

Who Benefits Whom in the Neighborhood?

Demographics and Retail Product Geography

Joel Waldfogel
The Wharton School
University of Pennsylvania

Preliminary

May 31, 2006

Because of fixed costs, additional people nearby confer a benefit on each other by helping to make more retail products available. Yet, because product preferences differ across groups of consumers, the appeal of what's available depends on the mix of consumers. If product preferences relate to consumer characteristics such as race, income, age, and ethnicity, then product availability will be stimulated by concentration of like individuals. The sensitivity of product availability to demographic mix of consumers has been documented for metropolitan-area products, such as newspapers, radio, and television, as well as one neighborhood-level product, restaurants. Here I revisit the question for a broader group of local retail establishments. Using the Consumer Expenditure Survey, I document that preferences differ across groups. Then, using the 2000 Census and the 2000 Zipcode Business Patterns, I show that the mix of products available is sensitive to the mix of local preferences. People therefore derive benefit through the product market from agglomerating with persons with similar product preferences, and this may help to explain patterns of residential segregation.

It is well understood that because of fixed costs, retail product provision requires agglomeration of consumers. As a result, places with more people tend to have more retail outlets while places with insufficient demand have none.¹ In this sense additional people nearby confer a benefit on each other by helping to make more products available. Yet, because product preferences differ across groups of consumers, it is not simply the *amount* of nearby demand that determines what's available but the *mix* of consumers, according to their preferences. If product preferences relate to consumer characteristics such as race, income, age, and ethnicity, then product availability will be stimulated by concentration of like individuals. Additional group members nearby benefit each other, while additional persons preferring other things do not.

The sensitivity of available products to demographic mix of consumers has been documented for products whose market area is an entire metropolitan area, such as newspapers, radio, and television. The mechanism may also operate at the neighborhood level; Waldfogel (2005) documents that neighborhoods with large populations in particular groups (black, college-educated, etc.) are more likely to have chain restaurant outlets appealing specifically to those groups. Based on evidence for the restaurant market, this indicates a product market benefit of agglomeration with persons of like preferences. While it is conventional to think of publicly provided goods as the rationale for neighborhood sorting, privately provided goods may provide an additional benefit to agglomeration with like types. The goal of the present exercise is to revisit this question for a much broader group of local establishments.

¹ This is one way to interpret much of the empirical work on firm entry. See Bresnahan and Reiss (1990) and a host of other studies.

The possibility that product markets reward agglomeration of like individuals has possible implications for residential segregation. A large volume of social scientific research documents a long legacy of residential segregation in the US.² Other research shows that residential segregation by race is harmful to blacks.³ Even as formal barriers to integration have declined, segregation has remained puzzlingly strong. Residential segregation by race rose over time in the US until the 1960s and today stands nearly at its peak. Using zip codes as the unit of analysis, the Duncan “dissimilarity index” of black-nonblack dissimilarity for 2000 was 0.62, meaning that 62 percent of blacks would have to move in order for the share of black population to be equal across zip codes. Interestingly, the index is high not only for blacks compared to non-blacks. The index is similarly high for Hispanics vs non-Hispanics (0.60), and Asians vs non-Asians (0.54). Along other dimensions also explored in this paper the index is smaller: college vs non-college educated (0.31), over 65 vs under 65 (0.17), and household income below \$25,000 (0.26).

Notwithstanding the important negative effects of segregation for some groups, agglomeration of like individual benefits them from helping to make the agglomerating groups’ preferred products available nearby. It is a small instrumental leap to suggest that residential segregation persists in part because the agglomeration of like individuals provides them some benefit through product markets. Race is an important motivating example, but the product market motive for local agglomeration is not limited to race. Rather, agglomeration could provide product market benefits to any group with product preferences distinct from the remainder of the population.

² See Cutler, Glaeser, and Vigdor (1999) and Massey and Denton (1988) for two prominent examples.

³ See Cutler and Glaeser (1997).

The paper addresses three empirical questions. First, how do “preferences” differ across groups (race, education, income)?⁴ For this we use the 2004 Consumer Expenditure Survey, which shows how households allocate their expenditures across narrow product categories. Second, using the 2000 Census and the 2000 Zipcode Business Patterns, we ask how the availability of outlets in a category varies with the number of persons, by type, in local areas (5-digit zip codes). Finally, we ask whether the mix of products is sensitive to the mix of local preferences, or whether people derive benefit through the product market from agglomerating with persons of similar preferences.

Section 1 provides a brief theoretical background. Section 2 describes the data used in the study. Section 3 presents results.

I. Theoretical Background

Our underlying question is whether the mix of nearby products affects the mix of available products and consumers’ ensuing satisfaction from retail product markets. The following framework in the spirit of Hotelling (1929) is helpful for fixing ideas. Think of a one-dimensional retail product spectrum, where the dimension represents the relative appeal of the product to one group vs another. For example, if the groups are blacks and non-blacks, the dimension measures the relative appeal of the product to blacks as opposed to non-blacks. There is some large but finite number of possible retail outlets, such as “shoe stores,” “fish markets,” and so on. We have in mind the hundreds of different kinds of retail establishments in the NAICS coding system. Let’s suppose

⁴ Preferences in quotes because what matters to which products are brought forth is not what people want absent price and income constraints but rather what they are able and inclined to purchase.

that we have some way of measuring the extent to which a type of outlet is black-targeted (I propose an approach to this below). Then the possible types of outlets can be arrayed in order along the spectrum.

Firms must choose whether to enter at each of the possible establishment types along the spectrum. Because of fixed costs, the number of outlets that can profitably operate is finite. And, indeed, because of fixed costs, an outlet requires some density of nearby (in product space) consumers to make it viable. Places – corresponding to market areas – differ in their mix of consumers who, in turn, differ by their preferences. Some places are heavily black; others are heavily white.

Consider figure 1. The top panel depicts the distribution of most preferred varieties in a place where the distribution of tastes is skewed toward “black” products; the second panel depicts a place where tastes are skewed white. Suppose the consumers patronize the nearest outlet to their ideal. The market can support more outlets in regions of product space where demand is denser. As a result, the market in the top panel has more black-targeted products, while the market in the bottom panel supports more white-targeted products.

This setup then yields the non-surprising implication that places with more people preferring a particular type of products are more likely to have outlets – or to have more outlets – offering that type of product. As a result, the welfare of consumers – at least from the standpoint of nearby product availability – is higher when they live among others sharing their preferences.

A few important caveats are in order. The forgoing discussion ignores issues of pricing the conventionally assume larger importance in discussion of entry. As the large

literature on entry makes clear, products isolated in product space generally fetch higher prices, allowing them to cover their fixed costs with less nearby consumer density. From the standpoint of product availability, pricing issues attenuate problems of relatively less provision in sparse regions of product space. At the same time, inclusion of prices also suggests notions of welfare reflecting product availability net of prices, rather than availability alone. The only prediction we seek to derive from this setup, however, is that regions of product space with denser demand have more outlets; and it is difficult to imagine this not being true (especially in light of evidence below).

Second, consumers do not literally patronize one sort of outlet. Rather, consumers patronize both clothing and food and auto parts stores. One can think of a spectrum specific to each category of products (e.g. new cars vs used cars).

Third, outlets are not literally mutually exclusive in their product coverage. Grocery stores sell many of the items available at meat markets, fruit and vegetable markets, and fish and seafood stores. Similarly, department stores sell many of the items available at stores specializing in women's apparel.

Notwithstanding these caveats, this framework can fruitfully guide our empirical work, which seeks to answer the following questions:

- 1) do preferences for different kinds of retail outlets differ systematically across groups (race, income, age, etc)?
- 2) is the availability of outlets sensitive to the mix of consumers nearby?
- 3) by extension, do people derive benefit through the product market from dwelling with persons who share their retail product preferences?

