dallas, Texas, in September 1907 by Herbert Marcus, Sr., his sister Carrie Marcus Neiman, and her husband A.L. Neiman. By 1914, it had a permanent location on Main Street at Ervay Street, which has had Texas landmark status since 1982. Nieman Marcus was acquired by two private equity firms in October 2005.

Nordstrom, with an equally long history, was founded in 1901 in Seattle, Washington, by John W. Nordstrom, a Swedish immigrant. Nordstrom sold only shoes until 1963 but now sells a full line of retail products. In 1998, it replaced its downtown Seattle store with a new flagship location across the street. Nordstrom, with 2005 sales of $7.7 billion, employs over 50,000 individuals nationwide.

Finally, Saks opened as Saks Fifth Avenue in New York in 1924. It was founded by Horace Saks and Bernard Gimbel. It branched out almost immediately; its first branch store opened in 1926 in Palm Beach, Florida. It had annual sales of $2.7 billion in 2005.

Whereas all five stores are considered high end, Nordstrom and Bloomingdale's compete at roughly the same average price level, below Neiman Marcus and Saks, but above Macy's.[1]

THE APPROACH

Addresses for all Bloomingdale's, Neiman Marcus, Nordstrom, Macy's and Saks stores in the United States were collected from the respective companies' web sites in 2001. We were originally approached to answer the question about high-end retail in 1998 so collected our initial data a number of years ago. Having older data, however, with which to estimate a model has given us the opportunity to compare the model's predictions with current (2006) store locations in order to assess the model's performance. The other variables we discuss below (land area, population, percentage of high-income or wealthy families, and so forth) change, in a relative sense, rather slowly over time; hence, our results should still be of current interest.

In 2001, Saks had a total of 63 stores; Macy's, a total of 97; and Nordstrom, a total of 130. Neiman Marcus had 46 stores, while Bloomingdale's had 22. Altogether, there were 358 high-end retail stores for our study. After assigning each store to a metropolitan area, we added up the total number of high-end stores in each geographic region. Out of 275 areas, 64 had at least one high-end department store.[2] The remaining 211 regions had none. Figure 1 shows the locations of the five high-end department stores in our study. Each dot represents one zip code, while the shading varies from light to dark depending on the number of stores.[3]

We next worked toward developing a statistical model that could explain the variation in the number of high-end department stores. Although the development process involved a fairly large database with over 50 different variables describing regional characteristics, we report results only for three of those variables since none of the remaining variables statistically improved the model's fit or predictive ability. The effect of the three variables is strong. Our model explains 89 percent of the variation (that is, the estimated model has an R-squared value of 0.89) in number of stores. In estimating the model, we recognize that the character of our dependent variable (store counts) disqualifies ordinary least squares as a reliable estimation technique. Hence, our results are based on tobit estimation (a statistical regression technique that eliminates any bias and inconsistency associated with ordinary least squares) for censored data. Tobit estimation, available through many standard statistical software packages, has been used in several similar industrial-location studies, though for different industries. See, for example, Smith and Florida (1994) and Klier, Ma, and McMillen (2004).

Photo from Macy's Press Room, Federated Department Stores, Inc.

Lazarus, a Midwest department store chain founded in 1851 by Simon Lazarus, was taken over by Macy's in 2005. This Macy's store in downtown Cincinnati was formerly a Lazarus store.

The three explanatory variables are population, land area, and income, with population and income found in *Census 2000* and land area taken from the *County and City Data Book 2000*. High-end department stores, with substantial fixed costs, generally require a large population base to be successful. We expect them only in large urban centers, or "higher-order" centers in the language of Central Place Theory (Christaller, 1966).

Central Place Theory predicts there is a direct, positive relationship between the population of the central place and the number of functions (firms, generally, and, in our case, high-end retail department stores) provided in that place (Deller and Harris, 1993). Indeed, the data show that many of the stores are concentrated in the population centers of Boston, New York City, Los Angeles, and San Francisco.

Figure 1. High-End Retail Department Store Locations

In our sample, population ranged from 57,813 for Enid, Oklahoma, to over 21 million for the New York – Northern New Jersey – Long Island, NY – NJ – CT – PA region. Figure 2 is a scatter plot of the number of stores against population for the 275 regions in the study. We see that the largest population centers have the largest number of stores. However, for smaller regions, the range on the number of high-end retail stores is broad, suggesting factors other than population also influence store location.

