

Differentiated to Death?

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1. Introduction

There is considerable literature in industrial organization examining the effect of geographic differentiation among firms on market power. For products or services for which geographic location is the sole differentiator among firms, markups would be expected to decline in market density. If, however, firms differ along other, non-spatial dimensions, for example by offering products and services that cater to the tastes of particular religious, racial and ethnic groups, then markups may not decline as rapidly in market density. Greater non-spatial differentiation of firms may also increase their number, since for a given level of fixed costs and for a given market size, more firms should survive in equilibrium if differentiation limits competition.

In this paper, we examine the extent of geographic and product differentiation in the market for funeral services. We measure the role of differentiation in limiting competition among funeral homes. Funeral markets are an ideal empirical setting for examining spatial and non-spatial differentiation. First, there are substantial fixed costs of entering funeral markets because of normal investment requirements, barriers to recruiting new customers, and substantial state licensing requirements. The number of funeral homes that will “fit” in a market of a given size is limited by these entry costs. Second, there is considerable perceived differentiation among funeral homes. Blacks, whites, Hispanics and Jews have very different preferences concerning the care and disposition of their dead. For example, 55.2% of whites who died in Florida in 2006 were cremated, compared to only 21.2% of blacks. In some markets, funeral homes provide services specialized to the ethnicity and traditions of their clientele. Families may also return to funeral homes that have served them and their community in the past because of time pressures to make decisions quickly and because of the high costs of searching for alternative providers during an emotionally stressful time.

Funeral markets are a classic example of how “preference externalities” as defined by Waldfogel (2003) may be shaping the characteristics of the products and services offered in a market. In markets in which establishing an enterprise requires a fixed investment (as it surely does for funeral homes), a critical mass of consumers that share similar preferences is required to elicit the entry of a firm dedicated to serving those preferences. For example, Waldfogel shows that Spanish language radio stations appear in market areas with a significant number of Hispanic consumers. Where Hispanic populations are just below the threshold to elicit the entry of Spanish radio stations, other radio stations may orient their product to better serve Hispanic listeners, for example, by playing more songs by Hispanic artists or by having a weekly Spanish-language show. Where there are few Hispanics, Waldfogel shows that Hispanics

spend less time listening to the radio, suggesting that local radio stations are not orienting their programming to serve those groups' tastes. He shows similar results for blacks.

Using firm-specific data on funeral homes in Florida, we examine the threshold number of deaths of members of different ethnic, racial, or religious groups necessary to elicit the entry of firms that cater to their tastes and traditions in funeral services. We find a remarkably tight correlation between the number of deaths of blacks in a county and the number of bodies handled by funeral homes that identify themselves as black-serving. For Hispanic customers, we categorize funeral homes into whether they are primarily Hispanic (have a name like Funeraria Catolica or answer the telephone in Spanish) or whether they have a "Hispanic department" (can transfer the caller to a Spanish speaking receptionist who can use the specialized vocabulary of the funeral industry). We show that, analogously to radio stations, counties with very few Hispanics are unlikely to provide any Spanish language-related services, counties with somewhat more Hispanics have Spanish language services, and counties with many Hispanics have funeral homes that cater nearly exclusively to a Spanish-speaking clientele.

We also estimate the demand for the services of funeral homes, considering both the funeral homes' distance from the deceased and the extent to which the religious, racial and ethnic specializations of funeral homes affect the substitutability between them. Estimating the degree of substitutability and, hence, competition between funeral homes is important for several reasons. First, it speaks to the issue of preference externalities. Second, it may affect the price of funerals, which are very costly for many families. In 2002, Americans spent, on average, \$4,828 per death at funeral homes, which is more than a tenth of median household income.

The extent of competition between ethnically differentiated funeral homes has important policy implications. In April of 2006, the largest funeral home chain in the United States, Service Corporation International, announced that it planned to acquire the second largest chain, Alderwoods. Seven months later, the FTC and SCI agreed to a consent decree that required SCI to sell funeral homes in 29 markets where the FTC alleged that the merger would have been anticompetitive. In its analysis of the proposed merger, the FTC argues that funeral markets are sometimes segmented into submarkets that cater to specific populations of "customs-conscious" consumers. As a result, the FTC sometimes chose to define the relevant product market as only including funeral homes that catered to a specific group, a decision that was made on a "market-by-market basis."

For example, the FTC argues that the merger would have created a "virtual monopoly" in the market for Jewish funerals in Broward County, Florida, because SCI and Alderwoods owned all of the funeral homes that were recognized as incorporating Jewish "customs and rituals."

As a result, SCI agreed to sell 5 Jewish funeral homes in Broward County. In other cases, the FTC was more oblique, talking about funeral homes that “serve certain demographic segments of the population,” such as those served by two funeral homes in Meridian, Mississippi. There are seven funeral homes in Meridian, five of which identify themselves as black funeral homes and two of which were owned by SCI and Alderwoods. According to the FTC, the merger would have created “a virtual monopoly” in Meridian, presumably because white families strongly preferred the services of these two funeral homes to those of the five funeral homes that identified themselves as black-serving.

Our paper incorporates the possibility of “preference externalities” into a demand system for differentiated products (Berry (1994) Berry Levinsohn, and Pakes (1995)). We estimate the model using data on funeral markets in Florida, an ethnically diverse state in which the sizes of ethnic, racial and religious groups vary dramatically across its funeral markets. Following Davis (2006), we estimate a model with spatial differentiation and differentiation along other dimensions. In our demand estimates, we estimate the cross-price elasticity of demand between specialized funeral homes and show that cross-price elasticities across ethnically diverse funeral homes are quite low; consumers do not view ethnically disparate funeral homes as close substitutes. However, in market areas where those populations are less well-represented, non-specialized funeral homes may provide services to cater to those groups’ tastes. We show that funeral homes in smaller market areas are perceived as closer substitutes by all groups and document the relationship between market density and markups. Our counterfactuals show that markups do not fall as much in market density as they would if funeral homes did not differentiate along ethnic, racial and religious lines.

There is very little existing literature on funeral markets. Harrington and Krynski (2002) show that states with stricter entry regulations have lower cremation rates and therefore higher spending per funeral. Chevalier and Scott Morton (2008) show that, when a funeral home faces price competition in caskets, it charges lower markups on caskets and higher markups on services. A recent paper by Parcel (2008) examines vertical relationships between funeral homes and crematoria in Minnesota. She shows that funeral homes pay higher prices rather than contract with a crematorium that is owned by a competing funeral home.