II. Data

The basic dataset for the study is a zip code level cross section with information on population and demographic characteristics, along with information on the number of retail outlets, by category. The establishment data exist for 1082 distinct categories under the North American Industry Classification System (NAICS). These data are drawn from the 2000 Census and the 2000 Zipcode Business Patterns. We seek to map these categories to groupings for which we have evidence on how preferences differ by groups.

Separately, we have calculations from the Consumer Expenditure Survey showing how expenditure is distributed across groups of people (for example by race and income) and over categories of goods and services. We examine the following distinctions: race (black/nonblack) Asian (asian/nonasian), Hispanic (Hispanic/non-Hispanic), income (low income/non-low income⁵) education (college educated/not college educated), and age (over 65/not over 65).

Although the Economic Census and CEX data exist for different purposes, they contain many categories that correspond with one another. That is, many of the expenditure categories in the CEX correspond to categories – or groups of categories – of establishments in the NAICS coding system. For example, the expenditure category, “food away from home” maps reasonably to the NAICS categories for full service restaurants (722110), limited service restaurants (722211), cafeterias (722212), snack & nonalcoholic bars (722213), mobile food services (722330), and drinking places (alcoholic beverages) (722410). Similarly, the CEX category for footwear maps to the NAICS category for shoe stores (448210). The CEX provides fairly detailed information

⁵ The low income group in the CEX includes households with income below 2x,000, and the most similar low-income household category in the Census includes households with income below 2x,000.

on the categories of establishments included in each expenditure category at the CES Glossary of terms (at <http://www.bls.gov/ce/csxgloss.htm>, accessed March 20, 2006.) Appendix A presents the mapping we create from this information, in conjunction with the full NAICS list.

In most cases, CEX expenditure categories include multiple types of NAICS establishments. In two cases, CEX categories are narrower than NAICS categories. For example, the CEX separately reports expenditure on beef, pork, poultry, and other meats. The NAICS includes only meat markets (445210). Our matching procedure yields 36 distinct categories.

Table 1 describes the entry (supply) data. The first column shows the mean number of category outlets in a zip code. The second column shows the share of zip codes with at least one outlet in the category. These are our two basic measures of product availability. As the table shows, some of the most commonly available categories are food at home, food away from home, gas stations, and health care (chiefly doctors and dentists' offices). Less commonly available establishments are bakeries, apparel shops for children under 2, fruit and vegetable stores, fish and seafood markets, and tobacco stores. Of course, table 1 indicates the presence of establishments dedicated to the particular category. Many specialized items are available not only at specialized stores (such as bakeries and butcher shops) but also at more general grocery stores (which are included in the food at home category).

Table 2 shows basic demand characteristics. The mean (median) zip code population is 9,697 (3472). The mean (median) percentage black is 7.8 (0.8), and the mean and median percentages with household income below \$25,000 are both 32. The

mean (median) percentage Hispanic is 6.5 (1.6); and the mean (median) percent Asian is 1.5 (0.3). The mean (median) percent college educated is 13.3 (9.4); and the mean (median) percent over 65 is 12.4 (11.9). On average a zipcode is 88 (39) square miles. The mean (median) radius is 4.1 (3.5) miles if they were circular. In addition, as table 2 indicates, there is substantial variation across zip codes in their composition by age, race, etc., suggesting the possibility to separately measure the relationship of establishment availability to different populations.

III. Results

1. Do Preferences Differ across Groups?

It is well known from other contexts that preferences for many products differ sharply by groups. For example, radio station formats attracting two thirds of black listening attract 2-3 percent of non-black listening. Similarly, Spanish-language radio attracts half of US Hispanics but less than a percent of non-Hispanic listeners.⁶ Similarly sharp differences exist for other media products. With the exception of *Monday Night Football*, top-rated shows among whites tend to be bottom-rated among blacks, and *vice versa*.⁷

Demographic differences in product preferences are not limited to media products. In the restaurant market, blacks and non-blacks patronize chain restaurants offering systematically different cuisines. Even after accounting for income as well as zip code of residence, blacks patronize restaurants offering Southern cuisine far more heavily than non-blacks. Educated consumers patronize coffee/bagel restaurants, as well

⁶ See Waldfogel (2003) for evidence on how radio preferences differ by group.

⁷ Waldfogel (2004) provides data on television viewing by race and Hispanic status.

as more expensive chain restaurants, at elevated levels relative to their less educated – and lower-income – counterparts.⁸ While many products remain to be studied, it seems clear that preferences for food and cultural products differ sharply across groups.

The findings that preferences differ sharply across groups are derived from consumption data at the narrow product – brand – level. That is, the data indicate which radio station, or which television program, or which chain restaurant, consumers patronize. Our data for this study are at a far higher level of aggregation, and these data may obscure inter-group differences in preferences. To see this, consider a category such as “food.” Everyone eats food, so virtually everyone allocates a substantial share of expenditure to food. Two persons who share a willingness to eat none of the same particular foods might still allocate similar amounts of money to food. As the product categories grow narrower, their capacity to show differences grow. For example, devout Hindus, Moslems, and Orthodox Jews might spend similar amounts on meat; but their expenditures on beef, lamb, and pork would differ sharply. Here, I trade off precision for reach. I include many categories of expenditure and types of establishments, but my information on spending patterns are at a highly aggregative level.

Beyond this, the question of whether “preferences” differ across groups is more accurately rephrased as, “Do expenditure patterns differ across groups?” I am not interested in underlying preferences – what people want absent the constraints imposed by their means. Rather, I am interested in what people find useful and appealing, given both their preferences and their means. Table 3 presents data from “Table 2100. Race of Reference Person: Average Annual Expenditure and Characteristics, Consumer

⁸ Waldfogel (2006) provides evidence on how chain restaurant patronage varies by race, Hispanic status, and education.

Expenditure Survey, 2004.”⁹ As table 3 shows, the answer is yes, at least to some extent. The first column shows the ratio of black to non-black household expenditure. This is our measure of *relative preference* by group. The remaining columns show analogous relative preference measures for other groups relative to their complements: Asians (vs. non-Asians), over 65, Hispanics, college-educated, and low-income (under \$20,000).

Some of the differences in expenditure patterns – relative preferences – between groups are striking. For example, blacks spend 32 percent less than nonblacks overall, reflecting their lower average income. We would therefore expect the viability of retail outlets to be less sensitive to black population than to white, since black households spend less. Despite black households’ lower overall expenditures, blacks actually spend absolutely more on some products, including footwear (167 percent as much) and fish and seafood (134). Blacks also spend more than non-blacks on two subcategories of meat included separately in the CEX but not listed separately in the table: poultry (124), and pork (118). At the other end of the spectrum, blacks spend substantially less than nonblacks on pets, toys, hobbies, and playground equipment (29), health care (50), alcoholic beverages (34), reading materials (38), and new cars (42).

Other columns reveal similar differences in relative preferences between groups and their complements. For example, Asian households outspend non-Asian households on new cars (132), fish and seafood (232), and on fruits and vegetables (155). Asians spend about a third as much as non-Asians on tobacco products.

The old outspend the young by more than double on drugs and medical supplies (at drug stores). Similarly, the old outspend the young by 73 percent on health care. On the other hand, the old spend much less than the young on clothing and footwear.

⁹ See <http://www.bls.gov/cex/#tables>, accessed March 8, 2006.

Hispanic and non-Hispanic households also spend differently. While Hispanic households spend xx percent less than non-Hispanic households overall, Hispanic households outspend non-Hispanics on clothing for children under 2 (203), fish and seafood (128), footwear (134), fruits and vegetables (131), and meat and poultry (139). By contrast, Hispanic households spend much less than others on tobacco (51), pets, toys, hobbies, and playground equipment (60), and reading materials (38).

College educated households outspend their less educated counterparts more than three to one on fees and admissions and floor coverings, and more than double on furniture, reading materials, and various other household expenditures.

Low-income households (with household income under \$20,000) spend about two thirds less than others overall and outspend higher income household in no category. Still, the low-income households' expenditures are relatively high on tobacco (74).

