Examining the Location Decision: The Case of Self-Storage Facilities

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Introduction

This paper is concerned with the location decision for a self-storage business and by implication the determinants of success in the self-storage business. As an industry, self-storage has grown significantly in the last decade, the result of high occupancy levels. There are always possessions that are too precious to lose, but not valuable enough to move. As professionals and laborers move from job to job, or people change locations, a need for storage develops.

There are few relevant literature pieces concerning the self-storage industry. Because self-storage companies behave similarly to retail stores, we will consider the literature on retail store location. Self-storage facilities have typically sprung up in the economy where high income per capita residents concentrate, the suburbs. Wheaton (1977) and Strauss (1998) argue that income increases as you move further from cities because middle and upper class people can afford to live outside the city. The tradeoff then becomes between the benefit of land and the cost of traveling. Wheaton contends that suburban flight allows these people to escape the tax burden cities impose. Middle income Americans then, as a result, enjoy a substantial "fiscal surplus" in the suburbs. Empirical work has been done on this topic regarding Washington D.C. by way of studying federal tax returns. Strauss (1998) claims that resident population and federal tax returns show DC has experienced a consistent decline in residents and taxpayers, and that he sees the economic position of the suburbs growing on an absolute and relative basis.

There is a good deal of literature on firm location, most of which references the early work of Harold Hotelling from 1929. Hotelling argued that agglomerations of firms

are inefficient because they do not minimize consumer transportation costs. He concluded, "our cities become uneconomically large and business districts within them too concentrated"(Hotelling 1929). (Dudey 1990) builds off of Hotellings location model. Dudey analyzes the relationship between the incentives that firms have to cluster and the effect of clustering on welfare. One of his final propositions is that firms may cluster when locating at constant is not efficient. He claims a city planner who specifies commercial districts and land-use controls could correct the market failure by forcing certain firms to agglomerate.

Becker (1997) makes a case for the importance of site selection, especially for companies in the service sector of the economy. Becker examined a case of dental practices and their site selections. He finds that for a quality service experience, site has more of a strategic rather than merely tactical importance. Becker conducted a survey regarding location and satisfaction from 650 dental practices. He found that aesthetic characteristics of the site are correlated significantly both to practice income and practitioner satisfaction. Understandably, Becker's concluding remarks were that firms should often avoid the cheapest site, and focus on aesthetically pleasing sites.

The Self-Storage Association notes that in an industry with such easy entry, the best location could become your competitor. The trade association web site provides a detailed checklist for site selection. On a comparable ratings scale they evaluate visibility, access, traffic counts, site configuration, competition, and demographics. Each item is given a weighted value to determine a total level of efficiency and plausible success. The second part of the site selection involves due diligence. Along with the comparable ratings scale, the due diligence process considers any fatal flaws and cost

considerations that may make the site unfeasible. If a site is not going to be the best financially performing for you, then it probably will not be for a competitor either.

While every town has a gas station and convenience store, what areas have a self-storage business? What are the characteristics of the consumers? This paper, using data collected from the U.S. Census Bureau and data generated for this topic, presents a case to answer these questions. Specifically, this research will provide a description of the relationship between the number of self-storage facilities in an area and its: Population, percent of the population 65 years and older, percent of homeownership, mean household income, and the number of people per square mile. There is a lack of scholarly work pertaining to the self-storage industry, so this empirical study will help to explain the relationships of location, and offer further information on site selection.

Method

The counties of New Jersey and Pennsylvania are the 88 regions considered. The independent variable data collected for this paper is a product of the U.S. Census Bureau for the year 2000. Their website is very user friendly, and it provides a wealth of information. I was only concerned with the five demographic variables listed previously. The independent variables were chosen after some consideration. They are not random. Population was chosen because it explains the demand for self-storage facilities from a broad overview. The percent of the population 65 and over was used to give insight into the age characteristics of the consumers. The percent of owner occupied houses would show if storage was needed more for renters or more permanent residents. Mean income

per household would show whether wealthier individuals value space or possessions. The statistic for people per square mile accounts for land values. Higher densities imply higher values. The number of self-storage facilities per county is the dependent variable. It was compiled using the Yellow Pages online. They provide an address and telephone number of every business, organized by type, for each state. Facilities were assigned to a county based on their zip code. There are approximately 400 self-storage businesses in Pennsylvania and 275 in New Jersey. Of the 67 counties in Pennsylvania, 12 had no listings for self-storage. All 21 counties of New Jersey had a facility, with 2 as the lowest count.