Besides population, we include the land area in square miles for each metropolitan area. The high-end retailers are expected, other things being equal, to locate more stores in large geographic areas to cut down on shoppers' commutes. Whereas the New York area is fairly condensed in 10,838 square miles, the sprawling Los Angeles region takes up 33,955 square miles of land.

The third variable is the proportion of households in the region with income of at least $150,000 in 2000. High-income households should have more discretionary income to spend, and high-end retail should be attracted to high-income metropolitan areas.

The estimated model, using tobit estimation for censored data, is

Stores = -8.9093 + 0.00000149 Population + 0.0002647 Land Area + 153.0243 Proportion of High-Income Households.

The t-statistics are 11.73, 4.58, and 7.48 for Population, Land Area, and Proportion of High-Income Households, respectively, indicating that each estimated coefficient is significant for at least the one percent significance level.

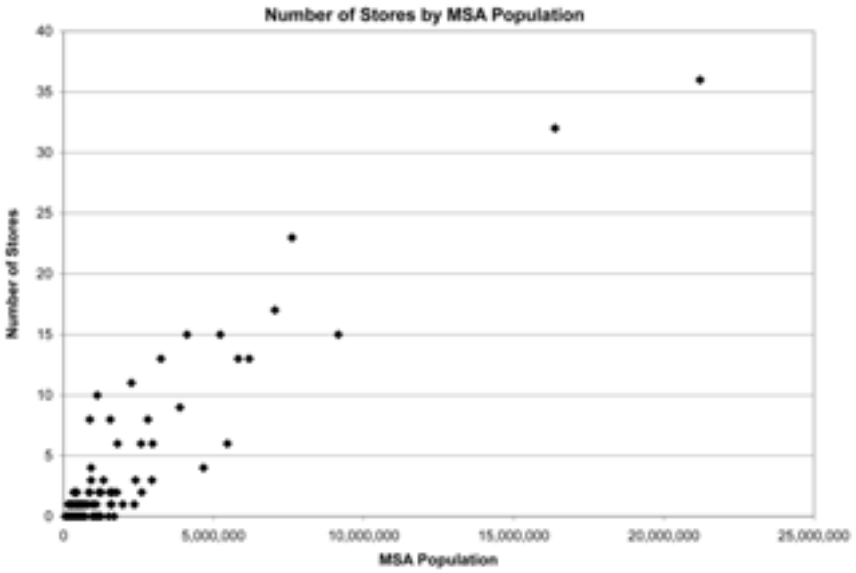
Before the final model was developed and estimated, a large number of other economic and demographic metropolitan-area variables were considered. Although none led to a statistical improvement in the final model, we mention here those additional variables so the reader can appreciate the process of model development. We mention them as well because some of them do undoubtedly enter into a department store's regional location decision as well as its specific site selection within a region. The fact that they do not show up as statistically significant when added to our model does not necessarily mean firms do not consider them when undertaking individual store location and site decisions.

We considered numerous variables that capture gender, the age profile, and educational attainment. We considered the proportion of men and women by region; the proportion of individuals aged 18 – 24, 25 – 34, 35 – 49, and 50 and above; and the proportion of individuals with a bachelor's degree. (Note that this latter variable has an estimated coefficient that is statistically significant in a regression model, but education is too highly correlated with proportion of high-income households for both to be included in the same model.)

We considered variables that captured wealth in an area, including median owner-occupied housing values and the threshold for the upper quartile of housing values in the area. These variables have estimated coefficients that are also statistically significant in a regression model, but, again, they are too highly correlated with the income variable to add to the model.

We looked at other income variables including median household income, effective buying income, number

Figure 2. Relationship Between Population and Number of High-End Retail Department Stores



of households with non-wage (interest, dividend, or rental) income, and percent of population employed in the finance-and-insurance sector, which tends to pay a higher-than-average salary. None of these variables performed as well as the proportion of high-income households in an area, and none could be included along with this proportion due to a correlation with the proportion that was too high. We also looked at per capita motor vehicle sales as a possible indicator of the willingness of individuals to buy big-ticket items.

