The Demand for Food Away From Home

Full-Service or Fast Food?

Hayden Stewart
Noel Blisard
Sanjib Bhuyan
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Abstract

Consumer spending at full-service and fast food restaurants will continue to grow over the remainder of this decade and the next. However, the larger increase is predicted to occur at full-service restaurants. Simulations assuming modest growth in household income plus expected demographic developments show that per capita spending could rise by 18 percent at full-service restaurants and by 6 percent for fast food between 2000 and 2020. The assumed increase in income alone causes such spending to rise by almost 15 percent and 7 percent at full-service and fast food restaurants, respectively. The increasing proportion of households containing a single person or multiple adults without live-at-home children will cause per person spending to rise by another 1 to 2 percent in each of these segments. However, the aging of the population will decrease spending on fast food by about 2 percent per capita.

Keywords: full-service restaurants, fast food restaurants, food spending, household income.

Acknowledgments

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Summary

Consumer spending at full-service and fast food restaurants will continue to grow over the remainder of this decade and the next. However, the larger increase will likely occur at full-service restaurants. Simulations assuming modest growth in household income plus expected demographic developments show that per capita spending could rise by 18 percent at full-service restaurants and by 6 percent for fast food between 2000 and 2020. The assumed increase in income alone causes such spending to rise by almost 15 percent and 7 percent at full-service and fast food restaurants, respectively. The increasing proportion of households containing a single person or multiple adults without live-at-home children will cause per person spending to rise by another 1 to 2 percent in each of these segments. However, the aging of the population will decrease per person spending on fast food by about 2 percent per capita.

Fast food restaurants had been increasing their share of the growing away-from-home market until the middle of the 1990s. Sales at fast food restaurants briefly surpassed those at full-service restaurants around the same time. However, the fast food share of the away-from-home market has been relatively steady since then. In 2002, full-service restaurants again accounted for a slightly larger share of total sales.

A household's demand for food away from home depends on its income as well as on its demographics. A 10-percent increase in a typical household's per capita income would cause it to spend 6.4 percent and 3.2 percent more per capita at full-service and fast food restaurants, respectively. Away-from-home expenditures are typically higher for single-person households and households containing multiple adults without live-at-home children. For instance, a single person spends almost $3 more per person each week at each type of establishment than an otherwise identical person who is married and has live-at-home children.

Current and future changes in the away-from-home market could reflect changes in the diet and health of American consumers. Any shift in market share between fast food and full-service restaurants may reflect important changes in what people are eating away from home, because fast food tends to have different quantities of fat and calories than meals prepared at full-service restaurants.

This study also represents a necessary first step in understanding how and why the structure of the foodservice industry is changing. As the demand for meals and snacks at full-service restaurants increases relative to the demand for fast food, restaurant companies will be motivated to adjust what menu items and services they offer. To be sure, such adjustments might also alter any projected changes in market share between full-service and fast food establishments.

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Introduction

Americans now spend nearly half of their food dollars on meals and snacks at foodservice facilities, such as restaurants, hotels, and schools. Total away-from-home expenditures, defined to include all food dispensed for immediate consumption outside of the consumer's home, amounted to $415 billion in 2002.[1] That is about 58 percent greater than annual away-from-home expenditures in 1992 which totaled $263 billion. Even after accounting for inflation and business cycles (fig. 1), expenditures still increased by 23 percent between 1992 and 2002. We anticipate that households will continue to increase their spending on foodservice meals and snacks at an annual rate of about 1.2 percent in real (inflation-adjusted) terms (Blisard et al., 2003).[2] Rising household incomes and demographic developments, such as smaller household sizes, will account for this. However, it is not clear what types of foodservice facilities will be selling these meals and snacks.

A diverse array of foodservice firms—full-service restaurants, fast food establishments, hotels, retail stores, recreation places, bars, and operators of vending machines—compete for the consumer's away-from-home dollar. However, full-service and fast food restaurants have captured the bulk of the market, with 39.9 percent and 37.9 percent of total sales in 2002 (fig. 2).[3] Full-service restaurants, defined as establishments with waitstaff, tend to offer more varied menus and dining amenities. Fast food establishments tend to emphasize convenience (table 1).

The composition of the away-from-home market is dynamic. The full-service and fast food segments now command a similar share of the market, but it is unclear which segment is poised to expand relative to the other. Until the middle of the 1990s, sales of fast food were increasing faster, and briefly surpassed those at full-service restaurants. This upsurge was buoyed by the strategic location of new fast food outlets. Convenience is a major sales point for fast food operators. If driving to an outlet takes longer than cooking at home, then fast food is not truly convenient.[4] Thus, as fast food companies open more outlets per square mile in appropriate locations, consumers have to travel less for fast food, on average. In turn, these new store openings have stimulated the demand for fast food (Jekanowski et al., 2001). The proliferation of fast food restaurants can be seen in a trend known as "channel-blurring," whereby gas stations and retail stores, such as Wal-Mart and Target, are hosting foodservice chains like Pizza Hut and Taco Bell.

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[*] Sanjib Bhuyan is a member of the faculty at the Department of Agricultural, Food, and Resource Economics at Rutgers University. Rodolfo M. Nayga, Jr., is a member of the faculty at the Department of Agricultural Economics at Texas A&M University.

[1] Figures reported in this study are supplied by the Economic Research Service (ERS) and do not include alcohol. However, estimates of total expenditures do include the value of food consumed away from home, even if not purchased, such as the value of food distributed in some institutional facilities, as well as taxes and tips. See Manchester (1987) for a more detailed explanation of how ERS figures are calculated, including the distinction between sales and expenditures. Other sources report similar estimates of the market's size even though these sources base their calculations on very different formulas. The National Restaurant Association, for one, emphasizes the value of sales by restaurant companies. For 2002, it estimated the value of sales at $407.8 billion.

[2] Industry studies have also projected the continued growth of the market including analyses by the National Restaurant Association (*Restaurant Industry 2010: The Road Ahead*) and a consulting firm (*Foodservice 2010*).

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[3] The National Restaurant Association estimates that, in 2002, sales by full-service restaurants totaled $146 billion and sales by fast food restaurants amounted to $116 billion (*Restaurant Industry Forecast 2003*).