Even with these data, it appears that “preferences” differ across groups. Each of the two-way comparisons leaves open a large possibility that the difference along the dimension of comparison actually reflects other causes. For example, Some of the racial differences may reflect income rather than race. Whatever their cause, however, it is clear that persons in different groups by race and income tend to allocate their expenditures across categories differently. As a result, different groups benefit from the availability of establishments offering different products for sale.

We can summarize the differences between groups' preferences systematically. One measure is the Euclidean distance between groups' expenditure shares. Define p_i^k as the share of group i 's expenditure on good k . The distance between groups k and j is

then $\sum_{i=1}^N (p_i^k - p_i^j)^2$, which is bounded between 0 and 1. Alternatively, we can calculate

the correlation between groups' expenditure share vectors. Table 4 reports these measures, for groups (such as blacks, Asians, etc) and their complements (non-blacks, non-Asians, etc.)

By both of these measures, the old (over 65) and the young have the most dissimilar preferences, followed by the low household income (under \$25,000) and higher income, then blacks and Hispanics and their respective complements. Asians and non-Asians – and college educated and non-college educated persons – have more similar preferences.

Using expenditure data as an indicator of preferences runs the risk of confusing what's available with what people actually want. People can more easily purchase what is available near them. Hence, their expenditure on items available nearby may increase mechanically with “supply” driving “demand,” rather than the other way around. One response to this concern is independent evidence showing that items with high expenditure shares for particular group are important to the group. The independent evidence might be of an historical or cultural nature for, say food preferences by ethnic group. Or it might relate to other features of group differences (e.g. do older people spend more on health care? If so, it would presumably be driven by heightened medical need rather than, say, proximity to doctors' offices).

Here, we see that older persons outspend younger persons on healthcare. Lower-income groups also spend relatively more on inferior goods (e.g. used cars as opposed to new). And higher-income college educated persons outspend others on luxuries, such as fees and admissions. These patterns that are reflective of prior ideas about who wants

what lend support to the idea that the direction of causality runs from consumer preferences to patterns of product availability, rather than the other way around.

The Size of the Relevant Market

We treat population as a rudimentary measure of demand, and we ask how the number of establishments operating in a category relates to population. The question is, what is the right level of geographic aggregation? Introspection suggests that the overwhelming majority of demand for, say, a typical restaurant in a large area is drawn from persons in that area. Three-digit zip codes contain an average (median) of 323,400 (200,000) persons and average 3200 square miles. If they were circular, their radii would average 27 miles. To the extent that population measures demand, the demand measure in the 3-digit zip code regression is essentially measured without error. Hence, this regression of outlets on population gives an accurate estimate of the number of additional outlets that an additional person (or million persons) attracts. Call the coefficient on population β^3 . Now imagine examining the same relationship – between population and establishments – at finer levels of geographic disaggregation. At some level, the catchment area will be too small to support local supply. At that level, local population will become an erroneous measure of demand. Regressions of establishments on population will therefore yield β coefficients biased toward zero. To determine whether 5-digit zip codes are a reasonable measure of the market area, we compare the coefficients from regressions of 3-digit and 5-digit zip code areas. Table 5 reports β^3 and β^5 as well as the ratio β^5/β^3 . If the 5-digit area is not too small, then the ratio will be close to 1. Inspection of table 1 shows that most of these ratios are close to 1. The two

categories with the lowest estimates of β^5/β^3 are fruits and vegetables and fish and seafood, which – see table 1 – are the least prevalent categories included in the study. We retain these as separate categories for two reasons. First, while lower than other categories' β^5/β^3 estimates, at roughly 0.85, they are still both absolutely rather close to 1. Second, these categories have large group differences in apparent preferences.

That the vast majority of the estimates of β^3 are similar to the estimates of β^5 provide some evidence that 5-digit zip codes, in addition to being conveniently available, are also a reasonable geographic are for analysis.

Demand and Entry

One feature of Table 5 that is difficult to miss is the uniformly positive relationship of number of outlets in the zip code to demand. Similar patterns arise when the presence, as opposed to the number of outlets, serves as the dependent variable. This is, of course, not surprising in light of both common sense and the industrial organization literature on entry.¹⁰ Still, its meaning for us is that places with more people are more likely to have outlets nearby – and outlets in more categories – so that, in general, additional people provide each other a benefit in helping to bring forth more nearby product outlets. But as the evidence of Table 3 indicates, different people make use of different products, so people really only benefit from products they value.

We have two measures of outlet availability, whether the zip code contains an outlet in the category and how many outlets. Both provide a measure of outlet availability; with the number of outlets, larger numbers suggest more outlets nearby.

¹⁰ See Bresnahan & Reiss (1990) or Berry (1992) for early studies. See Seim (200x) for recent work that takes location seriously.

Tables 6-8 revisits the relationship between establishments and demand, dividing population into various groups of two, based on race, age, education, income, or Hispanic status. The first few columns of table 6 divide population into blacks and others (succinctly but inaccurately labeled “whites”). Population is measured in millions, allowing the following interpretation of the first row. An additional million nonblack persons bring forth 86 additional liquor stores, while an additional million blacks bring forth 132 additional liquor stores. In general, as with this first, row, the nonblack coefficients exceed the black coefficients. We expect this, given that whites have larger expenditures than blacks. The last column of the table reports the ratio of the black to white coefficients.

While the white coefficients are in general larger, the ratio is not constant. For example, some of the black coefficients (e.g. fish and seafood) are absolutely larger than white coefficients. Others are substantially lower (e.g. pets, toys, etc).

The latter half of table 6 repeats the exercise for Asians and non-Asians. Notably, the Asian coefficients on food away from home, fruits and vegetables, and fish and seafood far exceed the non-Asian coefficients.

Table 7 examines the relative importance of age and Hispanic status, respectively, on entry into the 36 categories. Here we find that the over 65 coefficients for health care, alcoholic beverages, drugstores, fees and admissions, and food away from home far exceed younger persons’ coefficients.

We also estimated each of the models in Tables 6-8 using the binary dependent variable indicating presence of a category outlet in the zip code. For economy of

exposition they are not reported, but the results from these regressions will be incorporated below.

The regressions in Tables 6-8 are intentionally very parsimonious. The goal of the regressions is to determine what is experienced in zip codes that differ in their mix of, say, blacks and others. Were we to control for the usual host of demographics, we would arguably get closer to determining the “effect” of, say, additional blacks, holding other demographics (income, education, and so on) constant. But then the black coefficient would not answer the question of interest, which is “what additional product outlets are available in a place with additional blacks?” and not “what additional products would be available in a place with more blacks if blacks were identical to whites in their observable characteristics?”

Given our goal, there are some modifications that avoid some mistaken inferences. For example, blacks, Hispanics, and Asians are concentrated in particular regions. To avoid the possibility that the coefficients on these groups are picking up features of the areas where they live, we ran regressions including just MSA zip codes and MSA fixed effects, with nearly identical results.

Is Entry Sensitive to Preferences?

It is clear from the evidence in tables 6-8 that entry patterns vary across zip codes with different mixes of population by age, race, etc. The question of interest to us is whether entry is sensitive to preferences. That is, in places with large agglomerations of blacks, or college educated persons, etc, do the agglomerating groups get access to more of the products they prefer? We examine this by comparing our crude measure of

relative preferences (relative expenditure) to a simple measure of relative entry sensitivity. To be clear, we measure *relative preference* as the ratio of a group's average household expenditure on this category to the average household category expenditure of the group's complement. We measure *relative entry sensitivity* as the ratio of the group's entry coefficient to the entry coefficient for the group's complement. Here we have two possible measures of entry sensitivity, based on numbers of outlets and based on whether an outlet exists. We use the term *relative presence sensitivity*, as opposed to *relative entry sensitivity*, for the latter.

Figures 2-7 show how relative preferences relate to relative entry sensitivity, and figures 8-13 relate relative preferences to relative presence sensitivity. Many of these figures depict an unmistakably positive relationship. Table 9 reports measures of association between relative preferences and relative entry (and presence) sensitivity, for each pair of groups. We report both the correlation and the Spearman rank correlation. Ranks are attractive because the cardinal value of the relative entry sensitivity measure (constructed from the ratio of regression coefficients) is somewhat sensitive to small (and sometimes negative coefficient estimates).