2. Regulatory Environment

Florida requires funeral directors to be licensed and prohibits anyone other than licensed funeral directors from arranging and supervising funerals. To enter the market, funeral directors must have an associate degree, must have completed a prescribed set of mortuary courses, must have passed a state

exam, and must have served a one-year apprenticeship. Florida also licenses funeral establishments, which are simply defined as being where funeral directors do their jobs. Unlike most other states, Florida does not require funeral homes to have embalming preparation rooms; funeral homes are allowed to purchase these services from firms specializing in embalming. Similarly, most funeral homes purchase cremation services from independent crematories, although an increasing number own their own cremation facilities. Florida is also one of a handful of states that offer separate licenses for workers and firms that specialize in selling direct cremations, ones that do not involve any sort of formal ceremony. To enter the Florida market, “direct disposers” need only pass two courses—one on mortuary law and another on communicable diseases—and a written examination. Finally, Florida’s funeral homes must also obey the federal Funeral Rule, for example by providing à la carte price lists to consumers.

Florida’s funeral regulations have changed very little over the last 20 years, with almost all of the changes being additional requirements for direct disposers and direct disposition firms. For example, Florida now prohibits funeral homes and direct disposition firms from operating at the same address and has recently added continuing education requirements for direct disposers.

The entry barriers created by Florida’s funeral regulations are both less substantial and less effective than those of most other states for three reasons. First, entry into the market for direct cremations is nearly free of regulatory barriers in Florida, creating a more competitive market for direct cremations than in most other states. The greater competition induces the Internet retailer Funeral Depot to charge, on average, \$720 for direct cremations in Florida compared to \$1005 elsewhere. Second, entry into the market for other funeral services is less costly than in most other states because Florida does not require funeral homes to have embalming preparation rooms and funeral directors to be embalmers (Harrington, 2007). Finally, the entry barriers are less effective in Florida because of the rapidly growing number of deaths there. Indeed, the number of deaths in Florida over the 15 years from 1989 to 2004 increased by 27.3 percent compared to 10.5 percent in the rest of the country.

The lower entry barriers and faster growth of deaths has created a much more diverse set of funeral firms in Florida than other states. In 2002, funeral firms in Florida handled 155 deaths, on average, compared to only 85 deaths in the rest of the nation, a difference that reflects the fact that there are some very large funeral homes in Florida. On the other hand, 39.3 percent of funeral firms in Florida have no paid employees, which is only slightly smaller than the 41.7 percent in the rest of the country. Hence, Florida funeral homes run the gambit from very small family-owned funeral homes to very large ones, many of which are owned by national corporations.

3. Data

We have compiled a very detailed data set on Florida's funeral markets. Our data include firm-specific information on the number of bodies handled by every funeral home in the state, the disposition of the bodies (e.g., cremation and burial), the prices they quote, and their characteristics, including whether they cater to a particular ethnic, religious or racial group. We also have information on funeral consumers, measured as the number of deaths by race and ethnicity in over three thousand Census tracts in Florida, along with the demographic characteristics of those tracts. The location of funeral homes and consumers were geocoded, giving us their spatial characteristics in addition to their non-spatial ones.

The data on funeral home quantities by disposition comes from Funeral Industry Consultants (hereafter FIC),¹ which gathers data on individual funeral homes annually from state funeral home regulatory filings. The FIC dataset includes how many burials, entombments (in mausoleums), cremations, removals (i.e., shipping bodies to other states), and "other" were performed by each funeral home in each of the years from 1987 to 2006, as well as data from each funeral home on how many embalmings were done in 2006. The category "other" includes bodies donated to medical schools and burials at sea, and accounts for approximately 1% of all deaths. In our analysis, we define the two principal products of funeral homes as being burial (burial+entombment) and cremation, and we treat removals as being exports to other funeral markets. The "other" category of dispositions is included in the outside good, which is defined below. The Florida funeral homes in our sample with no missing data handled an average of 100 cremations and 75 burials in 2006. However, the range of both is large, from zero to 1700 for cremations and zero to 1400 for burials.

Using the FIC data, we created the market share of each funeral home for each of the two principle products, burial and cremation. We initially chose counties to be our markets, and we continue to present some county level statistics in the paper. However, many Florida counties are very small and contain relatively few funeral homes. Hence, we mainly report results based on markets defined by the regions of the Florida Funeral Director's Association—with some modification to avoid boundary lines crossing through urban areas. There are only 6 of our market areas, compared to 63 counties, so they are much bigger.

The data on funeral home prices came from a survey we conducted in late 2006 in which we phoned all Florida funeral homes to ask them about their prices and characteristics. We asked funeral homes about the prices of a set of standard services (direct cremation, embalming and forwarding a body) and the price of their least expensive casket within several common categories. For example, we asked them for the price of their least expensive 18 gauge (carbon) steel casket, which is one of the most popular types of casket. We used the price of this type of casket as a component of the price of burial at

¹ Readily available for sale for \$300 at the time of writing: 1-800-948-8938.

each funeral home. Since some funeral homes did not offer an 18-gauge steel casket, we used the following procedure to impute its price. We took the mean price of each type of casket and then calculated each funeral home's percentage deviation from that mean for each non-missing casket type. Missing 18 gauge steel prices were imputed by taking the mean 18 gauge steel price and multiplying by the funeral home's percentage deviation calculated from a non-missing casket type. The average price of an 18 gauge steel casket in our sample was \$2286, and ranged from as little as \$600 to as much as \$4550.

The prices of our two products, burial and cremation, are derived from elements in our survey and are constructed as follows. The price of cremation is simply the price the funeral home reported for a direct cremation, which is a standard package that includes taking the body to a crematory, placing it in a cardboard container, and cremating the body. The price of burial is defined to be the price of the 18 gauge steel casket plus the price of "forwarding the body," which includes picking up the body at the place of death, the services of the funeral director, embalming the body, and driving it to the airport. While a standard funeral would not involve the airport component, the advantage of using this price is that the components of the package are known and standard. There is no "standard quality level" funeral that we could ask about over the phone, so the forwarding price provides a nice proxy for the overall price level of the funeral home services. Hence, our estimate of the price of burial captures almost all of the components of a traditional burial provided by funeral homes with the exception of a charge for visitation. However, as alluded to above, there is huge variation in the amount of this type of service desired by consumers. For example, people often choose not to have a ceremony or visitation at funeral homes, opting to have them instead at churches or synagogues. The price of cremation varies from \$400 to \$4500 with a median of \$1200. The price of burial is even more varied, ranging from \$1600 to \$9000 with a median of \$4000. In general, black-serving funeral homes charge lower prices for services, while Jewish funeral homes charge more. Jewish homes do not charge more than other homes for an 18 gauge steel casket, perhaps because the traditional casket for Jews is a plain wooden box. Both burial and cremation prices are positively and significantly correlated with the average income in the census tract of the funeral home.