[4] Making a meal convenient includes building outlets near where consumers live, work, and shop. Convenience also means speedy service. For example, when it comes to drive-thru service, it appears that a goal among fast food chains is to serve customers in under 3 minutes. In 2002, the average service time—from when a car reaches the speaker to the car's driver receiving his or her food—at 25 major chains was about 187 seconds (Tutor, 2003).

Table 1—Segments of the market at a glance

Item	Full-service	Fast food
Share of sales in 2002 (percent)[1]	39.9	37.9
Number of outlets[2]	191,245	214,774
Number of paid employees (million)[2]	3.6	3.3
Sales points and dining amenities	Variety	Convenience

[1] CPI, Prices, and Expenditures: Expenditure Tables. USDA/ERS. The remainder, 22.2 percent, is for sales at hotels/motels, schools and colleges, retail stores, recreational places, and other foodservice establishments.
[2] 1997 Economic Census. Accommodation and Foodservice. Bureau of the Census.

The relative expansion of the fast food market segment appears to have stalled in recent years. In 2002, sales at full-service restaurants accounted for a slightly larger share of total away-from-home spending, while, in 2003, McDonald's reduced its estimates for near-term sales growth from 15 percent to 2 percent (Gogoi and Arndt, 2003). Meanwhile, Burger King was sold to a group of investors in December 2002 for $1.5 billion. Five months earlier, these same investors had offered $2.26 billion for the company. Reasons cited by the investors for scaling back their offer included the competitive environment in which Burger King and other fast food chains now operate.

The full-service restaurant segment is seemingly poised to expand its share of the away-from-home market (*Restaurant Industry 2010: The Road Ahead*).[5] The National Restaurant Association believes that the overall growth of the market will depend on rising incomes and demographic changes. However, it also argues that these demand forces will have the greatest

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[5] *Foodservice 2010*, a report by a consulting company, McKinsey & Co., also expresses this same view.
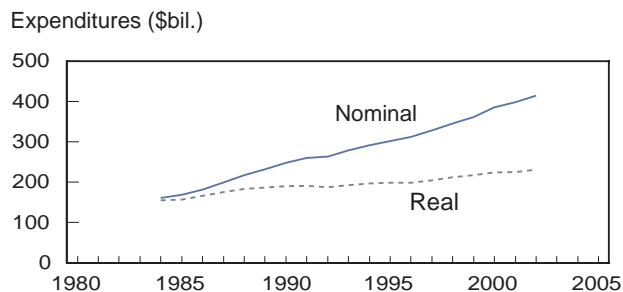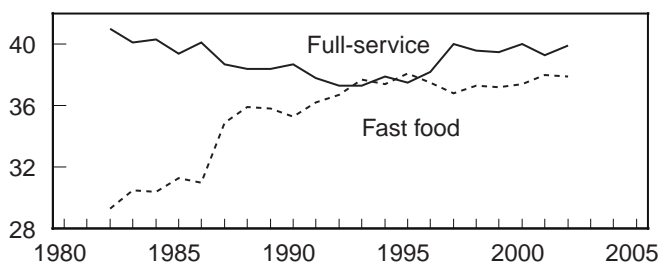
impact on the kinds of services and types of menus typically available at full-service restaurants.

Any shift in market share between fast food and full-service restaurants may further affect what foods and services restaurants of both types offer. If trends in demand favor full-service restaurants, the market could soon include more full-service restaurants offering more varied menus and a wider range of dining amenities. Fast food restaurants might also introduce many of these same foods and services themselves.

Developments in the demand for foodservice meals and snacks could also reflect important changes in the diet and health of the American population. Fast food tends to have different quantities of fat and calories than meals prepared at full-service restaurants (Lin and Frazao, 1999). Thus, to the extent that any shift in expenditures reflects changes in consumption, it is likely that changes also are occurring in the healthfulness of what consumers are eating away from home.

This study examines how the demand for food away from home is changing, how these changes could affect the size of the full-service and fast food segments, and the implications for how restaurants might respond. In particular, we focus on how developments in the economic and demographic characteristics of the Nation's population may be leading to changes in demand for the foods and services supplied by restaurants. Important trends in the U.S. population include rising incomes, an aging population, smaller household sizes, and an increasingly high proportion of households containing single people or multiple adults without live-at-home children. These developments could prompt changes in the demand for food away from home that will affect both the supply of restaurant foods and services as well as the diet and health of the consumers who demand those items.

Figure 1
Annual away-from-home expenditures

Expenditures ($bil.)

Source: Food CPI, Prices, and Expenditures: Expenditure Tables. Economic Research Service.

Figure 2
The away-from-home market by outlet type

Percent of sales

Source: Food CPI, Prices, and Expenditures: Expenditure Tables. Economic Research Service.

Determinants of Consumer Demand

The theory of household production, outlined by Becker (1965), extends classical demand theory to consider how prices, income, demographics, and time constraints can all influence a household's purchases of items like food. This economic model of household behavior holds that the costs of consumption can include prices as well as time spent eating food, preparing food, and cleaning up after a meal or snack. A household must therefore decide whether to spend time on all aspects of the activity of eating a meal (i.e., prepare food at home) or outsource some aspects like preparation and cleaning up (i.e., purchase food away from home). The optimal decision depends on many factors, including the household's finances, the opportunity cost of its manager's time, and how well the household manager can cook. In the context of Becker's model, a household manager can be defined as the person primarily responsible for shopping, cooking, cleaning, and other household chores.

Empirical analyses have further shown how specific economic and demographic characteristics of a household can influence its demand for food away from home by market segment. Four such studies use household survey data from the 1970s and 1980s. McCracken and Brandt (1987) and Byrne et al. (1998) analyzed the relationship between some key household characteristics and expenditures at each type of restaurant. Nayga and Capps (1994) studied the relationship between a household's characteristics and its frequency of dining at each type of facility. Also, Hiemstra and Kim (1995) analyzed the impact of household characteristics on expenditure by eating occasion and market segment.[6] Characteristics found to be important in these studies include the household's income, time constraints faced by the household manager, the household manager's age, number of people in the household, education level of the household manager, the household's region of residence, and the household's race and ethnicity.