We looked at crimes reported to the police as well as government revenue, including property taxes, and spending. We also considered the fraction of a region's employment in the Accommodations Industry (NAICS 721) to determine whether we could capture successfully a regional economy's participation in tourism and/or the convention business.[4]

Finally, average annual expenditures on housing, apparel, education, entertainment, and food away from home were obtained from the *Consumer Expenditure Survey* of the Bureau of Labor Statistics (BLS). These data were available for only 28 major metropolitan areas and for four broad regions of the U.S. (Northeast, South, Midwest and West). For areas near one of the 28 areas with data, we assumed the area had the same expenditure pattern as did its nearby BLS area. For areas not near an area with expenditure data, we ascribed the regional value to it.

Courtesy of Neiman Marcus®.

Neiman Marcus Flagship Store. In 1914, Neiman Marcus had a permanent location on Main Street at Ervay Street, in Dallas, which has had Texas landmark status since 1982.

We thought that people who tended to spend more on apparel or leisure-type activities might be more likely to frequent high-end department stores. However, none of the expenditure variables improved upon the fit or predictive power of the model.[5] Again, we are not saying that expenditure patterns are not important to the locational decisions of the department stores —- only that including secondary data on expenditures does not help us to answer any better statistically the question posed to us by the economic developers.

THE ANSWER

With a population of 1,979,202, a land area of 3,810 square miles, and 4.57 percent of the households with income of $150,000 plus, our model predicts that the greater Cincinnati area should have had two stores in 2001. In other words, the results of our analysis suggest that a strategy focused on attracting a Nordstrom, Bloomingdale's, Neiman Marcus, or Macy's to the greater Cincinnati area, to join its one Saks branch, could have been successful.

Although there is as yet no Nordstrom, Bloomingdale's or Neiman Marcus store in the area, there are now six Macy's stores, challenging either the model or the notion of "high end" retail. The high-end environment in Cincinnati has been altered due to the takeover of Lazarus Department Stores by Macy's in 2005. Lazarus, a Midwest department store chain founded in 1851 by Simon Lazarus, became Lazarus - Macy's in 2003, and then Macy's in 2005. However, since the average price point of Lazarus was below that of Macy's, it remains to be seen whether the Macy's branches in the Cincinnati area will be able to carry successfully a full higher-end line or whether there will be some closures or other changes within the next five to ten years.

The estimated model does a reasonable job of predicting number of stores across the country's metropolitan areas. For each region, we compared the actual number of stores with the model's predicted number. For 215 regions, the model accurately predicts the actual number of stores. For example, the Minneapolis–St. Paul area had six high-end department stores in 2001. The model predicts six (6.13 to be exact); the Boston area had 13 stores, and the model predicts 13 (12.61).

For 17 regions, including the Cincinnati–Hamilton metropolitan statistical area, the model overpredicts the number of high-end department stores. These 17 regions were those most likely to acquire (have the highest odds of acquiring) one or more stores.

Whereas the model suggested that Cincinnati's characteristics would allow it to have two stores relative to the single Saks branch that it did have, the model overpredicted the number of stores in Naples, Florida, by five stores. A population of 251,377, a land area of 2,025 square miles, and a relatively high-income population (over nine percent of the households had income in excess of $150,000) led to a prediction of six high-end stores. However, Naples had but one high-end department store in 2001. Similarly, the Houston area had five fewer stores than the model predicts. While it had four high-end department stores, the model predicts nine.

The remaining overpredictions were for the following areas:

- San Francisco–Oakland–San Jose (four-store overprediction)
- Detroit–Ann Arbor–Flint (three-store overprediction)
- New York–Northern New Jersey (three-store overprediction)

- Raleigh–Durham–Chapel Hill (two-store overprediction)
- Los Angeles–Riverside–Orange County (two-store overprediction)
- Chicago–Gary–Kenosha (two-store overprediction)
- Charlotte–Gastonia–Rock Hill (two-store overprediction)
- Las Vegas (one-store overprediction)
- St. Louis (one-store overprediction)
- Austin–San Marcos (one-store overprediction)
- Flagstaff (one-store overprediction)
- Cincinnati–Hamilton (one-store overprediction)
- Nashville (one-store overprediction)
- Hartford (one-store overprediction)
- Denver–Boulder–Greeley (one-store overprediction)