Regardless of the measures used, there are statistically significant relationships between what's available and what's desired for blacks and Hispanics. Across other dimensions the relationships are less clear. Two of four correlation measures are significant for age and college education. None are significant by income.

Conclusion

In a context with highly aggregated expenditure patterns – and therefore one biased against revealing effects – we document a sensitivity of the nearby availability of products to preferences, measured along multiple dimensions. This evidence indicates that agglomeration rewards members of agglomerating groups via the availability of products in the local market. This, in turn, may provide part of the explanation for residential segregation. To be sure, our mechanism of product availability is no more than part of the answer. Schools and other publicly provided amenities certainly loom large. But the evidence in this paper shows that the economics of retail distribution in the presence of substantial fixed costs too may help explain who lives with whom.

Public economists typically think of government-provided goods such as schools and police services as the determinants of residential sorting. Another strand of literature has people choosing neighborhoods on the basis of housing. And some more recent work has individuals choosing neighborhoods based on peers. All of these factors are likely to be important. But goods provided through private markets are important as well.

To the extent that goods and services provided by local governments determine the nature of neighborhoods, individuals can be thought to find communities appropriate to their preferences by finding jurisdictions where the median voter shares their preferences over government-provided goods. The market-provided goods discussed in this paper suggest that in their quest for satisfaction, consumers need to agglomerate with consumers as well as citizens who share their preferences.

References

Bayer, Patrick, Robert McMillan, and Kim Reuben. "An Equilibrium Model of Sorting in an Urban Housing Market." Mimeo. Yale University. Oct. 2002.

Berry, Steven T. "Estimation of a Model of Entry in the Airline Industry." *Econometrica*, vol. 60, no. 4, July 1992, pp. 889-917.

Bresnahan, Timothy F; Reiss, Peter C. "Entry and Competition in Concentrated Markets." *Journal of Political Economy*. Vol. 99 (5). p 977-1009. October 1991.

Bresnahan, Timothy F; Reiss, Peter C. "Entry in Monopoly Markets." *The Review of Economic Studies*. Vol. 57 (4). p 531-53. October 1990.

Cutler, D. and E. Glaeser (1997) "Are Ghettos Good or Bad?" *Quarterly Journal of Economics* 112:827-872.

Cutler, D., E. Glaeser and J. Vigdor (1999) "The Rise and Decline of the American Ghetto." *Journal of Political Economy* 107:455-506.

Duncan, O. and B. Duncan (1955) "A Methodological Analysis of Segregation Indices." *American Sociological Review* 20:210-217.

Epple, Dennis and Holger Sieg. "Estimating Equilibrium Models of Local Jurisdictions." *Journal of Political Economy*, vol. 107, no. 4, August 1999, pp. 645-81.

Hotelling, Harold. "Stability in Competition." *The Economic Journal*, Vol. 39, No. 153. (Mar., 1929), pp. 41-57.

Massey, D. and N. Denton (1988) "The Dimensions of Residential Segregation." *Social Forces* 67(2):281-315.

Mazzeo, Michael. "Product Choice and Oligopoly Market Structure." *RAND Journal of Economics* 33 (Summer 2002):1-22.

Seim, Katja. "An Empirical Model of Firm Entry with Endogenous Product-Type Choices." (forthcoming) *RAND Journal of Economics*.

Tiebout, Charles. "A Pure Theory of Local Expenditures." *The Journal of Political Economy*. V. 64(5) (Oct 1956) pp. 416-424.

Waldfogel, Joel. "Preference Externalities: An Empirical Study of Who Benefits Whom in Differentiated-Product Markets." *RAND Journal of Economics*, vol. 34, no. 3, Autumn 2003, pp. 557-68.

Waldfoegel, Joel. "Who Benefits Whom in Local Television Markets?" Brookings Wharton Papers on Urban Economics, 2004.

Waldfoegel, Joel "The Median Voter and the Median Consumer" NBER Working Paper

Table 1: Establishment Presence by Category

Modified CEX Categories	mean	presence
Alcoholic beverages	0.97	38.42%
Apparel and services	0.70	23.33%
Bakery products	0.18	13.05%
Cars and trucks, new	0.88	30.84%
Cars and trucks, used	0.83	31.94%
Children under 2(apparel)	0.19	10.09%
Drugstores	1.39	46.15%
Fees and admissions	2.24	52.98%
Fish and seafood	0.06	4.96%
Floor coverings	0.54	26.10%
Food at home	3.34	71.54%
Food away from home	15.52	83.15%
Footwear	1.01	24.10%
Fruits and vegetables	0.11	8.02%
Fuel oil and other fuels	0.18	11.83%
Furniture	1.01	32.90%
Gasoline and motor oil	4.06	75.75%
Health care	14.50	61.67%
Household textiles	0.08	6.46%
Maintenance and repairs	7.01	69.18%
Major appliances	0.33	20.08%
Meat and poultry	0.22	15.03%
Men and boys (apparel)	0.36	14.55%
Miscellaneous household equipment	1.26	42.19%
Other apparel products and services	2.32	38.58%
Other entertainment supplies, equipment, and services	1.49	40.01%
Other household expenses	0.40	22.35%
Other vehicles	0.21	14.32%
Personal care products and services	3.18	46.28%
Personal services	2.24	53.93%
Pets, toys, hobbies, and playground equipment	0.88	30.63%
Postage and stationery	0.29	16.82%
Reading	0.46	21.07%
Television, radios, sound equipment	0.93	29.48%
Tobacco products and smoking supplies	0.19	12.81%
Women and girls (apparel)	1.21	27.25%

Table 2: Demand Characteristics of 5-digit Zip Codes

	mean	median	75 th percentile	90 th percentile
Population (000)	9697	3472	13451	28,885
Square miles	88	39	94	193
radius	4.1	3.5	5.5	7.8
<u>Percent:</u>				
black	7.7	0.8	5.9	25.9
Hispanic	6.5	1.6	5.1	16.9
Asian	1.5	0.3	1.0	3.4
Low income HH	32.0	31.7	41.0	49.6
College educ'd	13.3	9.5	15.3	25.8
Over 65	12.4	11.9	14.8	18.1

Table 3: Household Relative Expenditures, by Group and Category

Modified CEX Category	black ¹¹	Asian ¹²	age ¹³	Hisp ¹⁴	education ¹⁵	Income ¹⁶
Alcoholic beverages	0.34	0.71	0.52	0.67	1.98	0.36
Apparel and services	0.97	1.04	0.45	1.00	1.65	0.39
Bakery products	0.74	0.93	0.88	1.03	1.16	0.56
Cars and trucks, new	0.42	1.32	0.57	0.91	1.35	0.18
Cars and trucks, used	0.58	0.86	0.50	1.18	1.09	0.33
Children under 2 (apparel)	0.61	1.04	0.22	2.03	1.38	0.53
Drugstores	0.48	0.71	2.26	0.54	1.21	0.69
Fees and admissions	0.32	1.16	0.63	0.56	3.18	0.20
Fish and seafood	1.27	2.38	0.77	1.28	1.36	0.50
Floor coverings	0.45	1.23	0.81	0.40	3.42	0.15
Food at home	0.80	1.10	0.78	1.18	1.19	0.56
Food away from home	0.59	1.25	0.56	0.82	1.68	0.33
Footwear	1.67	0.95	0.33	1.34	1.41	0.52
Fruits and vegetables	0.77	1.55	0.89	1.31	1.33	0.58
Fuel oil and other fuels	0.40	0.33	1.48	0.58	1.04	0.64
Furniture	0.76	1.23	0.51	0.83	2.00	0.27
Gasoline and motor oil	0.75	1.02	0.55	1.04	1.21	0.42
Health care	0.50	0.82	1.73	0.59	1.38	0.54
Household textiles	0.65	0.61	0.97	0.67	1.75	0.30
Maintenance and repairs	0.63	1.08	0.71	0.87	1.59	0.41
Major appliances	0.50	0.68	0.83	1.00	1.43	0.31
Meat and poultry	0.98	0.94	0.74	1.39	1.01	0.58
Men and boys (apparel)	0.80	1.35	0.45	1.02	1.70	0.32
Miscellaneous household equipment	0.38	0.81	0.58	0.73	2.14	0.26
Other apparel products and services	0.77	0.85	0.43	0.94	2.28	0.35
Other entertainment supplies, equipment, and services	0.13	0.43	0.55	0.43	1.64	0.17
Other household expenses	0.46	0.96	1.11	0.51	2.64	0.31
Other vehicles	0.18	0.23	0.06	0.11	0.91	0.07
Personal care products and services	0.85	0.87	0.77	0.88	1.55	0.41
Personal services	0.78	1.50	0.62	1.12	1.99	0.32
Pets, toys, hobbies, and playground equipment	0.29	0.41	0.48	0.60	1.55	0.33
Postage and stationery	0.60	0.90	0.95	0.58	1.85	0.44
Reading	0.38	0.86	1.15	0.38	2.49	0.39
Television, radios, sound equipment	0.82	1.01	0.65	0.82	1.37	0.45
Tobacco products and smoking supplies	0.67	0.36	0.46	0.51	0.43	0.74
Women and girls (apparel)	0.89	0.97	0.53	0.77	1.56	0.39