Households with higher incomes tend to spend more on products and services, including leisure, variety, and dining amenities like waitstaff, ambience, and alcohol service. Food away from home is a form of leisure where leisure is defined as time spent outside of both the labor force and household production. Both fast food and full-service restaurants can provide leisure for a household manager who is freed from cooking, cleaning, and shopping. Moreover, along with the additional leisure, households with more income may also buy more variety and other dining amenities. Thus, households with higher incomes have been shown to have higher expenditures for both fast food and full-service meals and snacks, but spending at full-service restaurants is most responsive to any changes in income (e.g., McCracken and Brandt, 1987; Byrne et al., 1998).

Households also may demand more food away from home as their manager works longer hours outside the home. In particular, fast food may come to represent a convenient meal option, if such a restaurant is reasonably accessible. Spending for fast food has been shown to increase along with the number of hours worked by a household manager in the labor force (e.g., Byrne et al., 1998). By contrast, dining at a full-service restaurant can take as long as preparing, eating, and cleaning up after a meal at home. Thus, there is neither a clear theoretical nor empirical relationship between a household's demand for food at full-service restaurants and its time constraints.

The number of people living in a household also may influence its demand for meals and snacks away from home. In particular, as a household adds more members, food prepared at home may become more economical. For example, it might take 20 minutes to prepare a meal for one person at home, but just 30 minutes to prepare a meal for four people. When cooking at home, the household with more members can also benefit by purchasing larger package sizes with lower per unit costs. In total, single-person households will likely have the highest time and monetary costs per person for eating at home, while larger households will incur lower costs per capita. Empirical studies do find that larger households tend to spend less money per capita away from home (e.g., McCracken and Brandt, 1987).

A household's demand for food away from home also may depend on the ages of its members. One reason is that tastes may change as people age. For example, if the sensitivity of taste buds diminishes with age, older people may demand foods with bolder flavors (Friddle et al., 2001). Also, older and younger people may have different opportunities to socialize, so if they

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[6] Eating occasion was defined to include, for example, breakfast, lunch, and dinner.

eat out for different reasons, they may logically go to different kinds of establishments. On balance, empirical studies find that households with younger members tend to spend more money on fast food, while households with older people tend to spend more money on full-service dining (Byrne et al., 1998).

The impact of aging on demand is complicated by uncertainty about whether generations will retain their distinctive eating habits as they age. For example, will an elderly person in 2020 have the same expenditure patterns as an elderly person now with similar characteristics? Perhaps not. Younger generations know less about cooking than earlier generations did at the same point in their life (Foodservice 2010). However, even if this argument is true, younger generations may still evolve like older generations. Younger generations may compensate for their lack of skills by taking advantage of the growing array of prepared foods and convenience appliances. In fact, Blisard (2001) finds that members of different generations tend to have similar behavior away from home at the same points in their lives.

Does the structure of a household also influence its demand for meals and snacks away from home? For instance, a married couple with children is likely to have different preferences and preparation capabilities than a single-parent family, a single-person household, and multiple adults living together without children. Even after controlling for hours worked in the labor force and income, members of each of these types of household may not share the same opportunities to socialize or face the same time constraints. This is a subject area not taken up by previous research.

Effect of Household Characteristics on Demand

Our first step in this analysis is to identify the characteristics of a household that are potential determinants of its demand for food away from home. In addition to characteristics identified in past studies, we include the structure of a household, whether it is comprised of a married couple with children, a single parent with children, a single person, or multiple adults without live-at-home children. A data set must also be identified to empirically examine the relationships between the characteristics of a household and that household's demand for meals and snacks at both fast food and full-service restaurants.

Changing Structure of Households

The increasing incidence of alternative types of household in the U.S. has been much publicized (e.g., Kinsey, 1990). In this study, we define a traditional household as a married couple with live-at-home children. Traditional households accounted for 30.2 percent of all households in 1980, but just 23.5 percent in 2000 (Cromartie, 2002). Single-person households, single-parent families, and households of multiple adults without a live-at-home child are on the rise (see box, "Changing Structure of American Households").

Differences are likely to exist in the preferences and household production capabilities of diverse types of households. Members of single-person households may be more likely to socialize and date than members of a traditional family. But do these pursuits inflate one's expenditures at full-service or fast food establishments? For example, dating might lend itself to full-service restaurants promising a leisurely dining experience, while fast food establishments with play facilities may appeal more to families with children.

Single-parent households also may differ from traditional households in that they are more likely to contend with limited social opportunities, financial insecurity, and greater time constraints. These factors could influence a single-parent household's demand for convenience or other amenities associated with dining away from home.

A household with multiple adults and no child rearing responsibilities could also be very different. Having no children to raise could increase the household's ability to finance dining away from home, and expand its set of social opportunities. Greater financial resources and fewer time constraints might encourage the household to spend more money at full-service restaurants in particular.

Data Used in the Analysis

To test hypotheses about how a household's demand for food away from home is affected by its structure and other characteristics, we need a data set with information on households, their characteristics, and how much they spend in each market segment. The ideal set of data for this study would include information on at least several thousand households, the characteristics of each household, and how much each

Changing Structure of American Households

The structure of the American household is changing. The average age is higher, people are better educated, and there are fewer members per households. More Americans are also living outside of a traditional family (a married couple with live-at-home children).

A household's structure can have significant implications for how it buys and prepares food. For example, families with three or more children are considered a prime market for the basic food ingredients and volume discounts traditionally provided by grocery stores (Kinsey, 1990).

Demographic changes are behind the increasing frequency of nontraditional households. There are more "empty nest" adults living together after their children have grown up, as well as more unmarried people who are perhaps waiting longer to get married or who have been widowed (Cromartie, 2002).

This report seeks to determine whether nontraditional households eat out more or less often than their traditional counterparts, and where they tend to spend their money. For example, as compared with a married couple engaged in child rearing, single people may have more social opportunities to dine out at full-service restaurants.