One caveat of our methodology is that our survey of Florida funeral homes collected information on posted prices, not the actual prices that people paid for funeral goods and services. It is possible that consumers bargain over the price of funeral services. However, we have been told anecdotally that consumers rarely negotiate over the cost of funerals because they are emotionally distraught or under pressure to make arrangements quickly. Indeed the idea that consumers rarely compare prices was the principal rationale for the Funeral Rule. The Florida funeral homes that we surveyed presumably assumed

that we were potential consumers during the initial price questions.² Furthermore, the funeral directors did not qualify their responses about the price of their least expensive 18 gauge steel casket—the first question on the survey—with phrases such as “I’m willing to work with you on prices” or with explanations that the prices they were quoting were only their “official” prices.

In the survey, we also asked each funeral home whether it caters to the needs of some particular ethnic or religious group. If a home self-affiliated with Jewish, Hispanic, or black, we assigned it to that ethnic category. We also used information from two directories of funeral homes to determine whether funeral homes catered to African-Americans—one is a national directory of only black funeral homes and the other identifies black funeral homes. We also identified funeral homes as being either Hispanic or Jewish by names such as Funeraria Abreu Gonzalez and the Star of David Funeral Chapel. Finally, we hired an undergraduate who was fluent in Spanish to call all of the funeral homes in Florida to ask for the price of a direct cremation. If the receptionist could respond in fluent Spanish or could transfer the student to someone who spoke Spanish, we characterized the funeral home as having a “Spanish Department.”

The main religious group in funeral home specialization that we cannot measure using US Census data is Jewish. We use measures of the Jewish population in various counties in Florida collected by researchers at Miami University Miller Center for Contemporary Judaic studies. They count the Jewish population per zip code. We convert these zip codes to census tracts using ArcMap (Environmental Systems Research Institute, 2004). We can approximate the number of deaths that are Jewish using these data. However, anecdotally, we know that the age distribution of Jewish population in Florida is not the same as that of the population overall: there are many retirees in this group. Accordingly, the hazard of death for a given Jewish population may be larger than for the native population. If this is the case, then straightforward usage of the Miller Center data will lead us to underestimate the number of Jewish deaths as a proportion of the Florida death data.

Of course there will be ethnic differentiation among funeral homes that we cannot measure. Member of religious groups may tend to use the same funeral home and so homes may specialize across religions or across different versions of a religion (e.g. Catholic vs Evangelical Christian). It is interesting that in our survey, we asked funeral homes about religion and very few indicated that was a dimension on which they specialized (except Jewish). Other, less easily described variation in the tastes of consumers may express itself in the décor or the behavior of staff members, which will create differentiation. We return to the role of unobserved differentiation later.

The residual homes that are not Black, Hispanic, or Jewish, were characterized as White/Other. We will refer to this attribute as the funeral home’s (or the census tract’s) “ethnicity.” Black funeral homes handle markedly fewer cremations than the average funeral home, only 23 per year on average,

² If asked, our research assistants explained they were conducting an academic survey.

reflecting overall black preferences for burial (average 63 per year). White funeral homes carry out 121 cremations and 67 burials on average. Hispanic funeral homes are much larger than the mean home, on average, holding 168 cremations and 160 burials each. We found that 88 funeral homes that were not identified as Hispanic nevertheless had Spanish Departments; 4 Jewish funeral homes, 10 Black funeral homes, and 74 White/Other funeral homes in our dataset offer Hispanic funerals.

We also know whether funeral homes are part of a national chain from the FIC data. Twenty-six percent of the homes in our data are part of national chains. Half of Jewish homes belong to chains, whereas only one Black home belongs to a chain. About one-third of White funeral homes belong to a national chain, and one quarter of Hispanic homes belong to chains. Chains choose to buy funeral homes in somewhat more affluent census tracts (\$37,000 average income compared to \$31,000). Another one-quarter of Florida funeral homes have branches with the same name; that is, they belong to a local chain. National chain members are larger (332 bodies handled per year) than local chain funeral homes (204 bodies), which are in turn larger than independents (157 bodies).

We create a proxy for the quality of the funeral home facilities using information from the property tax system. We hand-collected property tax data for funeral homes by searching for them in the online property tax assessor's database for each county in Florida. When the online system failed, we followed up by telephone or mail with county appraisers. From the property tax records, we collected data on the 2006 property taxes paid and square footage of each funeral home in the state. We normalize property taxes by the county-level mean, as each county has its own method of assessing property taxes. One type of funeral home systematically does not have property tax data; for storefront funeral homes that are tenants in strip malls, we set the property tax and square footage measures to zero, but set an indicator variable equal to one to indicate "strip mall tenant." We also use average income in the funeral home's census tract from the Census (2000) as a measure of funeral home quality.

We gathered information on the number and location of potential customers of funeral homes by obtaining death data from Florida's Bureau of Vital Statistics. These data give us *resident deaths* by race and Hispanic origin for each Census tract in Florida for 2006, where resident deaths are counted by the residence of the deceased regardless of where the death occurred (even out-of-state). We also obtained *recorded deaths* by race and disposition (cremation, burial, and forwarded out-of-state). Recorded deaths are deaths that occurred in Florida regardless of whether the deceased were Florida residents. We treat the number of resident deaths as the potential size of the market. Florida resident deaths totaled 169,365 and recorded deaths totaled 171,302. Much of the discrepancy between these two death totals are accounted for by non-resident deaths of individuals over the age of 65 in the winter months. The data from Funeral Industry consultants report a total of 175,874 deaths handled by Florida Funeral Homes and Direct Disposers in 2006.

The characteristics of potential consumers come from U.S. Census data. We extracted the demographics of all census tracts in Florida in the year 2000, focusing on measures of race, ethnicity, education, and income. We also used data from the 1990 census demographics to provide historical measures of the size of various populations. We matched 1990 data to a changed 2000 tract boundary by using the data from 1990 tract that made up the largest portion of the 2000 tract. The number of Black, White, Hispanic, and Native Born residents of a census block will help us determine what sort of differentiation funeral homes were likely to have prior to our time period. We also collected measures of education and income in 1990.

We created additional variables using measures from these primary datasets. FIC reports on the location and number of crematories in the state. We create an indicator for vertical integration which is one if the funeral home shares a name/address with a crematory. Funeral homes that are vertically integrated are much larger on average (389 median number of bodies per year compared to 185 for un-integrated). Likewise, an indicator for horizontal integration is one if the funeral home shares a name/address with a direct disposer. We counted the number of times we had to call the funeral home in order to obtain the casket information and use that as a characteristic of the home – measuring responsiveness, a quality attribute. We used ArcMap to determine the distance from each funeral home to the closest salt water (Atlantic or Gulf of Mexico). Because Florida’s population is concentrated on the coasts, this measure will later serve as an instrument for funeral home costs. The median funeral home is only six miles from a coast.

We measure the number of funeral homes in a zip code in 1987, the first year of the FIC dataset, which gives us an historical measure of market structure. Using geocoding tools, we count the number of other funeral homes within five miles and the number of same-ethnicity funeral homes in the market within five miles. These will serve as instruments for price, as in Davis (2006). Relatively few of our funeral homes, about 6%, have no competitors within five miles. 60% have three or more. However, close to 20% of funeral homes have no competitor of the same ethnic type within five miles, and only 45% of the sample has three or more competitors of the same type.