¹¹ Black/Non-Black.

¹² Asian/All

¹³ Over 65/Under 65.

¹⁴ Hispanics/non-Hispanic.

¹⁵ College educated/Non College educated.

¹⁶ HH inc < 20,000/ HH inc >=20,000.

Table 4: Preferences and Segregation

Group (complement)	Correlation of expenditures	Euclidean Distance	Duncan dissimilarity index
Black	0.940	0.070	0.617
Hispanic	0.952	0.065	0.595
College educated	0.971	0.048	0.309
Asian	0.974	0.047	0.535
Over 65	0.834	0.130	0.171
Low Income	0.934	0.080	0.256

Table 5: Population and Entry, 5 and 3-Digit Zipcodes

Modified CEX Category	5-digit zip pop	s.e.	3-digit zip pop	s.e.	β^5/β^3
Alcoholic beverages	93.55	0.63	95.74	2.38	0.98
Apparel and services	68.23	0.83	67.75	1.36	1.01
Bakery products	20.99	0.21	20.66	0.47	1.02
Cars and trucks, new	74.91	0.75	56.12	1.28	1.33
Cars and trucks, used	74.64	0.71	56.84	1.49	1.31
Children under 2 (apparel)	21.47	0.30	23.44	0.48	0.92
Drugstores	132.76	0.83	130.63	2.13	1.02
Fees and admissions	188.22	1.08	177.55	2.78	1.06
Fish and seafood	7.28	0.13	8.38	0.37	0.87
Floor coverings	51.57	0.45	46.32	0.80	1.11
Food at home	314.96	1.35	347.88	5.10	0.91
Food away from home	1481.21	7.57	1540.09	21.37	0.96
Footwear	116.36	1.10	109.14	1.69	1.07
Fruits and vegetables	13.31	0.20	15.87	0.67	0.84
Fuel oil and other fuels	9.55	0.25	8.08	1.05	1.18
Furniture	101.40	0.82	96.97	1.32	1.05
Gasoline and motor oil	307.48	1.61	264.22	5.27	1.16
Health care	1565.14	10.75	1606.53	20.79	0.97
Household textiles	8.70	0.13	9.34	0.22	0.93
Maintenance and repairs	676.79	3.36	615.01	6.16	1.10
Major appliances	30.66	0.31	22.18	0.48	1.38
Meat and poultry	24.05	0.27	28.96	0.88	0.83
Men and boys (apparel)	39.50	0.52	44.12	1.06	0.90
Miscellaneous household equipment	111.90	0.74	110.85	1.59	1.01
Other apparel products and services	253.02	2.01	277.08	4.85	0.91
Other entertainment supplies, equipment, and services	130.97	1.11	126.02	2.85	1.04
Other household expenses	40.93	0.36	42.25	0.70	0.97
Other vehicles	17.61	0.24	12.68	0.41	1.39
Personal care products and services	339.92	1.96	347.32	6.06	0.98
Personal services	213.44	0.98	203.51	2.80	1.05
Pets, toys, hobbies, and playground equipment	92.67	0.67	88.06	1.53	1.05
Postage and stationery	30.87	0.30	30.27	0.54	1.02
Reading	47.03	0.49	47.47	1.45	0.99
Television, radios, sound equipment	104.75	0.74	99.84	1.35	1.05
Tobacco products and smoking supplies	19.17	0.23	18.82	0.53	1.02
Women and girls (apparel)	127.72	1.38	138.27	2.73	0.92

Table 6: Entry and Group Populations: Black-Non-black and Asian-non-Asian

Modified CEX Categories	black	se	Non-black	se	Asian	se	non-Asian	se
Alcoholic beverages	132.22	2.11	86.43	0.72	46.71	5.91	96.44	0.72
Apparel and services	21.09	2.81	76.91	0.97	80.97	7.88	67.44	0.96
Bakery products	9.71	0.72	23.07	0.25	55.04	2.01	18.89	0.25
Cars and trucks, new	26.44	2.52	83.84	0.86	-36.98	7.03	81.81	0.86
Cars and trucks, used	64.83	2.42	76.45	0.83	-142.7	6.62	88.03	0.81
Children under 2	8.01	1.02	23.95	0.35	34.04	2.86	20.7	0.35
Drugstores	137.27	2.81	131.93	0.96	95.56	7.83	135.05	0.96
Fees and admissions	10.66	3.51	220.92	1.21	41.75	10.22	197.25	1.25
Fish and seafood	17.52	0.45	5.39	0.15	29.09	1.26	5.93	0.15
Floor coverings	12.43	1.5	58.77	0.52	5.06	4.23	54.43	0.52
Food at home	455.5	4.52	289.08	1.55	396.91	12.82	309.91	1.57
Food away from home	633.28	25.17	1637.35	8.64	2522.95	71.41	1417.03	8.72
Footwear	85.95	3.75	121.96	1.29	97.1	10.46	117.55	1.28
Fruits and vegetables	13.08	0.67	13.35	0.23	51.1	1.85	10.98	0.23
Fuel oil and other fuels	3.17	0.86	10.73	0.29	-19.02	2.39	11.31	0.29
Furniture	61.02	2.78	108.83	0.95	90.68	7.79	102.06	0.95
Gasoline and motor oil	256.12	5.47	316.94	1.88	-307.06	14.83	345.34	1.81
Health care	464.98	35.87	1767.71	12.31	2385.61	101.67	1514.59	12.42
Household textiles	-0.56	0.45	10.41	0.16	13.02	1.27	8.43	0.16
Maintenance and repairs	466.26	11.35	715.56	3.89	91.15	31.66	712.87	3.87
Major appliances	4.18	1.04	35.54	0.36	-12.44	2.93	33.32	0.36
Meat and poultry	30.22	0.92	22.92	0.31	65.34	2.55	21.51	0.31
Men and boys	35.33	1.75	40.27	0.6	65.03	4.89	37.93	0.6
Miscellaneous household equipment	12.42	2.45	130.21	0.84	134.35	7.05	110.51	0.86
Other apparel products and services	154.09	6.81	271.24	2.34	467.08	19.03	239.83	2.32
Other entertainment supplies, equipment, and services	-9.97	3.67	156.93	1.26	53.72	10.51	135.73	1.28
Other household expenses	23.65	1.22	44.11	0.42	21.45	3.42	42.13	0.42
Other vehicles	3.23	0.81	20.26	0.28	-23.23	2.26	20.13	0.28
Personal care products and services	81.03	6.48	387.59	2.22	493.6	18.58	330.45	2.27
Personal services	295.86	3.28	198.26	1.13	76.05	9.22	221.91	1.13
Pets, toys, hobbies, and playground equipment	-7.79	2.18	111.17	0.75	67.19	6.33	94.24	0.77
Postage and stationery	5.59	1	35.53	0.34	42.61	2.81	30.15	0.34
Reading	16.56	1.67	52.64	0.57	89.97	4.67	44.39	0.57
Television, radios, sound equipment	51.06	2.49	114.64	0.85	153.2	7	101.77	0.86
Tobacco products and smoking supplies	1.39	0.76	22.44	0.26	8.91	2.14	19.8	0.26
Women and girls	82.01	4.69	136.14	1.61	165.61	13.09	125.39	1.6