1980

Single person (22.7%)

Single parent (7.3%)

Traditional Family (30.2%)

Multiple adults, no children (39.8%)

2000

Single person (25.8%)

Single parent (9.2%)

Traditional Family (23.5%)

Multiple adults, no Children (41.5%)

2020 (Projected)

Single person (28.6%)

Single parent (8.7%)

Traditional Family (16.7%)

Multiple adults, no children (46%)

Source: Derived from Cromartie, 2002, who provides projections for traditional, single-person, and single-parent households. He also provides a projection for married couples without children. However, these four categories are not all encompassing. Some household types do not belong to any group, e.g., unmarried, cohabitating adults without children. Thus, in this study, we derived projections for households comprised of multiple adults without children by determining the percentage of households not belonging to any one of the other three groups. It follows that this fourth group includes all households with multiple adults and no children.
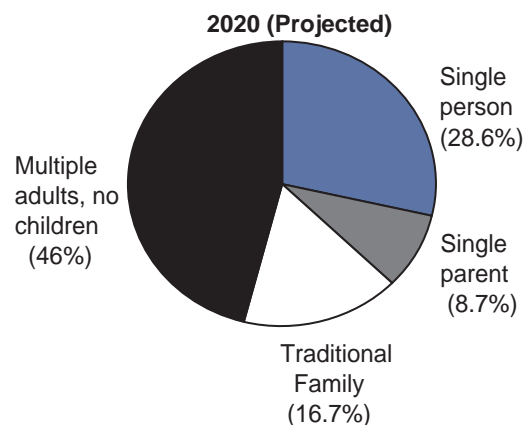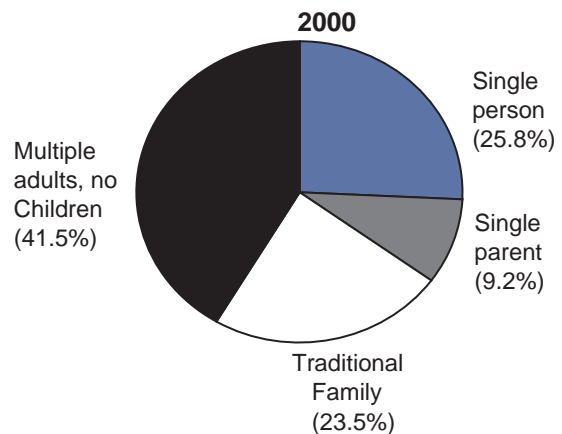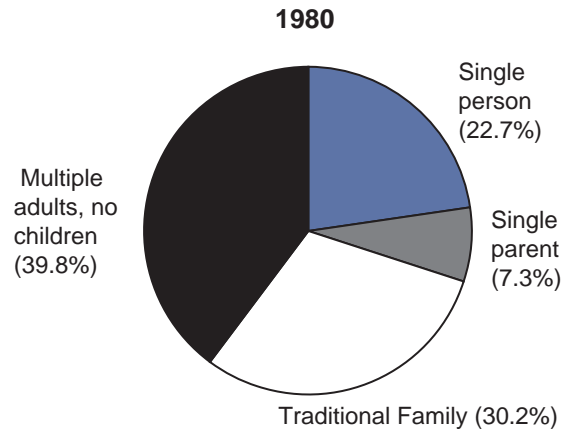
household spent in each market segment. Moreover, it would follow this sample of households over 20 to 50 years, and report on how each household's characteristics and expenditures have changed. By witnessing how each household's food spending changed with its characteristics, we might project how spending is likely to further evolve as each current household becomes wealthier, older, or different in structure. Unfortunately, these data are not available. Still, employing some assumptions, we can adapt existing sources of data to undertake the same sort of analysis.

The Bureau of Labor Statistics (BLS) provides the only public survey of household characteristics and household expenditures.[7] The BLS Consumer Expenditure Survey (CES) is an annual representative sample of spending by American households.[8] In the diary section of the survey, each household reports its expenditures on food away from home and other goods for 2 weeks. These data can also be matched with information about each household, such as its income, number of members, region, and race.

The CES does not follow the same households over time, and it does not classify household expenditures away from home prior to 1998. The BLS surveys a household for one 2-week period, and then drops this household from its survey. Thus, each annual survey contains a completely different set of households. Moreover, because the BLS did not break down away-from-home spending on fast food versus food at full-service restaurants prior to 1998, we can only use data on household characteristics and their spending patterns for 1998, 1999, and 2000.[9]

An additional limitation of household surveys in general, including the CES, is that they do not include

expenditures by businesses or for people in institutions. It follows that the analysis in this study does not capture all of the away-from-home market. In order to determine how much of the market is captured by the CES, we undertook a "back of the envelope" calculation. In 2000, among households completing the survey, we find that per capita away-from-home spending averaged $19.21 each week, not including alcohol. It follows that households in the United States spent about $1,000 per person per year. Thus, since the U.S. population equaled 281 million in 2000, it can be further estimated that spending by all households was around $281 billion. We estimate that the CES captures about 75 percent of the total market, since the size of the away-from-home market was approximately $385 billion in 2000 (fig. 1).

Statistical Model of Away-From-Home Expenditures

The statistical model used in this report relates a household's pattern of spending away from home to its economic and demographic characteristics, but not to prices. We recognize that prices are an important determinant of demand. However, since the CES does not contain information on prices and our data were collected over a short period of time, we assume that there was little variation in the price of fast food relative to the price of food at full-service restaurants over the period when the data were collected. In other words, households are assumed to have faced similar relative prices.[10] This assumption allows us to view a household's expenditures on meals and snacks as value-weighted quantities. For example, a meal at a full-service restaurant may be more costly than a meal at a fast food restaurant. It is therefore possible that a household eats fast food more often than full-service meals, but reports similar expenditures in both market segments. In this case, price differences serve to

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[7] The National Panel Diary Group (NPD) also undertakes such a survey, Consumer Reports on Eating Share Trends (CREST). However, these data have not been available for use by outside researchers in recent years.

[8] It includes only noninstitutional households. An institutional household would include people living in institutions, such as prisons or military facilities.

[9] We also removed households providing incomplete information on key characteristics and/or reporting negative incomes from the sample. The CES designates households as "complete" or "incomplete" income reporters, depending on their response to income questions. The distinction between complete and incomplete reporters is based, in general, on whether or not the respondent provided values for major sources of income, such as wages and salaries, self-employment income, and Social Security income. However, even complete income reporters may not have provided a full accounting of all income from all sources. It is also possible

for complete reporters to report negative incomes due to self-employment or other income losses. In this study, incomplete income reporters and complete reporters with negative incomes are excluded. In each year, the final sample includes about 5,000 households.