The first set of variables we create with all our datasets are funeral home characteristics such as quality and level of competition, prices, and market shares. We need two additional datasets to carry out our analysis. The first is the matrix of resident deaths by census tract, which tells us how many consumers of which ethnic type at each location are shopping for a funeral home. Secondly, we can calculate the distance from each of these census tracts to each funeral home in a market, which will be the dataset from which we draw the individual-specific distance characteristic. Table 1 reviews the different types of data and the source for each.

Missing data are a major issue in demand estimation of the sort we undertake in section 5 of the paper. We have 782 funeral homes in our dataset. Of these, 47 are missing property tax data, 101 are missing cremation price and 145 are missing a burial price. The homes missing a burial price handle 9.4% of total bodies disposed of by funeral homes in Florida in 2006. One choice would be to omit these homes from the demand estimation because we do not have complete data. However, these homes have a significant market share in total, and their individual shares from FIC are not missing. We could create market shares including all homes and then drop those homes with missing data. Alternatively, we can impute the missing data using market averages. We choose to retain all funeral homes that handled positive numbers of bodies in 2006, impute values of missing variables, and create an indicator, *missing*, for these observations. Funeral home characteristics (property taxes, square footage) were assigned using the county average. A missing price was assigned using predicted values from a simple hedonic regression of other funeral homes. The sources of all the data used are contained in Table 1 below.

Table 1: Data Sources				
Name	Source	Year	Level of obs	Types of variables
Funeral home data	Funeral Industry Consultants	1982-2006	Funeral home	Address, total bodies handled, burials, cremations, shipped out of state, vertical integration, horizontal integration, distance to nearest crematory, competition in 1987
Death Data	Florida bureau of vital statistics	2006	Census block group	Deaths by race
Survey Data	Authors	1996 and 2006	Funeral home	Prices of cremation, transfer, embalming, and caskets, ethnic specialization, Spanish department, chain status
Census data	Census Bureau	1990, 2000	Census block group	Income, education, race, ethnicity, native born
Jewish population data	North American Jewish Data Bank	Multiple years	Zip code	Jewish population
Property Taxes	County Assessors' webpages	2006	Funeral Home	Square footage, taxes assessed

4. Differentiation, Entry, and Demand

Entry and Entry Threshold ratios

Bresnahan and Reiss (1990, 1991) examine the relationship between exogenous market size and the number of entrants. Waldfogel (2003) extends this idea to examine preference externalities; measuring

the number of members of a group with similar preferences must exist to elicit the entry of a firm specialized to serve that group's needs.

We investigate this issue by considering the number of funeral homes in individual counties. Unlike Bresnahan and Reiss, we do not have localities that are chosen to be isolated from other localities. There is some concern that the county is not the ideal unit of observation because there are 67 of them in Florida, some are quite small, and the boundaries of some counties cut through densely populated areas. Therefore, later, we estimate our structural model by subdividing the state into only six large regions. Two other differences are worth mentioning. First, it is very unlikely that funeral home fixed costs vary with the number of entrants: the fixed assets are undifferentiated buildings, and the regulatory requirements are fixed across entrants. Secondly, the welfare consequences of entry in funeral markets are different than in some other industry settings. The number of entrants in the market and any subsequent reduction in prices will not affect quantity demanded (deaths). Entry and reduction in margin may redistribute surplus to consumers, of course.

Unlike Bresnahan and Reiss, our data are very detailed in providing us the number of customers that each of these small businesses serves. Table 2 provides summary statistics for the number of deaths handled by funeral homes in Florida. These data are the deaths handled by funeral homes themselves. There are several patterns that should be noted from Table 2. First, it may be surprising how few deaths overall are required to sustain a funeral home. Indeed, in Florida overall, the median funeral home handles 152 deaths per year; the 25th percentile funeral home handles 69. Since the location assets of the funeral home are largely fixed, it appears that many funeral homes have excess capacity in that their viewing rooms do not appear to be in use every day of the year (or even every other day). Second, it appears that far fewer deaths are required to sustain a funeral home identifying itself as black-serving. The average margin per customer may be higher for these funeral homes, where embalming is common and cremation is rare. While these funeral homes have identified themselves as black-serving, our data does not show directly that the individuals patronizing those funeral homes are black. However, interestingly, the fraction of deaths cremated at the funeral homes identifying themselves as black-serving closely matches data from the Florida Department of Vital Statistics which shows that 21% of recorded deaths of blacks in Florida are cremated, compared to 55% of whites. Third, the average Hispanic funeral home and the average Jewish funeral home serve somewhat more customers than other types of funeral homes in Florida. For Jewish funeral homes, it should be noted that the fraction of bodies that are exported out of state is more than double the average for all funeral homes, and that these exports presumably utilize funeral home capacity less intensively than a typical viewing/burial.

Table 2: Size distribution of funeral homes of different types

	All	Black	Hispanic	Jewish
25%ile	69	22	126	175
50%ile	152	66	275	274
75%ile	275	121	452	370
For the mean FH:				
Embalm/total	0.48	0.80	0.61	0.19
Cremated/total	0.47	0.25	0.38	0.43
Export/total	0.13	0.07	0.10	0.30

Bresnahan and Reiss undertake ordered probit specifications to measure whether the small businesses that they study have increasing Entry Threshold Ratios. Their ideas can be applied straightforwardly to the funeral market. If a threshold number of consumers exist, then it should be profitable for a funeral home to enter a local market. If competition destroys profits, then the number of consumers required to elicit the entry of the first entrant should be lower than the number of incremental consumers required to elicit the entry of the second or third. We undertake an analysis very similar to that undertaken by Bresnahan and Reiss (1990, 1991), most closely following the set-up in Genesove (2000). Our specification is simpler than that in Bresnahan and Reiss due to the unique nature of our data. Bresnahan and Reiss study businesses such as beauty salons, tire dealers, dentists, and car dealerships. When considering the relationship between entry and market size, they consider the population of the local market, but also consider demographic characteristics that may be correlated with whether and how frequently consumers patronize these businesses. However, in our data, we focus our market size as measured by the number of deaths in the county. Since nearly all deaths in Florida are handled by a funeral home, the mapping from the death data to a funeral home customer count is very close to one for one. We extend their focus to consider entry threshold ratio evolution for the different ethnicities of funeral homes, which may or may not be competitively segmented in the market.