Table 7: Entry and Group Populations: Age and Hispanic Status

Modified CEX Categories	over 65	se	under 65	se	Hisp	se	non-Hisp	se
Alcoholic beverages	262.22	10.42	75.38	1.28	83.15	1.91	96.32	0.79
Apparel and services	345.22	13.84	38.45	1.7	43.88	2.54	74.7	1.05
Bakery products	93.21	3.55	13.21	0.44	19.21	0.65	21.46	0.27
Cars and trucks, new	432.67	12.31	36.49	1.51	10.23	2.24	92.1	0.93
Cars and trucks, used	284.79	11.85	52.05	1.46	62.4	2.17	77.89	0.9
Children under 2	105.28	5.03	12.44	0.62	10.61	0.92	24.36	0.38
Drugstores	738.22	13.38	67.63	1.64	81.81	2.51	146.3	1.03
Fees and admissions	931.55	17.6	108.27	2.16	-3.17	3.09	239.08	1.27
Fish and seafood	34.06	2.24	4.39	0.28	7.71	0.41	7.16	0.17
Floor coverings	263.41	7.39	28.81	0.91	11.95	1.35	62.09	0.56
Food at home	776.21	22.51	265.42	2.77	349.57	4.13	305.76	1.71
Food away from home	5559.91	124.42	1042.8	15.3	874.92	22.81	1642.33	9.41
Footwear	547.88	18.32	69.99	2.25	65.2	3.36	129.96	1.39
Fruits and vegetables	75.8	3.28	6.59	0.4	16.3	0.6	12.52	0.25
Fuel oil and other fuels	91.76	4.21	0.69	0.52	-4.66	0.77	13.33	0.32
Furniture	475.94	13.59	61.16	1.67	55.09	2.5	113.7	1.03
Gasoline and motor oil	1232.57	26.43	207.95	3.25	135.58	4.81	353.16	1.98
Health care	10527.27	172.08	600.9	21.16	633.39	32.32	1812.75	13.34
Household textiles	52.33	2.23	4	0.27	4.25	0.41	9.88	0.17
Maintenance and repairs	1763.28	55.94	560.02	6.88	625.1	10.27	690.53	4.24
Major appliances	203.13	5.1	12.16	0.63	6.23	0.94	37.15	0.39
Meat and poultry	74.03	4.52	18.68	0.56	35.13	0.82	21.11	0.34
Men and boys	190.85	8.61	23.21	1.06	25.42	1.58	43.24	0.65
Miscellaneous household equipment	583.24	12.15	61.23	1.49	18.31	2.2	136.77	0.91
Other apparel products and services	1212.91	33.25	149.77	4.09	120.42	6.1	288.26	2.52
Other entertainment supplies, equipment, and services	752.55	18.24	64.15	2.24	9.62	3.31	163.22	1.37
Other household expenses	152.88	6.02	28.9	0.74	31.94	1.1	43.31	0.46
Other vehicles	79.69	4.01	10.94	0.49	6.41	0.73	20.59	0.3
Personal care products and services	2093.64	31.22	151.26	3.84	85.34	5.79	407.58	2.39
Personal services	294.54	16.37	204.71	2.01	71.02	2.85	251.29	1.18

Pets, toys, hobbies, and playground equipment	386.34	11.06	61.08	1.36	11.75	1.98	114.18	0.82
Postage and stationery	146.39	4.92	18.46	0.61	10.54	0.9	36.28	0.37
Reading	211.46	8.22	29.34	1.01	6.31	1.49	57.85	0.61
Television, radios, sound equipment	396.8	12.27	73.38	1.51	59.32	2.24	116.82	0.93
Tobacco products and smoking supplies	83.66	3.76	12.24	0.46	7.5	0.69	22.27	0.28
Women and girls	812.86	22.8	54.03	2.8	63.88	4.21	144.69	1.74

Table 8: Entry and Group Populations: Education and Income

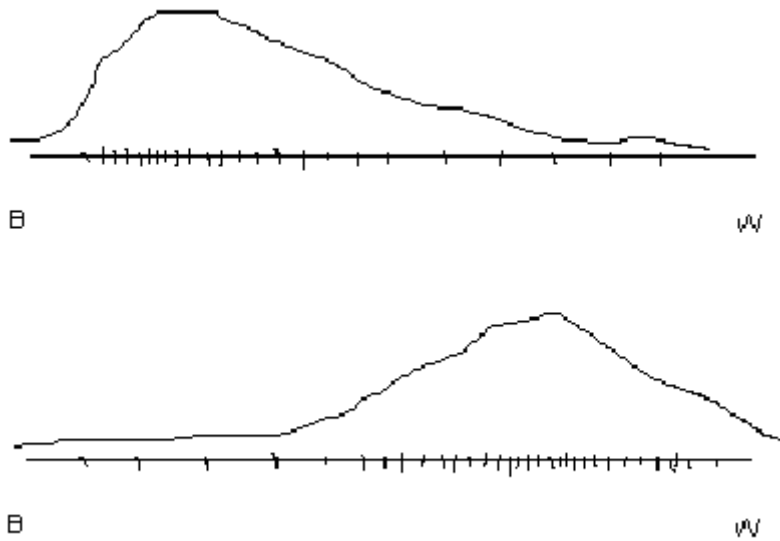
Modified CEX Categories	College	se	non- College	se	Low income	se	Non-low income	se
Alcoholic beverages	127.29	4.03	87.01	0.99	412.5	7.99	197.23	3.44
Apparel and services	228.47	5.29	37.17	1.3	201.73	10.67	195.43	4.6
Bakery products	32.62	1.38	18.73	0.34	74.86	2.77	50.87	1.19
Cars and trucks, new	96.57	4.81	70.71	1.19	226.25	9.6	203.71	4.14
Cars and trucks, used	-99.97	4.47	108.48	1.1	589.58	8.96	54.37	3.86
Children under 2	107.95	1.88	4.71	0.46	-9.24	3.87	88.95	1.67
Drugstores	202.29	5.32	119.28	1.31	695.01	10.22	247.95	4.41
Fees and admissions	658.55	6.4	97.05	1.58	5.3	12.74	747.78	5.49
Fish and seafood	7.93	0.87	7.15	0.21	58.53	1.74	4.4	0.75
Floor coverings	117.78	2.86	38.73	0.71	91.92	5.69	167.59	2.45
Food at home	221.69	8.72	333.03	2.15	1935.33	16.28	437.7	7.02
Food away from home	4054.65	46.37	982.39	11.43	4287.53	90.58	4216.97	39.05
Footwear	289.66	7.05	82.77	1.74	321.31	14.12	333.89	6.09
Fruits and vegetables	29.67	1.27	10.14	0.31	70.53	2.55	23.77	1.1
Fuel oil and other fuels	8.57	1.63	9.74	0.4	25.72	3.3	26.85	1.42
Furniture	251.38	5.23	72.33	1.29	321.78	10.41	275.76	4.49
Gasoline and motor oil	109.32	10.34	345.89	2.55	1481.49	20.15	602.64	8.68
Health care	6582.29	62.58	592.64	15.42	1963.24	131.27	5535.26	56.59
Household textiles	35.99	0.85	3.41	0.21	-7.32	1.72	37.48	0.74
Maintenance and repairs	45.94	21.37	799.07	5.27	2965.97	43.47	1384.6	18.74
Major appliances	38.15	2	29.21	0.49	127.43	3.98	71.28	1.71
Meat and poultry	28.1	1.74	23.27	0.43	137.63	3.51	36.02	1.51
Men and boys	137.25	3.28	20.55	0.81	124.99	6.64	110.09	2.86
Miscellaneous household equipment	391.4	4.51	57.72	1.11	128.9	9.1	397.43	3.92
Other apparel products and services	992.58	12.22	109.67	3.01	334.36	25.1	884.83	10.82
Other entertainment supplies, equipment, and services	484.5	6.85	62.45	1.69	76.48	13.78	500.36	5.94
Other household expenses	63.84	2.33	36.48	0.57	111.3	4.67	113.89	2.01
Other vehicles	2.82	1.55	20.48	0.38	79.43	3.11	37.34	1.34
Personal care products and services	1348.47	11.16	144.43	2.75	-26.18	22.86	1371.78	9.85