[10] Our data were collected over 3 years. We allow prices to vary from year to year. We also allow prices to depend upon the season of the year when the survey was administered as well as upon the region of the country in which the household resides. Households are assumed to face similar prices otherwise. Studies of the away-from-home market commonly make this same assumption, including McCracken and Brandt (1987) and Byrne et al. (1998).

weight the value of purchases to the household. In fact, a similarity of expenditures in the two segments would suggest that the household receives similar levels of satisfaction from its total purchases of both types of food away from home. Viewing prices as weights for aggregating purchases in this way is consistent with classical demand theory (Green, 1964).

The Statistical Model

The statistical model will provide more accurate estimates of the relationships between a household's characteristics and its spending away from home, if we simultaneously estimate the equations for spending on fast food and spending at full-service restaurants. For instance, because of variation in how much household managers enjoy (or dislike) cooking, some households may eat out relatively infrequently (or frequently) at both types of facility. If so, a correlation is said to exist between a household's spending at full-service restaurants and the same household's spending on fast food. Including this correlation in the model will improve its accuracy, which can be accomplished using existing procedures for simultaneously estimating models with multiple equations.[11]

Obtaining accurate estimates of the relationship between household characteristics and away-from-home expenditures requires a special statistical procedure to account for households that do not have any such expenditures. During the 2-week survey period, 21 percent of households completing the CES spent no money on fast food, and 45 percent spent no money at a full-service restaurant. This lack of purchases is known as zero-censoring, and raises some estimation problems. If the data contain many zero-expenditure observations, results based on usual methods of estimation could be biased.

Models that allow a researcher to estimate multiple equations simultaneously and to account for zero-censoring include those developed by Heien and Wessells (1990) and Shonkwiler and Yen (1999). Here, we apply the latter model because it appears to be the most accurate and is "state-of-the-art."[12] A brief

description of this model follows, and a more detailed description is supplied in the appendix.

The Shonkwiler and Yen method proceeds in two steps to correct for the problem of zero-censoring. In our study, the first step analyzes whether each household completing the CES had non-zero expenditures in each market segment. In particular, the probability that a household spends some money on fast food is estimated as a function of the household's income, time constraints, and demographic characteristics. The same equation is also estimated for each household's decision about whether to spend some money at full-service restaurants. These results are then used in the second step. At this point, we derive equations relating a household's income and demographic characteristics to its expenditures in both market segments. These equations contain an adjustment to correct for the fact that many households spent nothing, which is based on the results of estimating the aforementioned probabilities in the first step. The adjusted equations for spending at fast food and at full-service restaurants can then be estimated using ordinary techniques for the simultaneous estimation of multiple equations.

Definition of Variables

Data in the CES must be prepared for use in the statistical model before the analysis can be conducted. In particular, variables must be calculated from the raw data in the CES. We specify and create several variables, such as measures of household expenditures, household income, hours worked by household managers, household structure, the age of a household manager, and the number of people living in a household (table 2).

To calculate the values of per capita expenditures at fast food and full-service restaurants, we divided a household's weekly expenditures at each type of facility by the number of members in the household. Inflation-adjusted spending was then determined by dividing expenditures by the Consumer Price Index (CPI)[13] for all items.

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[11] This procedure is known as a seemingly unrelated regression.
[12] The method of Heien and Wessells (1990) has been widely applied over the past decade, including by Byrne et al. (1998). However, Shonkwiler and Yen (1999) have found a shortcoming of this model and present an alternative specification. Furthermore,

they use Monte Carlo techniques to demonstrate that their proposed specification is statistically more accurate. The method of Shonkwiler and Yen (1999) has been recently applied in several studies (e.g., Su and Yen, 2000 ; Yen et al., 2002).
[13] Fourth quarter of 2000 = 100.

Table 2—Variables measuring expenditures and household characteristics, calculated from CES

Variable	Mean	Definition
Expenditures:		
Full-service restaurant	$8.43	Per capita, average weekly spending at full-service restaurants
Fast food	$8.15	Per capita, average weekly spending on fast food
Household characteristics:		
Income	$422.00	Household's per capita, average weekly, real, before-tax income
Hours worked		
by manager	24.2	Hours spent in the labor force by the household manager
Age of manager	47.55	Age of the household manager
College-educated manager	0.25	Indicator variable of whether household manager has a college education
Size of household	2.56	Number of members reported to be living in the household
Race:		
Asian	0.047	Indicator variable of whether respondent or spouse identified themselves as Asian
Black	0.09	Indicator variable of whether respondent or spouse identified themselves as Black
Hispanic	0.11	Indicator variable of whether respondent or spouse identified themselves as Hispanic
Household type:		
Traditional	0.27	Indicator variable of whether respondent is married with live-at-home children
Single	0.28	Indicator variable of whether respondent lives alone
Multiple adults		
without children	0.35	Indicator variable of whether respondent lives with at least one other adult but no children
Single parent	0.10	Indicator variable of whether respondent is an unmarried adult with live-at-home children

Since income is a key variable that explains spending, we calculated this variable from data in the CES as well. To do so, we divided a household's total income by the number of household members to obtain per capita income. Per capita income was then made weekly (divided by 52) and stated in real terms (divided by the CPI).

Data in the CES were also used to calculate hours worked each week outside of the home by the household manager. However, the CES does not identify the household manager—the person primarily responsible for household chores. Yen (1993), who also used the CES, circumvented this issue by studying the impact of hours worked by married women. However, this study takes a slightly different approach. Each household's manager is defined as the survey respondent if the person was single. For married respondents, the household manager is assumed to be the spouse who works the fewest hours outside the home.[14]

Three binary variables were also created to capture household structure. Each variable corresponds to one of the three nontraditional types of household identified in this report. These variables equal "one" if the household belongs to a certain type, and "zero" otherwise. For example, one variable identifies whether a household includes only a single person. It equals one for the 28 percent of households in our sample who are single, and zero for the other 72 percent. All households were classified as belonging to either one

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[14] This approach is straightforward for households with either only one adult or a married couple. However, it may be less clear when applied to households with multiple unmarried adults, e.g., same-sex couples. In such a case, the household manager is always the survey respondent. There are two reasons for this default approach. First, the CES does not include information on adults in a household who are not married to the survey respondent. Second, it is arguable that the action of responding to the CES is itself a domestic chore. If so, it is further likely that the person who maintains the diary section of the CES is the primary household manager.

of the three types of nontraditional household or as being a traditional household.[15]

Other household characteristics in our model include the age of the household manager; number of people living in the household; whether the household manager had completed college or attained a higher level of education; household region; year the survey was completed; season in which the survey was completed; and whether a member of the household described himself or herself as belonging to a minority group including Black, Asian, or Hispanic.