Specifically, we consider the specification in which the profitability of each firm in a county with a death population S and with k funeral homes to be:

$$\Pi_k = \alpha \ln S + \delta_k + \varepsilon \quad (1)$$

Where α and δ_k are parameters to be estimated. If entry occurs up to the point where the $k+1$ th entrant would expect to earn negative profits, then:

$$\text{Prob}(N>k) = \Phi(\delta_k - \alpha \ln S)$$

Where Φ is the standard normal distribution. As in Bresnahan and Reiss, we use the ordered probit to estimate these parameters and we solve for S_k , the minimum market size required to support K firms and the entry threshold ratios, $(S_{k+1}/k+1)/(S_k/k)$.

Note that the data used in this table of probit results are not the same as those used in Table 2. Table 2 uses the data of deaths handled by funeral homes who report themselves to have various specializations. Table 3 examines the entry of funeral homes of various specializations as a function of the number of deaths of consumers of a particular ethnicity in a county. Table 3 shows the estimates of the ordered probit specifications for all funeral homes, Black-serving funeral homes, Hispanic-serving funeral homes, and Jewish funeral homes. Column 1, the simplest specification, shows the total number of funeral homes in the county as a function of the number of deaths in the county. Below the probit estimates, we show the estimated entry threshold ratios. Our results show that the estimated number of customers required to support the second funeral home is almost exactly twice that of the first funeral home, in sharp contrast to Bresnahan and Reiss. This could be because the size of the counties prevents the two funeral homes from competing directly, or it could be because differentiation decreases competition among the funeral homes. This might be expected if funeral home entry follows the principle of maximal differentiation as in Mazzeo (2002). For larger numbers of funeral homes, there is modest evidence of increasing entry threshold ratios.

Table 3: Ordered Probit of deaths on number of funeral homes							
	All	Black	Black	Hisp	Hisp	Jewish	Jewish
ln(Total Deaths)	1.79 (0.33)	-0.27 (0.20)		-0.17 (0.30)		1.76 (0.55)	
ln(Black Deaths)		1.48 (0.27)	1.23 (0.19)				
ln(Hisp Deaths)				0.55 (0.22)	0.45 (0.11)		
ln(Jewish Deaths)						-0.003 (0.13)	0.33 (0.09)
δ_1	7.42 (1.67)	3.75 (0.96)	4.50 (0.77)	1.68 (1.59)	2.55 (0.50)	15.24 (4.54)	1.55 (0.26)
δ_2	8.67 (1.75)	5.11 (1.03)	5.82 (0.88)	2.62 (1.61)	3.47 (0.62)	16.43 (4.74)	2.17 (0.35)
δ_3	9.68 (1.84)	5.89 (1.10)	6.57 (0.97)				
δ_4	10.73 (1.96)						
Estimated entry thresholds							
S_1	62.6		39.2		303.1		110.9
S_2	125.8		114.8		2375.7		736.4
S_3	220.9		211.6				
S_4	396.8						
$(S_2/2)/S_1$	1.0		1.5		3.9		3.3
$(S_3/3)/(S_2/2)$	1.2		1.2				
$(S_4/4)/(S_3/3)$	1.3						

Column 2 begins the analysis of the “ethnic” funeral homes. For the ethnic funeral homes, we examine whether the number of funeral homes is empirically a function of all deaths in the county, or of the deaths

of members of a specific ethnic group. Columns 2 and 3 examine two possible specifications in black funeral homes. We cannot reject the hypothesis that the number of black funeral homes is independent of the number of overall deaths in a county. However, the number of black funeral homes is clearly a significant function of the number of deaths of blacks in the county. Below Column 3, we show the estimated entry threshold ratios, using only the number of deaths of blacks as our measure of market size. The number of bodies served implied by the entry threshold ratios is very similar to the number of bodies actually served by funeral homes identifying themselves as black-serving, as shown in Table 2. Furthermore, relative to funeral homes overall, a small number of deaths of blacks are required to sustain a black-catering funeral home. This must either be due to lower entry costs for black funeral homes or because each customer is more valuable (due to low cremation rates and high rates of embalming). Table 3 also demonstrates the increasing pattern of entry threshold ratios expected from Bresnahan and Reiss. If the markets for black and non-black funeral homes are highly segmented, then we may expect an increasing entry threshold ratio for black funeral homes considered as a group that is not apparent in the full dataset.

Columns 4 and 5 repeat this exercise for funeral homes that identify themselves as Hispanic-serving, or have Spanish language names (e.g., Funeraria Catolica). There are fewer Hispanic funeral homes in the state than there are black funeral homes, and they are concentrated in only a few counties. In particular, there are only 5 counties with greater than one Hispanic funeral home (though Miami-Dade county has 20 Hispanic funeral homes). Thus, we are only able to estimate the first two entry threshold ratios. The data are consistent with increasing threshold ratios. However, the number of Hispanic deaths required to induce entry seems very large, even relative to the fairly large number of deaths actually served by Hispanic funeral homes as shown in Table 2. This may be due to the fact that an intermediate product exists-- funeral homes that have "Spanish language department" or have staff who are able to conduct funeral transactions in Spanish. In our data, we separately surveyed funeral homes for their ability to conduct transactions in Spanish (using a fluent Spanish speaker to conduct the survey). Table 4 reports summary statistics for Hispanic resident deaths in counties that have only funeral homes with Spanish language departments versus counties that have funeral homes that consider themselves (or are named to be) more exclusively Hispanic oriented. Table 4 shows that counties with more than a very few Hispanic deaths are likely to have funeral homes that make Spanish speaking staff available. As shown in Table 4, the mean county with one funeral home describing itself as Hispanic-serving has 205 Hispanic deaths per year. The funeral homes in those counties also face less specialized competition. The eight counties with exactly one funeral home identifying itself as Hispanic-serving also contained an average of 2.25 funeral homes that had a Spanish speaker available to answer our survey.

	Hispanic FHs	Spanish Departments	Avg Hisp Deaths
	0	0	18
Counties with:	0	1	63
	0	2	143
	1	Any	205

Columns 6 and 7 of Table 3 repeat the entry threshold exercise for funeral homes that identify themselves as Jewish or have names that reference Judaism (e.g. Menorah Gardens Funeral home). There are three caveats to this analysis. First, there are only 4 counties with more than one Jewish funeral home (although Palm Beach County has 11). Also, note that our measures of the number of Jewish deaths are much less precise than our measures of black or Hispanic deaths. Our estimates of black and Hispanic deaths are taken from the categorizations of each death in the Florida Public Health death data by census tract. Our number of Jewish deaths is based on an estimate of the share of the population that is Jewish in each zip code, converted to census tracts, then applied to the death data. Further, our number of Jewish deaths is almost surely undercounted, as it does not adjust for the fact that the Jewish population is on average older than the non-Jewish population (due to retirees). Suggesting measurement error, our specification shows that the number of Jewish funeral homes is not well approximated by the number of estimated Jewish deaths, when controlling for total deaths. Nonetheless, we compute entry threshold ratios. We do find evidence of increasing entry thresholds. The number of Jewish resident deaths estimated to induce the presence of one Jewish funeral home is 110, somewhat smaller than the number of deaths handled by the 25th percentile funeral home, consistent with a likely undercount.