Personal services	404.98	6.2	176.31	1.53	517.47	12.51	608.86	5.39
Pets, toys, hobbies, and playground equipment	358.57	4.01	41.13	0.99	-148.44	8	423.92	3.45
Postage and stationery	113.97	1.85	14.76	0.46	32.18	3.75	111.2	1.62
Reading	224.67	3.01	12.6	0.74	124.78	6.22	146.34	2.68
Television, radios, sound equipment	272.03	4.67	72.33	1.15	269.14	9.29	308.93	4
Tobacco products and smoking supplies	44.2	1.45	14.32	0.36	41.54	2.9	60.25	1.25
Women and girls	517.42	8.61	52.18	2.12	293.36	17.58	403.87	7.58

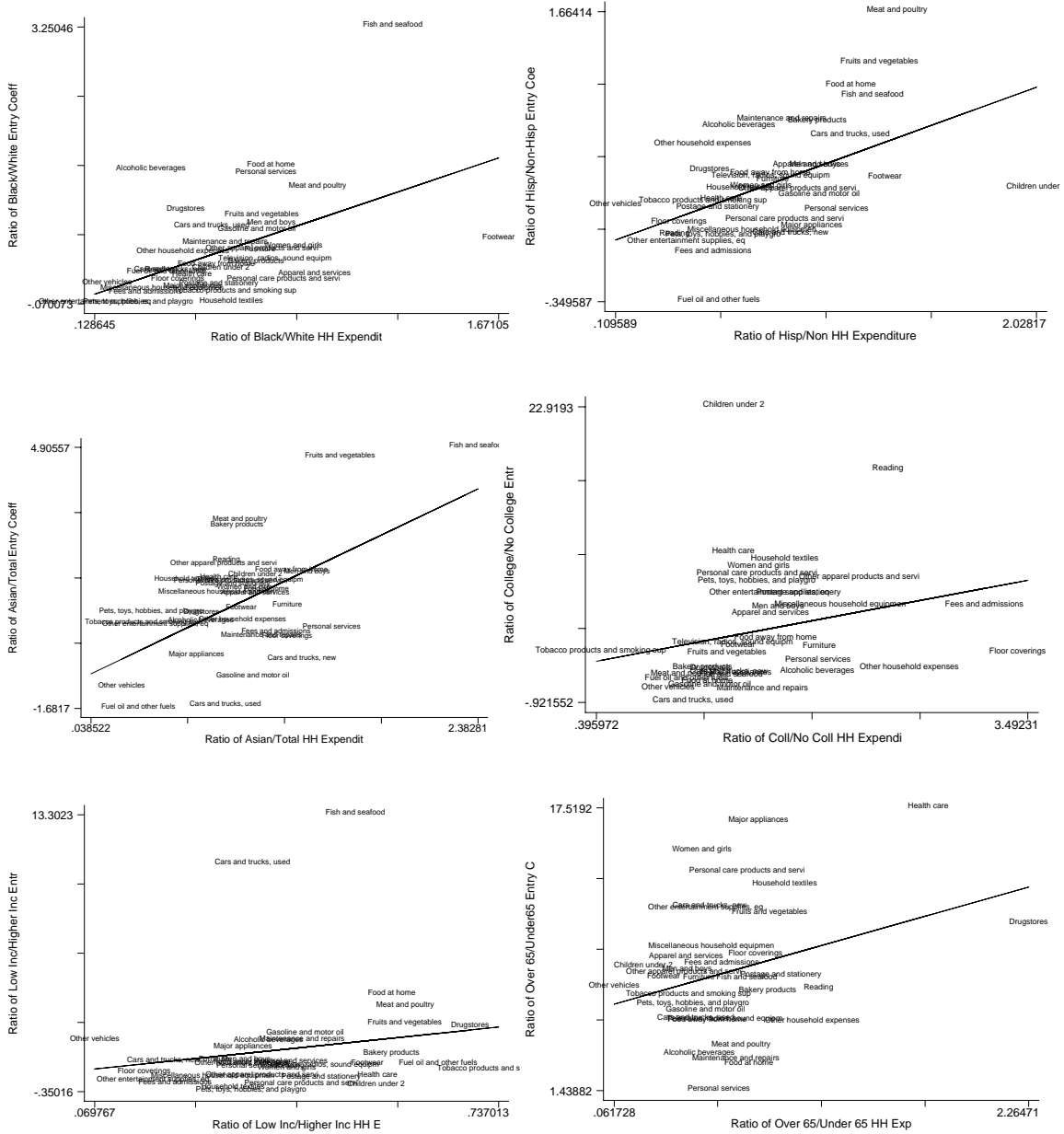
Table 9: Correlation of Relative Preferences and Relative Entry/Presence Sensitivity

	Entry	Entry	Entry	Entry	Presence	Presence	Presence	Presence
	Correlation	p-val	Spearman Rank correlation	p-val	Correlation	p-val	Spearman Rank correlation	p-val
Black – nonblack	0.49	0.0022	0.53	0.0004	0.56	0.0004	0.59	0.0002
Hispanic-non-Hispanic	0.51	0.0017	0.54	0.0006	0.51	0.0016	0.51	0.001
Asian-non-Asian	0.55	0.0005	0.27	0.114	0.42	0.010	0.08	0.083
Over 65- under 65	0.36	0.03	0.22	0.219	0.32	0.059	0.19	0.269
College – non-college	0.25	0.14	0.51	0.0015	0.17	0.330	0.52	0.001
Low income vs higher	0.17	0.31	0.28	0.101	0.16	0.363	0.22	0.192