Results of Model Estimation

The results of our statistical analysis agree with both economic theory and past studies. Household structure, a variable not considered in past studies, also is found to have a statistically significant impact on how much a household spends in each segment of the market. Estimated relationships are evaluated at the sample means shown in table 2. The results describe how an average household could be expected to adjust its expenditures in response to a change in a variable, such as its income or household type (table 3). Other statistical results are supplied in the appendix.

Spending in both market segments responds positively to an increase in per capita income. However, a 10-percent increase in per capita income would cause a typical household to augment its per capita expenditures on fast food by about 3.2 percent, versus 6.4 percent for full-service restaurants. Like past studies, including Byrne et al. (1998) and McCracken and Brandt (1987), our analysis suggests that households with more income buy more leisure as well as more of other dining amenities.

Time spent by the household manager in the labor force also has significant implications for how much a

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[15] For this reason, we did not include a variable to account for whether a household was traditional. Since each household in the data is classified as belonging to one type and only one type, a proper statistical analysis requires that we omit one category of household from the analysis. This omission creates the orthogonal relationship among predictor variables that is required for estimating a covariance matrix and conducting hypothesis tests. The consequence is that the identified relationships between the three variables in the model and expenditures must be interpreted as a measure of the difference in per capita weekly spending by these households and traditional households.

Table 3—Relationship between household characteristics and expected expenditures

Characteristic	Full-service	Fast food
Change in expenditures due to a 10-percent increase in the variable:		
	Percent	
Income	+6.4	+3.2
Hours worked by manager	+0.53	+1.44
Size of household	-2.25	-1.74
Age of manager	+1.05	-5.99
Absolute change in expenditure due to household taking on the characteristic:		
	Dollars	
College-educated manager	+2.15	+0.24
Single-person household	+2.92	+2.68
Single-parent family	-0.83	-0.83
Multiple adults without children	+1.98	+0.89
Asian household	+0.81	+0.39
Black household	-2.87	+0.01
Hispanic household	-0.93	+0.14

household spends away from home. Spending for fast food is especially sensitive. A typical household increases its per capita spending on fast food by about 1.4 percent following a 10-percent increase in the number of hours worked outside the home by its manager. By contrast, this same household would increase its per person spending at full-service restaurants by only about 0.5 percent. The link between time constraints and spending for fast food—but not for full-service restaurants—has been established.

The impact of aging also varies by market segment. Households with older managers dine at fast food establishments less frequently and, as a consequence, spend less money. An increase of 10 percent in the age of a household manager reduces the same household's per capita expenditures on fast food by about 6 percent. However, the same increase in age does not negatively affect spending at full-service restaurants (table 3). As other studies have found, people's preferences for food and services may tend to favor full-service restaurants as they age.

Larger households spend less money per capita in both market segments. This finding supports prior research arguing that economies exist in purchasing and preparing meals at home. A typical household can be expected to reduce such spending in both market segments about 2

percent following a 10-percent increase in the number of people living in the household (table 3).

Household structure also is important. However, because of the way variables capturing this structure are defined, we must be careful to interpret our results. The most appropriate interpretation of variables capturing household structure is to consider how a nontraditional household with otherwise typical characteristics would likely adjust its spending away from home if it became a traditional household. For example, as compared with a traditional household, higher per capita expenditures are typical of single-person and childless households. Indeed, a single person spends almost $3 more per person at each type of establishment. Thus, a single person could be expected to reduce his or her per capita spending away from home by $3 (for both fast food and full-service food) if he or she married and had a child.

Single parents and their children are the only type of household tending to spend less per capita than traditional households. Single parents spend about 83 cents less per person at each type of establishment than do their married counterparts. It follows that a married person with children and otherwise typical characteristics can be expected to reduce spending on fast food by 83 cents per person per week should he or she divorce or become widowed.

Other variables, like race and education, are also significant determinants of how much a household spends away from home. For instance, between 1998 and 2000, when all other variables are set at their mean value, a Black household still spent $2.87 less per person at full-service restaurants than did other households (table 3). This finding is consistent with past studies, and may reflect differences in tastes, or possibly more limited access to foodservice establishments.

Simulating Future Away-From-Home Expenditures

Future changes in demand can be simulated by incorporating into our statistical model expectations about how key variables may change. These projected changes are based on modest growth in income, no change in hours worked by household managers, and the likely evolution of demographic variables, such as age of household managers, between 2000 and 2020. This same procedure has been used by Blaylock and

Smallwood (1986), Blisard and Blaylock (1993), and Blisard et al. (2003).

One way to interpret our simulation is as a snapshot of how people would have behaved in 2000, if the projected changes in the population for 2020 were already in place in 2000. For instance, we might ask how spending on fast food would have been different in 2000 if household types assumed the same proportions as we expect in 2020. This interpretation is the best one because of a number of assumptions we have to make. First, we assume there will be no change in the price of fast food relative to the price of food at full-service restaurants. If such a change were to occur, it could cause households to spend more or less than the simulated amount. Second, we assume that household characteristics will continue to influence consumer behavior in the same way. For example, as a consumer moves from one demographic group to another, his or her preferences will take on the characteristics of the new group. Thus, an elderly person in 2020 is assumed to have the same expenditure patterns as an elderly person in 2000 with similar characteristics (some evidence to justify this latter assumption is provided by Blisard (2001) for the case of spending away from home). Third, our simulation holds constant factors like the number and location of restaurants as well as the mix of food and services supplied by restaurants. For instance, it is assumed that fast food restaurants will continue to supply the same types of food and the same dining amenities as they did in 2000. We will later consider the significance of relaxing this assumption, i.e., fast food restaurants offering more varied menus and heightened services.

Projected changes in the U.S. population include modest growth in household incomes. Real per capita disposable income increased by 1.2 percent per year on average between 1988 and 1998 (Saunders and Su, 1999). Thus, we assume that per capita incomes will rise by 1 percent per year on an inflation-adjusted basis between 2000 and 2020.[16]

No change is projected in the time constraints faced by household managers, as we have found no compelling evidence to suggest that such changes will occur. In recent years, the growth in labor force participation among adult women has slowed. The BLS reports that participation was 51.6 percent in January 1980, 57.7 percent in January 1990, and 60.3 percent in January

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[16] This same assumption was made in Blisard et al. (2003).