Along the lines suggested by Waldfogel (2003), the entry data suggest that presence of more individuals in an ethnic group may induce entry by a funeral home serving that group. For Hispanics, we see a similar pattern as Waldfogel finds for Hispanic radio stations; a small number of Hispanics may lead a funeral home to provide some attempt to cater to Hispanics while a larger number of Hispanics may induce specialized entry. One concern about the entry results is that, while the results are suggestive of market segmentation along racial and ethnic lines, it is possible that, for example, black-serving funeral homes identify themselves as black-serving only because their location and pricing leads to a clientele

that is largely black, rather than any aspect of their service being differentiated. We explore that in the demand system analysis by measuring whether whites have a distaste for Black funeral homes and visa versa, holding price constant.

Pricing relationships

We examine how prices vary with market size in the next section. Bresnahan and Reiss (1991) undertake an exercise similar to this for tire dealers, although they of course do not have the market segmentation issues that we address here. We use a reduced form specification that attributes burial and cremation prices to county demographics, funeral home chain membership, and proxies for funeral home quality. Table 5 shows the variable definitions.

Table 5: Variable definitions
<i>Z_{ij}</i> variables:
<i>price</i> = Price (of burial or cremation, by specification) <i>sqft</i> =the square footage of the funeral establishment, equals zero for strip mall tenants <i>strip</i> = an indicator variable that takes the value one if the funeral home is a strip mall tenant <i>taxdev</i> =the deviation of the funeral home’s tax liability per square foot from the county average, equals zero for strip mall tenants. <i>chain</i> = an indicator variable that takes the value of one if the funeral home belongs to a chain <i>Vlcrem</i> = an indicator variable that takes the value of one if the funeral home owns a crematory. <i>avginc</i> =Average household income in the census tract in which the funeral home is located
<i>Q_j</i> variables:
<i>totaldeaths</i> = county total deaths <i>ethnicdeaths</i> = county total deaths of residents of the same ethnicity as the funeral home

Table 6 shows results from the regression below, where *i* indexes funeral homes, and *j* indexes counties:

$$price_{ij} = \alpha + Z_{ij}B_1 + Q_jB_2 + u_{ij} \quad (2)$$

We include different sets of the aggregate number of dead in the *Q_j*’s. For each ethnic group, we examine the relationship between prices for burial and cremation and the number of deaths of the own ethnic group and the number of total deaths in the county. Because of the potential for within-county correlation of the errors, standard errors are calculated that are robust to within-county correlation. Unsurprisingly, funeral homes with “better” characteristics charge more for funerals, though the effect is

only statistically significant for some coefficients on square footage and taxes. Funeral homes that are members of chains charge significantly more than funeral homes that are not chain members. This suggests that chains purchase funeral homes with high quality attributes. Indeed, the data show that chain funeral homes are 46% larger, on average, than the non-chain homes. Cremations cost less at funeral homes in strip malls. The strip mall indicator is a proxy for the quality of the establishment. For example, strip mall establishments do not have the facilities for funeral services that free-standing establishments do. Average income in the census tract of the funeral home has an unstable coefficient. This may reflect the fact that some funeral homes are in commercial or other non-residential areas, so census average income is not a good measure of quality.

We also examine the relationship between prices and market size. We have already showed that the number of deaths required to induce the entry of a funeral home increases with each incremental entrant. This provides indirect evidence of market conduct—more firms create more competition lowering markups. While we cannot directly measure markups, we can provide more direct evidence on the effects of increasing market size by examining how prices covary with market size increases.

Table 6: Regression of prices on characteristics and county deaths								
	Burial	Cremation	Burial	Cremation	Burial	Cremation	Burial	Cremation
Sqft	.017 (.012)	.005 (.004)	-.013 (.028)	-.001 (.011)	.091 (.011)	-0.005 (0.002)	.024 (.013)	0.008 (0.002)
Tax/sqft	21.1 (38.8)	37.8 (12.9)	248 (224)	82.3 (99.6)	-142 (270)	-62.123 (118.3)	71.9 (28.0)	13.0 (10.3)
Strip	-178 (246)	-338 (70.5)	-66.4 (252)	-566 (103)	---	---	---	---
AvgIncome	9.58 (3.76)	6.25 (2.2)	11.6 (8.50)	1.39 (4.71)	-13.3 (5.24)	5.22 (2.74)	-15.4 (13.4)	1.14 (3.77)
Chain	441 (154)	357 (64.8)	2719 (479)	36.2 (248)	-147 (155)	422 (61.4)	-999 (298)	-11.8 (165)
Total Deaths	-.027 (.010)	-.012 (.007)	-.004 (0.031)	-0.026 (0.017)	-0.034 (0.083)	0.020 (0.021)	.167 (.048)	0.0003 (0.017)
Black deaths	---	----	-.151 (0.135)	0.092 (0.089)	---	---	---	---
Hisp deaths	---	---	---	---	-0.079 (0.066)	-0.049 (0.016)	---	---
Jewish deaths	---	---	---	---	---	---	-0.961 (0.408)	0.795 (0.116)
Constant	3662	1042	3657	1038	4261	735	3764	1340
Sample	ALL	ALL	BLACK	BLACK	HISP	HISP	JEWISH	JEWISH
Obs	632	675	110	125	36	36	28	28

The dependent variable is the burial or cremation price. In the first two columns, the sample is all funeral homes, while in the later columns the sample consists only of funeral homes of a particular ethnic type. All standard errors are robust for clustering at the county level.

The results, though based on small samples in the case of Jewish and Hispanic funeral homes, are consistent with prices falling as market size increases. Columns 1 and 2 show that prices fall significantly for all funeral homes as total deaths rises. While statistically significant, the point estimates are not large. The point estimates suggest that burial prices fall about \$27 per 1000 additional county deaths. The less significant coefficient in column 2 suggests that cremation prices fall by about \$12 per additional 1000 county deaths. The subsequent columns show the relationship between prices at ethnic funeral homes and deaths of members of that ethnicity in the county and deaths overall. In general, the relationship between total deaths and prices is small and statistically insignificant. There is some evidence, though not overwhelming, that a negative relationship exists between prices and the deaths of members of the funeral home's ethnicity. All of the coefficients for the deaths of members of the funeral homes' own ethnicity are negative, except the coefficient for black and Jewish deaths for cremations at black and Jewish funeral homes. As cremation rates at black and Jewish funeral homes are quite low relative to the overall population, the lack of negative association between these deaths and prices are unsurprising. The other relationships between prices and own ethnicity deaths are statistically different from zero only for Hispanic cremations and Jewish burials.