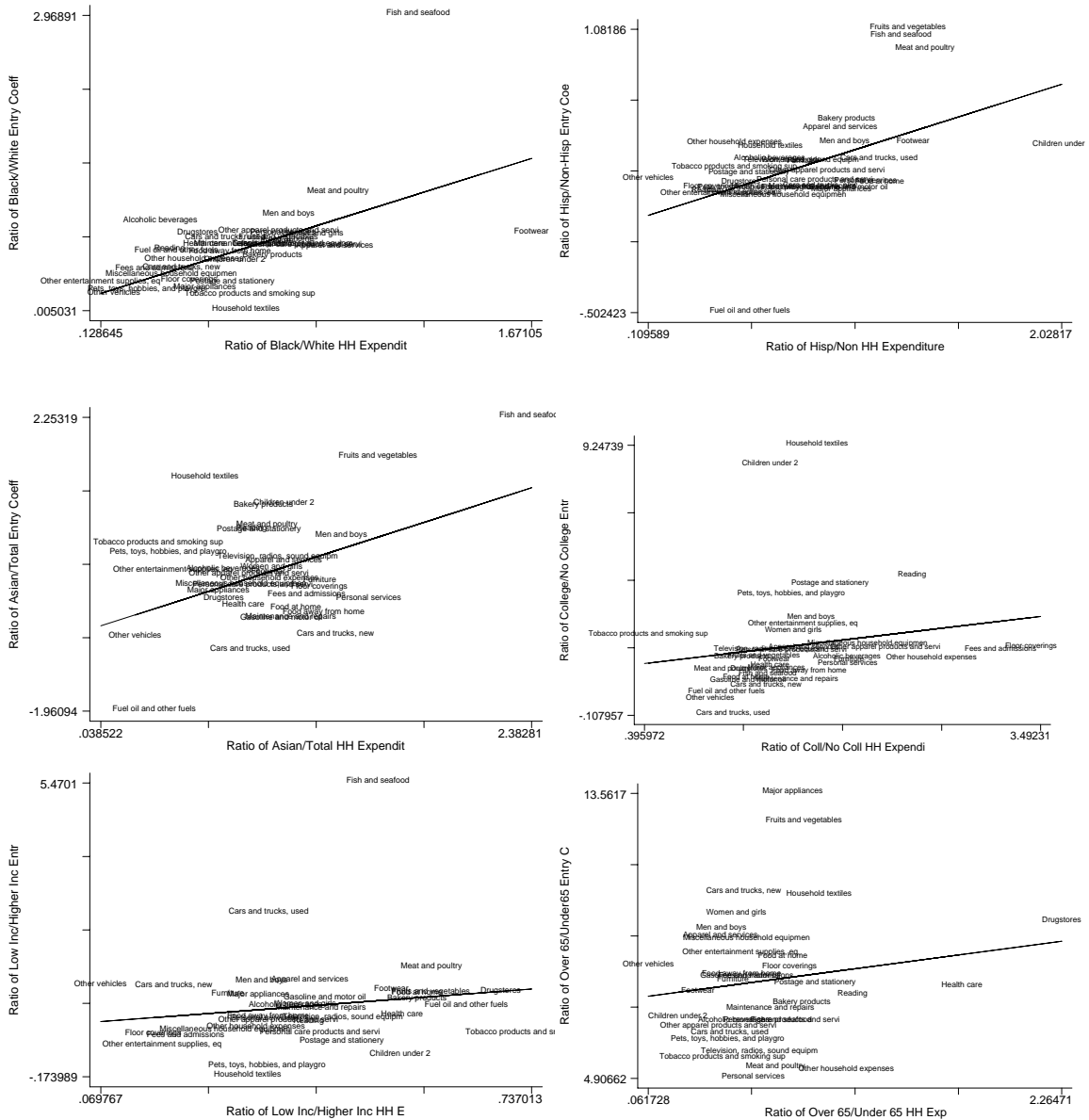
Figure 1: Consumer Density and Retail Outlet Availability



Figures 2-7: Relative Entry vs Relative Preference



Figures 8-13: Relative Presence vs Relative Preference



Appendix A: CEX-NAICS Mapping

NAICS	NAICS Category Name	CEX Category
441110	New car dealers	Cars and trucks, new..
441120	Used car dealers	Cars and trucks, used.
441210	Recreational vehicle dealers	Other entertainment supplies, equipment, and services..
441221	Motorcycle dealers	Other vehicles...
441222	Boat dealers	Other entertainment supplies, equipment, and services..
441229	All other motor vehicle dealers	Other vehicles...
441310	Automotive parts, accessories & tire stores	Maintenance and repairs....
441320	Tire dealers	Maintenance and repairs....
442110	Furniture stores	Furniture...
442210	Floor covering stores	Floor coverings..
442291	Window treatment stores	Household textiles....
443111	Household appliance stores	Major appliances.
443112	Radio, television & other electronics stores	Television, radios, sound equipment...
443120	Computer & software stores	Miscellaneous household equipment....
443130	Camera & photographic supplies stores	Other entertainment supplies, equipment, and services..
445110	Grocery (except convenience) stores	Food at home.
445120	Convenience stores	Food at home.
445210	Meat markets	Beef..
445210	Meat markets	Other meats
445210	Meat markets	Pork..
445210	Meat markets	Poultry....
445220	Fish & seafood markets	Fish and seafood
445230	Fruit & vegetable markets	Fruits and vegetables.
445291	Baked goods stores	Bakery products.
445310	Beer, wine & liquor stores	Alcoholic beverages
446110	Pharmacies & drug stores	Drugs...
446110	Pharmacies & drug stores	Medical supplies..
446120	Cosmetics, beauty supplies & perfume stores	Personal care products and services....
447110	Gasoline stations with convenience stores	Gasoline and motor oil.
447190	Other gasoline stations	Gasoline and motor oil.
448110	Men's clothing stores	Men and boys.
448120	Women's clothing stores	Women and girls...
448130	Children's & infants' clothing stores	Children under 2..
448140	Family clothing stores	Apparel and services....
448190	Other clothing stores	Other apparel products and services...
448210	Shoe stores	Footwear
448310	Jewelry stores	Other apparel products and services...
451110	Sporting goods stores	Other entertainment supplies, equipment, and services..
451120	Hobby, toy & game stores	Pets, toys, hobbies, and playground equipment...
451211	Book stores	Reading..
451212	News dealers & newsstands	Reading..
451220	Prerecorded tape, CD & record stores	Television, radios, sound equipment...
453110	Florists	Miscellaneous household equipment....
453210	Office supplies & stationery stores	Postage and stationery

453910	Pet & pet supplies stores	Pets, toys, hobbies, and playground equipment...
453991	Tobacco stores	Tobacco products and smoking supplies..
454311	Heating oil dealers	Fuel oil and other fuels...
512131	Motion picture theaters (except drive-ins)	Fees and admissions....
512132	Drive-in motion picture theaters	Fees and admissions....
532230	Video tape & disc rental	Fees and admissions....
621111	Offices of physicians (exc mental health)	Health care...
621112	Offices of physicians, mental health	Health care...
621210	Offices of dentists	Health care...
621310	Offices of chiropractors	Health care...
621320	Offices of optometrists	Health care...
621330	Offices of other mental health practitioners	Health care...
621340	Offices of PT, OT, speech therapy & audiology	Health care...
621391	Offices of podiatrists	Health care...
621399	Offices of all other misc health practitioners	Health care...
621410	Family planning centers	Health care...
621420	Outpatient mental health, substance abuse ctrs	Health care...
621491	HMO medical centers	Health care...
621492	Kidney dialysis centers	Health care...
621493	Freestanding ambulatory surgery, emergency ctr	Health care...
621498	All other outpatient care centers	Health care...
624410	Child day care services	Personal services
713110	Amusement & theme parks	Fees and admissions....
713910	Golf courses & country clubs	Fees and admissions....
713920	Skiing facilities	Fees and admissions....
713930	Marinas	Other entertainment supplies, equipment, and services..
713940	Fitness & recreational sports centers	Fees and admissions....
713950	Bowling centers	Fees and admissions....
722110	Full-service restaurants	Food away from home....
722211	Limited-service restaurants	Food away from home....
722212	Cafeterias	Food away from home....
722213	Snack & nonalcoholic beverage bars	Food away from home....
722330	Mobile food services	Food away from home....
722410	Drinking places (alcoholic beverages)	Food away from home....
811111	General automotive repair	Maintenance and repairs....
811112	Automotive exhaust system repair	Maintenance and repairs....
811113	Automotive transmission repair	Maintenance and repairs....
811118	Other automotive mechanical & electrical R&M	Maintenance and repairs....
811121	Automotive body, paint & interior R&M	Maintenance and repairs....
811122	Automotive glass replacement shops	Maintenance and repairs....
811191	Automotive oil change & lubrication shops	Maintenance and repairs....
811412	Appliance repair & maintenance	Other household expenses...
811420	Reupholstery & furniture repair	Other household expenses...
812111	Barber shops	Personal care products and services....

812112	Beauty salons	Personal care products and services....
812113	Nail salons	Personal care products and services....
812320	Drycleaning & laundry services (exc coin-op)	Other apparel products and services...
812910	Pet care (except veterinary) services	Pets, toys, hobbies, and playground equipment...
812921	Photofinishing laboratories (except one-hour)	Other entertainment supplies, equipment, and services..
812922	One-hour photofinishing	Other entertainment supplies, equipment, and services..