Table 4—Current and projected future population characteristics, used in simulation

Characteristic	2000	2020
Based on BLS reports:		
Income[1]	$422.10	$514.98
Hours worked by manager[2]	24.2 hours	24.2 hours
Based on Census projections:		
Size of household	2.5 members	2.4 members
Age of manager[3]	47.33 years	49.4 years
College-educated manager	23.5% of households	26.4% of households
Single-person household	25.8% of households	28.6% of households
Single-parent household	9.2% of households	8.7% of households
Multiple adults, no children[4]	41.5% of households	46% of households
Asian household	3.9% of households	5% of households
Black household	12.3% of households	12.9% of households
Hispanic household	12.6% of households	18% of households

[1] Future income is calculated assuming a 1-percent rate of growth in per capita, real income. In particular, we used the formula for future value and continuous compounding, i.e., Income2020 = Income2000(1+0.01)20

[2] No change is assumed in hours worked by household managers. Our assumption is based on the observation that measures of the working status of adult Americans, such as the female labor force rate, have been relatively stable over the past 10 years.

[3] The age of a household manager is derived from projections in Cromartie (2002). It is the average age of all people older than 19 years.

[4] Derived from Cromartie, 2002, who provides projections for traditional, single-person, and single-parent households. He also provides a projection for married couples without children. However, these four categories are not all encompassing. Some household types do not belong to any group, e.g., unmarried, cohabiting adults without children. Thus, in this study, we derived projections for households comprised of multiple adults by determining the percentage of households who could not be classified as belonging to any one of the other three groups. It follows that this fourth group includes all households with multiple adults and no children.

2000. It then fell back to 59.8 percent in December 2002. We assume that, between 2000 and 2020, there will be no further changes in labor force participation, nor in how much a typical household manager works outside of the home.

The future demographic characteristics of households are derived from Cromartie (2002).[17] Population, household, and education projections used here are derived from reports by the U.S. Census Bureau. The Census Bureau population series includes projections by single year of age, sex, race, Hispanic origin, and nativity (foreign-born or native) out to the year 2100. By contrast, educational attainment projections by sex and race are available for the years 2003 and 2028, so

our numbers represent interpolations between these two dates.

Projections derived from Cromartie (2002) are not intended as forecasts or predictions; rather, they represent assumptions about future trends in population, household formation, schooling, and the economy at large. For instance, in the population series, projections are based on assumptions about fertility, mortality, and immigration. In fact, differing assumptions were presented to provide three different projection series, representing high, middle, and low alternatives. This study uses projections based upon the middle series. Despite uncertainty about the extent of changes, the finding in Cromartie (2002) is that the Nation's future population will be older, better educated, live in smaller households, be racially and ethnically more diverse, and live in more nontraditional types of households (table 4).

[17] Further information on how the projections in Cromartie (2002) are calculated can be found in Blisard et al. (2003).

Future Spending at Full-Service Restaurants

The simulated net effect of all developments in the population is to lift per capita spending by about 18 percent at full-service restaurants between 2000 and 2020.[18] Rising incomes, changing household structures, and decreasing household sizes contribute significantly to this growth (table 5). Aging and other projected developments in the population have only a small impact on spending in this market segment.[19]

Rising incomes have the greatest impact of all projected developments in the population on per capita spending at full-service restaurants. According to our simulation, if incomes rise by 1 percent annually between 2000 and 2020 and all other variables remain unchanged, spending at full-service restaurants will increase by just under 15 percent per capita by 2020. In the near future, households with more income will be buying more leisure, variety, and dining amenities.

Expected developments in household structure have the next largest impact on spending at full-service restaurants. As the proportion of households characterized as traditional decreases, spending at full-service restaurants will increase by about 2 percent per person. Though small relative to the effect of changes in income, this impact is still significant given the dollar size of this market.

Decreasing household sizes will further increase per person spending at full-service restaurants by just under 1 percent. Larger households spend less away from home (per capita) because of economies in purchasing and preparing meals and snacks at home.

Table 5—Simulated change in per capita spending due to economic and demographic trends

Trend	Full-service	Fast food
	Percent	
1-percent annual growth in real income	+14.86	+6.67
Increasing proportion of alternative household types	+2.17	+1.33
Aging	+0.48	-2.44
Decreasing household sizes	+0.97	+0.67
Increased levels of education	+0.72	+0.11
Racial and ethnic diversity	-0.72	+0.22
Net effect of all anticipated developments	+18	+6

Future Spending on Fast Food

The simulated net effect of all developments in the U.S. population is to lift per capita spending by about 6 percent on fast food between 2000 and 2020.[20] Rising incomes, changing household structures, decreasing household sizes, and aging will all be influential. However, unlike the other developments, the aging of the population will subdue growth in per capita spending on fast food (table 5).

Per capita spending on fast food increases with incomes. If all other variables remain unchanged and incomes increase by 1 percent annually, such spending would increase by just under 7 percent by 2020. Households with more income are likely to buy more leisure for their manager.

Changes in household structure and decreasing household sizes should lead to increased spending for fast food. The net effect of these developments is to increase per capita spending for fast food by about 2 percent. For example, as smaller households find

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[18] Simulated growth is in real terms, i.e, inflation-adjusted dollars (base = fourth quarter of 2000). Moreover, this simulation is for per capita spending. It does not reflect likely growth in total spending at full-service restaurants. This result is simulated by further considering the impact of increased growth in the size of the population. In total, assuming the population will expand from 281 million to 332 million people (Cromartie, 2002), expenditures at full-service restaurants could rise by 40 percent.

[19] Some of these other variables may very important determinants of demand. However, between 2000 and 2020, they are not expected to change in ways that significantly alters expenditures away from home. For example, as shown in table 2, Black households spend much less at full-service restaurants than non-Black households.

[20] Once again, simulated growth is in real terms, i.e, inflation-adjusted dollars (base = fourth quarter of 2000). Moreover, this simulation is for per capita spending. Total growth in the market is simulated by considering the projected growth in the size of the population from 281 million to 332 million people. According to our simulation, the total spending by all households on fast food will grow by 26 percent.