Of these areas, in 2001, there were no high-end department stores in Raleigh – Durham – Chapel Hill, Charlotte – Gastonia – Rock Hill, Nashville, or Flagstaff, Arizona. Each of these areas had a population that exceeded the estimated threshold (discussed below) required for a high-end department store. This suggests these areas were ripe for the introduction of a high-end department store soon after 2001. Indeed, as of 2006, there now is a Neiman Marcus store in Charlotte, a Saks branch has opened in Raleigh, and there are two Macy's stores in Nashville, Tennessee. In addition, Nordstrom plans to open a store in Naples, Florida, in 2008.

The other areas for which the model overpredicts already had at least one high-end department store in 2001. In the case of New York–New Jersey, there were 36 stores in 2001, while the model predicts 39. There were 32 stores in the Los Angeles area, while the model predicts 35. According to the Nordstrom website in 2006, this store currently has plans to open two more branches in Los Angeles and another two in New York within the next few years.[6]

The model underpredicts the number of high-end department stores for 43 metropolitan areas. For 21 areas, the underprediction is by just a single store; for seven areas there is a two-store underprediction; for five areas, a three-store underprediction; and for four areas, a four-store underprediction. For six areas, the model underestimates the number of stores by five or more. Our worst prediction is for Portland–Salem, Oregon–Washington, where there were 11 high-end department stores in 2001. Our model predicts only three. Since most of the stores in this area are Nordstrom stores, we assume our underprediction is due to Portland's proximity to that store's headquarters in Seattle. Areas that are popular tourist and/or convention destinations tend to have more stores than the model predicts on the basis of population, area, and income. Indeed, the actual number of stores exceeds that predicted by the model in Honolulu, Hawaii; Phoenix-Mesa, Arizona; the Washington D.C.–Baltimore area; Miami, Florida; West Palm Beach, Florida; and San Diego, California, all popular travel destinations.

To determine how well the model predicts overall, we calculated mean absolute error (MAE) as the sum of the absolute values of the difference between actual and predicted number of stores, divided by 275, the number of metropolitan areas in the sample. The MAE is calculated as 0.5018 stores. This value is lower than that obtained by either the same model estimated using ordinary least squares or a model that includes a squared population variable.[7]

POPULATION THRESHOLDS

Working from the estimated model above, we compute minimum population levels for having one high-end department store. We set Stores = 0.5 on the left-hand side of the equation. (At predicted values of 0.5 and above, the model predicts at least one store in the metropolitan area.) We choose five different values for land area: 2,000, 2,500, 3,000, 3,500, and 4,000 square miles, respectively. While the metropolitan areas differ in size from a minimum of 393 square miles in Muncie, Indiana, to 39,369 square miles in Las Vegas, Nevada, the mean area is 2,590 square miles. We select five different values for the proportion of high-income households: 0.01, 0.02, 0.03, 0.04, and 0.05. The mean value of this variable is 0.032, while the range is again quite large, from 0.0118 for the Cumberland Maryland–West Virginia metropolitan statistical area to 0.1170 for the San Francisco–Oakland–San Jose area.

Table 1. Population Thresholds as a Function of Land Area and Proportion of High-Income Households

Land Area in Square Miles	Proportion of Households with Income of at Least $150,000				
	0.01	0.02	0.03	0.04	0.05
2,000	4,932,656	3,905,647	2,878,638	1,851,630	824,621
2,500	4,843,830	3,816,821	2,789,813	1,762,804	735,795
3,000	4,755,005	3,727,996	2,700,987	1,673,979	646,970
3,500	4,666,179	3,639,170	2,612,162	1,585,153	558,144
4,000	4,577,354	3,550,345	2,523,336	1,496,328	469,319

At the average values of 2,590 square miles and 3.2 percent of households having income of at least $150,000, the estimated model predicts a threshold of 2,568,422 (2.6 million) in population for there to be a high-end retail department store. We note that the Cincinnati area had a population below 2.6 million in 2001. However, with the area's above-average physical size and above-average share of high-income households, it could compete for a high-end department store, as shown in Table 1. Table 1 depicts the sensitivity of the population threshold to the amount of land area and the share of high-income households.