To discover the determinants of self-storage facilities we conducted a multiple regression analysis with the total number of self-storage facilities per county as the dependent variable.

Results

Table 1: Characteristics of the Counties

Variable	Mean	Std Dev	Minimum	Maximum
# of Self Storage Facilities	7.89	7.91	0	38
Population	235,175.05	275,704.59	4,946.00	1,517,550.00
Percent of pop. 65+	15.48	2.77	9.10	22.20
Percent Owner Occupied	73.54	7.70	30.70	84.80
Mean Income Per Household	$ 38,645.92	$ 10,294.00	$25,702.00	$ 74,586.00
People Per Square Mile	851.92	2,023.49	11.60	12,956.00

Table 2: Regression Results

Variable	Parameter Estimate	Standard Error	t value	Pr > I t I	Variance Inflation
Intercept	-6.66965	5.13968	-1.3	0.198	0
population(residual)	0.02603	0.0023	11.31	<.0001	1.33838
pop. 65+	0.35469	0.20706	1.71	0.0905	2.14979
percent owner occupied(residual)	-0.17382	0.08523	-2.04	0.0446	1.13425
income per household	0.19318	0.05973	3.23	0.0018	2.47372
people per square mile	0.00188	0.0002	9.29	<.0001	1.09567

Table 1 reports descriptive statistics. The average number of self-storage facilities
per county is 7.89 but the number varies a great deal across counties. Table 2 shows
regression results. After the initial regression, we found that people per-square mile was
correlated with population and the percent of owner occupied houses. A two-step
estimation process was used to correct for collinearity. Consequently, population and
percent owner occupied are residuals. As a result of these modifications, the variance
inflation was decreased in the second run of the regression. Also, the t value for people
per square mile more than tripled in significance once collinearity was corrected. It
turned out that all five variables are statistically significant, especially population and
people per square mile.

Analysis of the data reveals that as population increases by 1,000, there is an
increased demand for another .03 self-storage facilities. A one percent increase in
residents 65 and over raised the number of self-storage facilities by .35. This variable

had the highest parameter estimate. Apparently, older people are more likely to use self-storage. Percentage of homeownership was the only variable to yield a negative parameter estimate. A one percent increase in owner occupied houses reduces the number of self-storage facilities by .17. This makes sense intuitively because as more people own homes, the less people are renting, moving, and requiring storage. Income per household shows that an increase of .19 facilities would result from a $1,000 increase in that variable. Finally, density had a small but significant positive effect on the number of self-storage facilities. Because space is at a premium in high-density areas, people may seek ways to store their belongings off-site.

Perhaps the most useful data produced by this study is the list of actual versus predicted number of facilities in an area. Determining what areas have predicted numbers greater than their actual numbers would be an effective tool for choosing site location. Table 3 shows the five counties that have a predicted value of five or more than the actual number of facilities. These would be good target locations to build in according to our model. For instance, the model predicts that Essex, NJ should have 22 facilities but it has only 13. Likewise, the model predicts that Delaware, PA should have 15 facilities but it has only 8. Conversely, there are also five counties with an actual number of facilities of five or more than the predicted number. These areas would seem to be saturated, and should be avoided for further self-storage development. Lancaster, PA seems to be a particularly bad location.

Table 3: Actual vs. Predicted Results

County	Actual Number	Predicted Number	
Essex, NJ	15	+	20.1454
Middlesex, NJ	13	+	22.3038
Cumberland, PA	3	+	8.9993
Dauphin, PA	5	+	10.1794
Delaware, PA	8	+	15.2471
Burlington, NJ	23	-	14.1434
Hudson, NJ	18	-	9.343
Monmouth, NJ	29	-	19.7713
Berks, PA	21	-	12.0827
Lancaster, PA	26	-	15.2304

Summary

Researching and planning a potential business involves costs. This includes the opportunity cost of the time, and the time lost to begin to project. The benefit is being well informed, the potential increase in profits, and the chance of being a long-term success. By studying population developments and researching site selection, investors should be able to make strategic and lucrative decisions on where to locate a business.

This study has revealed some of the demographic explanations for the success of the self-storage industry. There is a statistical significance to the number of facilities in an area and the percent of that population aged 65 and over. Population density affects the total number in a positive way, but the cost of land use comes into play. The trade off for having a competitor close by is the consumer population. Consumers, assuming they are well informed and cost efficient, set prices with regard to their travel cost considerations and bargaining skills. For a business like self-storage, location in a region

with higher than average incomes, a high percent of residents 65 and over, a low percent

of owner occupancy, and moderate population densities will be key for success.

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