We examined two alternative specifications with results not reported. Very similar results are obtained if the total deaths in 2006 for each group are replaced by a five year average of deaths. Similar results are also obtained if the deaths variables are replaced by the number of funeral homes (overall and of a particular ethnicity), instrumented with the number of deaths (overall and of a particular ethnicity). For example, the price of a Hispanic burial is estimated to fall by a statistically significant \$58 with the incremental addition of one Hispanic funeral home.

5. Demand system estimation issues

Demand in an environment with a spatial component has been prominent in the literature on hospital competition (see Gaynor and Vogt (2003)) and in some literature on retail establishments (see Davis 2006; DePalma et. al. 1994, etc.). In Gaynor and Vogt (2003), for example, individual micro data on hospital patients is available, allowing the authors to estimate the willingness of specific patients to travel from their home location to obtain hospital care. More commonly, as in Davis (2006), the researcher has some proxy for the locations of potential consumers (say from the census), but no micro data is available which matches consumers to locations. Instead, the travel costs incurred by consumers are inferred from data on the distances between the potential consumer population and the retail locations and the sales of those retail locations.

The detail of our data falls between the extremes set by Gaynor and Vogt (2003) and Davis (2006). Analogously to Davis (2006), we do not have a data source which tells us which consumers used which funeral homes. However, we do have data from the state of Florida on resident deaths by race and by census tract (of which there are about 3500 in Florida). From the funeral home consultants, we have the number of customers buried and the number of customers cremated by each funeral home. All deaths taking place in Florida are handled through a funeral home. Davis (2006) relies on variation in the demographics of locations near movie theaters and variation in movie theater market shares to infer, effectively, the characteristics of consumers who go to the movies. In our empirical setting, we know the characteristics of the set of funeral home customers; in our analysis, we essentially allocate the deaths that we observe to the funeral homes in the market and to the products sold at those funeral homes.

In one variant of his specification, Davis uses additional moments to improve the precision of his estimates. Specifically, he uses survey data on the age distribution of consumers who attend movies and imposes a match between that survey and the model estimates. Similarly, we have additional data that we can also use to improve the precision of our estimates. The state of Florida records, at the county level, the aggregate share of the deceased, by race, who choose cremation versus burial. Like Davis, we can impose a match between these data and the model estimates.

The intuition for how our estimates are identified is as follows. We take all the resident deaths in each census tract (3500 tracts), which we know by ethnicity, and choose parameters of our model such that the right number end up at each funeral home (782 homes), buying the right proportion of products (2 products). Florida is an ideal setting for this empirical strategy because there is large geographic variation in the proportion of Hispanic, Black, White, and Jewish populations. There is also a big difference across regions in the proportion of native-born versus Florida immigrants, income, education, and the density of funeral homes. For example, some coastal southern counties have large retiree populations with many Jews. Some areas in the south are heavily Hispanic, while those in the panhandle have a high proportion of black residents.

Defining markets/Defining products

We define funeral markets by using the Florida Funeral Directors' Association division of the state into regions. We visually examined the borders of the ten regions to see where there were boundaries on which the population was clustered. Only one of the many boundaries separating regions cuts through a heavily populated area: the one that separates Southern Palm Beach County (in region 9) from Northern Broward County (in region 10). Another three small regions were awkwardly intertwined and part of the same metro area, so we combined them; lastly, we combined two small regions in the panhandle, for a final total of six regions. All of the resulting boundaries run through sparsely-populated areas. We feel

these market definitions strike a balance between minimizing the number of consumers near a boundary and limiting the consumer's choices to be less than the entire state. We calculate market shares and competition measures at this level.

Defining the outside good is tricky in this context because each body must be disposed of by a licensed funeral director, so no consumer is driven out of our data due to a higher price. Note that this is very different from classic differentiated products markets such as cars, where the outside good (not purchasing a car) has a very large share in any given year. We decided to treat the no-fills cremation provided by the direct disposers as the outside good. These cremations are substantially less expensive than funeral home services, but provide no ceremony. These may be chosen by customers desiring to leave the funeral home sector due to high prices. We also include in the outside good bodies handled by traditional funeral homes in the "other" category. "Other" is not burial, cremation, entombment, or export and consists mostly of medical donations and burials at sea. Medical donations, for example, generate significantly lower costs of disposing of the body. We sum the total bodies handled by direct disposers plus "other" bodies by market, and divide by total bodies handled per market to obtain a total market share for the outside good which varies at the market level.

Our model follows Davis (2006), who has a setup in which each movie theater sells multiple movies. We allow each funeral home to sell only two products, a cremation or a burial. Also, the elements of the model are similar to those in Parcel (2008), although her work does not consider ethnic differentiation among funeral homes.

Specification

Our two goods, cremation and burial will be indexed by f . For convenience, our model takes the dead consumer as the decision-maker. A consumer i in market m purchasing good f at funeral home h has utility:

$$U_{ifhm} = X_{fhm}\beta - g(d(L_i, L_{hm}); \lambda) + D_{fhm}\alpha_i + \xi_{fhm} + \varepsilon_{ifhm} \quad (3)$$

The X 's are the observable product and funeral home characteristics including price, square footage, average income in the funeral home's census tract, property taxes, chain affiliation, and how many calls were required before the funeral home answered the telephone for our survey (another measure of quality). All consumers value the X s identically. The function $g(\cdot)$ allows us to include distance variables in a non-linear way. The function d is the distance from the consumer's location L_i to the location of the home L_{hm} . The distance a consumer must travel to get to each possible funeral home

that she could patronize is measured by using the geocoded distance between the center of each census tract (the location of recorded deaths) and each funeral home in that county. In one specification we include an additional component of $g(\cdot)$, allowing distance to be nonlinear in distance by including both linear distance and an indicator for distance greater than 20 miles. The $D_{f_{hm}}$ are the subset of observable product and funeral home characteristics for which we will allow different consumer types to have different tastes, namely product dummies (cremation, burial) and the home's ethnic type (Black, Hispanic, Jewish, White) which is also a set of dummies. While we index α with i , we restrict the form that these preferences take. The α_i are restricted so that:

$$\alpha_i \in \{\alpha_{Black}, \alpha_{White}, \alpha_{Hispanic}\}$$

That is, we require all whites to have the same taste for patronizing a Hispanic-identified funeral home, but allow that taste to differ from that of Hispanics for a Hispanic funeral home. Likewise, on average black consumers may have a taste for burials relative to cremations that is different from whites' taste for burials relative to cremations. The ξ 's are the familiar unobserved product quality. Unobserved quality consists of traits we cannot measure such as cleanliness of home, friendliness of proprietor, convenience of opening hours, etc. We assume that these are valued equally by all consumers. The ε 's are the individual-funeral home iid error shocks.