Photo by Enrico.

The first Macy's Thanksgiving Day Parade occurred in 1924, a tradition begun by Macy's employees. The 2006 Parade had some wet weather, but there was still a crowd to watch it.

For a wealthy metropolitan area (with five percent of the households having income of $150,000 plus) with a large land area (4,000 square miles), the population threshold for a high-end department store is less than half a million. For such a region, only 469,319 people are needed for one high-end department store. As the land area falls, the threshold rises to 558,144 at 3,500 square miles and 824,621 at 2,000 square miles. On the other hand, as the proportion of high-income households falls, the threshold rises precipitously from 469,319 to 1,496,328 with four percent high-income households, to 2.5 million with three percent, 3.6 million with two percent, and 4.6 million with one percent. The highest threshold in Table 1, 4.9 million people, is for a small (2,000 square miles), low-income (one percent high-income families) area.

WHEN TO ADD MORE HIGH-END DEPARTMENT STORES

Since the estimated coefficients in this particular statistical model cannot be interpreted as the marginal effects of the independent variables, we compute marginal effects as the estimated coefficients times the proportion of regions (64 out of 275) that have at least one high-end retail store (see Greene, 2003). Using those marginal effects (0.000000347 for Population, 0.000061603 for Land Area, and 35.6129 for High-Income Households), we determine what must happen for an area that already has at least one high-end department store to acquire another.

All else the same, if the population in a region grows by 500,000, the model predicts an increase in the number of high-end department stores of 0.1735 (about a sixth of a store). If the population grows by a million, the expectation is a rise in high-end department stores of 0.347 (about a third of a store). If the population in a region thrives economically such that an additional half percent of households have over $150,000 in income, the model predicts an increase in the number of high-end department stores of 0.1781. This effect is of the same magnitude as that from a population rise of a half million and gives economic developers a feeling for the tradeoff between more people and wealthier people in attracting high-end retail. If the percent of high-income households rises by a full percentage point, the model predicts an increase of 0.3561 in the number of high-end department stores. Growth in physical area (though statistically significant) does not have as powerful an effect on number of stores, due to the relatively small estimated coefficient for Land Area in the model. With an increase in area of 500 square miles, all else the same, the model predicts an increase in the number of stores of 0.0308. With the addition of 1,000 square miles, the number of stores is predicted to rise by 0.0616.

SUMMARY AND CONCLUSION

In this article, we have estimated an empirical model to explain the number of high-end retail establishments in a metropolitan area. Since most of the 275 metropolitan areas in our sample had no high-end retail, we selected a tobit censored-regression model as the most appropriate specification. The three explanatory variables had statistically significant estimated coefficients. The model fit the data well as evidenced by the high rate of accurate predictions of number of retail stores.

Although population was the single most important variable predicting the existence of high-end retail, as we would expect from Central Place Theory, other variables such as land area and the proportion of high-income households were also important factors. Indeed, the population threshold for high-end retail can be reduced significantly by increasing the percentage of high-income households in the area. In that sense, high-end department stores can be viewed as rewards for successful economic development in a metropolitan region.

FOOTNOTES

1 Sales and employment data are found on Hoover's On-Line, accessed through the University of Cincinnati on September 9, 2006. Company history is available on individual company websites.

2 The metropolitan statistical areas (MSAs) and consolidated MSAs (CMSAs) are based on the relevant definitions in 2001. The U.S. Census Bureau's MSA definitions underwent a significant revision in 2003. For example, in 2001, the Cincinnati-Hamilton CMSA included 13 counties; according to the new definition, the Cincinnati-Middletown region includes 15 counties: seven in Kentucky, five in Ohio, and three in Indiana.

3 In addition to the stores indicated in Figure 1, there are nine stores in Honolulu, Hawaii, and one store in Anchorage, Alaska.

4 NAICS refers to the North American Industrial Classification System.

5 All of the collected data are available from the authors on request.

6 Store locations are available on individual company websites.

7 One issue we had to address was the form of the relationship (i.e., linear, binomial, logarithmic, etc.) between the number of stores and the population of a region. Plotting these two variables and identifying the best-fitting curve revealed that a linear relationship actually provided the best fit.

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