Something to note about the functional form of the D term is that unlike the specification for distance where the consumer's location is incorporated, we do not directly include information on the type of the consumer (i) with the type of the funeral home (f_{hm}) in the utility specification. The α 's will be identified from the share of each ethnic type in the deaths at each census tract and the market shares and types of each funeral home.

The demand system is completed with some specification of the direct disposer option. The conditional indirect utility from the outside option is:

$$U_{i0m} = \xi_{0m} + \varepsilon_{i0m} \quad (4)$$

We could extend that specification to allow utility for the outside option to be a function of a set of demographic characteristics.

Instruments

The set of parameters to be estimated are given by $\theta = \{\alpha, \beta, \lambda\}$. Our estimation procedure follows Berry, Levinsohn, and Pakes (1995). As is common, we expect that price is correlated with the

unobserved product characteristics. The key identifying assumption is that the set of instruments, $Z_{f_{hm}}$ are uncorrelated with unobserved product characteristics, $\xi_{f_{hm}}$ at the “true” parameter value θ^* .

$$E[\xi_{f_{hm}}(\theta^*)|Z_{f_{hm}}] = 0$$

Our instruments are similar to those used in Davis (2006). We use the number of total funeral homes, and the number of funeral homes of the “same type” within a five mile radius of a given funeral home as instruments. These instruments are valid if we take funeral home locations as given, or at least historically predetermined. Additional instruments include the distance from the home to the nearest salt water. Since the population of Florida is concentrated along the coasts, costs are higher the closer a business is located to the coast. This distance will serve as an estimate of funeral home costs. We use the market structure of the zip code in 1987 as an instrument for price. This historical measure will be correlated with current market structure, and therefore current prices, but not current unobservable quality. Total population in the census tract of the funeral home will similarly be correlated with the number of funeral homes and the level of price competition. One particular problem we have with the instrumenting strategy is that we need instruments that differentially affect prices for burials versus cremations. Similar to Waldfogel, we use measures of the size of subgroups of the 1990 tract in which the funeral home is located as an instrument for price. In particular, because blacks choose to bury at a higher rate than other groups, the population of blacks in the funeral home’s tract in 1990 will track competition in the market for burials, and therefore prices for burials in 2006. Likewise, the population of native-borns in the funeral home’s tract in 1990 will be correlated with market structure and price for burials, since this group is less likely to choose cremation than retirees, for example. We use the distance from a funeral home to the nearest crematory as an instrument for the price of a cremation (Parcel (2008)).

The model does not require, but we can impose, additional restrictions for the model to match. Specifically, we know the market shares of cremation versus burial for whites and blacks, so we can use this information as a constraint on the data to help identify the demand parameters with more precision. In particular, we know how many blacks chose cremation versus burial in each of our markets. We need one additional assumption to create the constraint. We assume that all bodies handled by black-identified funeral homes are black. We assume that the share of blacks being cremated at non-black funeral homes is the same as the overall share of that funeral home. We then have an additional moment for the GMM estimation [COMING SOON]. We take the estimated shares ($s_{if_{hm}}$) of black cremation across all homes in a market and set them equal to the known share (S_{ifm}) in that market. Abusing notation slightly, the i subscript indicates shares for an ethnic group, in this case black:

$$\sum_h s_{if_{hm}} = S_{ifm}$$

6. Results of the demand system estimation

Table 7 reports preliminary estimates for two specifications suggested by Equation 3 for a subset of 3 of our 6 funeral markets.

Table 7: demand estimation				
β	log(price)	-0.14 (0.38)	-0.19 (0.13)	
	chain dummy	0.39 (0.37)	0.39 (0.38)	
	square feet	0.03 (0.017)	.03 (0.01)	
	strip mall tenant	-1.949 (2.39)	-2.04 (2.28)	
	deviation from county mean taxes/sqft	0.13 (0.07)	0.15 (0.07)	
	average income in the census tract	-0.0001 (0.03)	-0.0013 (0.012)	
	number of phone calls required for survey	-0.12 (0.12)	-0.13 (0.13)	
	λ	Distance	-0.15 (0.18)	-0.15 (.068)
		Dummy for distance>20 miles		5.3 x 10 ⁻⁵ (1.6)
α	White taste for Hispanic funeral home	8.3x10 ⁻⁷ (0.21)	-6.7x10 ⁻⁵ (0.34)	
	White taste for black funeral home	-2.12 (2.05)	-1.27 (0.92)	
	Black taste for white funeral home	-6.69 (7.41)		
	Hispanic taste for black funeral home	-3.27 (10.53)		
	Black taste for cremation	-0.0635 (7.25)	-1.83 (10.4)	
	Hispanic taste for cremation	0.0155 (6.08)	0.25 (9.6)	

The signs of the results for funeral home characteristics accord with intuitions although our current results (that use a subset of the market and impose no moment conditions) are extremely imprecise. Controlling for price, funeral home consumers prefer larger funeral homes that have high service (answer their telephone). The current results suggest very low price elasticities overall. The results also suggest that ethnic preferences can be strong. The results show that whites are willing to pay more and travel farther to bypass a black funeral home. In particular, the point estimates suggest that, for a given price, a white customer would be willing to travel 9 miles farther, other things equal, to patronize a non-black funeral home.

Recall that our data do not show us which of the dead consumers go to which funeral homes, nor which are buried and which are cremated. However, the distribution of deaths across Census tracts and the resulting market shares of the different funeral homes is nonetheless sufficient to identify not only distance but ethnic coefficients on preferences for funeral homes. The estimates do suggest a black distaste for cremation, which reflects low cremation rates for blacks in the state.

Note that the consumer's strong value of geographic proximity here captures three main effects. The first is geographic distance from the consumer's residence to the funeral home. The second is any internalization of the travel costs of all the guests at the funeral. If there are many guests invited, a consumer may want to choose the local funeral home to avoid creating costs for those friends and family. Third, our distance measure will capture any other unobserved differentiation that sorts itself into neighborhoods. For example, if the neighborhood has a large number of Polish immigrants and the funeral home is run by a Polish immigrant, distance from the consumer's residence will also measure 'distance from the ethnic orientation' of the consumer. We include income in the funeral home's census tract as an observed component of differentiation, but education or religion are examples of other potential neighborhood sorting characteristics. Of course, the interpretation of a distance coefficient as including physical as well as cultural distance applies to just about any empirical estimation exercise with a neighborhood distance component. The large cost to distance displayed by our consumers is an indication that the sum of these three factors strongly affect utility.

7. Conclusions

Our preliminary results suggest low substitutability between funeral homes with different ethnic identities. This is visible in the entry patterns of funeral homes, in the relationship between funeral home density and prices, and in our preliminary demand estimation. Our results are consistent with the idea in Waldfogel (2003) that the ethnic makeup of one's neighbors can have implications for the range of products and services offered in the neighborhood. While our current results are very imprecise, our

preliminary results suggest that ethnic segmentation can have important impacts on competition, which has implications for merger policy.

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