The Changing Face of Fast Food

Many fast food restaurant companies are offering an increasingly wide range of goods and services. In fact, a new kind of restaurant concept is also emerging, fast-casual, which tries to combine the convenience of fast food with the kinds of menus more typically found in a full-service restaurant. This changing face of fast food can be seen in the history of one of America's best-known restaurant chains, McDonald's.

McDonald's began as a fast food concept in 1948, when the McDonald brothers eliminated many of the menu items and dining amenities previously available at their full-service restaurant. The remaining core menu had six products - hamburgers, cheeseburgers, fries, soft drinks, coffee, and shakes. The brothers also ceased to employ waitstaff, and replaced their short-order cooks with workers who specialized at specific tasks like grilling burgers. Says the company, "this limited menu concept triggered the 'fast food' concept, because focusing on just a few items that were prepared with standardized procedures made food service a model of efficiency" (McDonald's Corporation, media website).

The menu at McDonald's has gradually expanded to again include a wider variety of menu items. The first addition to McDonald's original menu was the Filet-O-Fish™ in 1963. A handful of other now well-known products were then promoted over the next few decades including the Big Mac™ (1968), apple pie (1968), Egg McMuffin™ (1973), cookies (1974), and Chicken McNuggets™ (1983). However, according to Consortium Members, a group representing about 350 McDonald's franchisees, more recent new product introductions have been the most "ambitious" in the company's history (Zuber, 2001).

Efforts to improve the atmosphere at McDonald's stores have accompanied efforts to expand menu items. In fact, the first McDonald's restaurant built to accommodate indoor seating was opened in 1962. However, the most noticeable efforts appear to be aimed at families with children. Ray Kroc, who became the company's franchising agent in 1954 and later purchased the McDonald's chain in 1961, is credited with focusing the company's marketing strategy on children through characters like Ronald McDonald. "A child who loves our TV commercials," Kroc is quoted as saying, "and brings her grandparents to a McDonald's gives us two more customers" (Schlosser, 2001). Notable child-oriented goods and services include packaging meals for children with toys, known as Happy Meals™ (1979), and installing play equipment in selected restaurants, known as a Playland™ (1971).

Offering more goods and services has required McDonald's to rethink how its operates. In fact, in 1998, the company replaced its much-touted kitchens with the "Made for You" production system. According to the company, "Food is prepared to order for each customer. Somebody doesn't want pickles on a Big Mac or wants mustard on a grilled chicken sandwich? No problem…What's especially exciting is that this is far more than just an operating system. It provides a platform for food innovation because it makes it easier to serve a greater variety of products" (McDonald's Corporation, 1998 Annual Report).

Many companies are promoting a newer concept, fast-casual, which strives to combine the food and atmosphere of full-service restaurants with the convenience of fast food. Examples include Boston Market, Chili's Express, and Schlotzsky's Deli. As of 2003, the McDonald's Corporation continues to own Boston Market.

cooking at home relatively less economical than larger ones, spending on fast food will grow.

The aging of the population will subdue any increase in spending due to changes in household structure and size. Our simulation suggests that per person spending on fast food may decrease by over 2 percent with the aging of the population. One possibility is that older people derive less satisfaction from the foods and services traditionally offered at these establishments.

Implications for Market Composition

Changes in demand are driving changes in the relative sizes of each segment of the away-from-home market. Rising incomes, the growing incidence of nontraditional households, and other developments in the U.S. population will allow for growth in both of the two largest market segments. However, population trends seem to favor increased spending at full-service restaurants relative to fast food.

How might restaurant companies adjust their businesses in response to the identified shift in demand? Our simulation has made some strict assumptions about prices and the behavior of consumers and firms. We now relax the assumption about firm behavior.

One plausible response by fast food companies would be to introduce more of the foods and services traditionally offered by full-service restaurants. In fact, among some companies, such a response appears to be underway. For example, many Subway restaurants accept debit and credit cards, and McDonald's has announced the same—despite reservations about its effect on the speed of its service. However, in tests using high-speed connections, McDonald's found that electronic payments can now be processed in only 5 seconds, versus 8 to 10 seconds for cash payments (*CNNMoney*, November 2002).

Many fast food restaurants are also expanding the variety of their menus. A study by the National Restaurant Association estimated that more than 75 percent of fast food restaurants introduced new menu items in 2000, while 66 percent intended to add new food items in 2001 (Operations Report 2001). At McDonald's restaurants, for example, Big Macs™ are now sold alongside newer products like breakfast bagels, salads, fruit and yogurt parfaits, and soft-serve

ice cream with candy mix-ins. In 2003, the company was further considering an increase in its scope of healthy menu items, including sliced fruits and vegetables (see box, "The Changing Face of Fast Food").

The response of fast food restaurant companies varies by firm, and the ability of many such restaurant companies to adapt may be limited. Marketing and logistics will likely prevent many fast food chains from aggressively expanding their menus and/or scope of services. First, some chains appear to worry about confusing their brand identity. Chick-fil-A, for one, added its first new category in 6 years in 2001, a portable salad line called "Cool Wraps." The vice president of brand development conceded that "We are kind of a slow poke for development because we believe in continuance of the menu" (Yee, 2001).[21] Second, fast food chains may jeopardize the speed of their service in offering too many services or menu items.

There is also the behavior of full-service restaurant companies to consider. These companies could both open more outlets and offer more variety/dining amenities at each establishment. In fact, in 2001, full-service restaurants were offering 31.6 percent more items on their menu than in 1997 (Yee, 2001). They were also increasing the scope of their services, including new options for takeout. In short, full-service restaurants may try to capture the growing demand for varied menu items among consumers who also remain time-starved.

In conclusion, the relative growth of the fast food segment appears to have stalled. Trends in demand now favor full-service dining. However, any changes in market share between the two segments will also depend on other factors, such as how firms in both market segments change the mix of foods and services supplied to their customers. Future research is needed to better understand these later changes as well as their implications for industry structure and the health of the American population.[22]

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[21]This survey did not include fine dining establishments (i.e., restaurants with white tablecloths and a maitre'd).

[22]ERS is currently undertaking a study of restaurants to determine how they are adapting their menus and services. Evidence on this subject admittedly is anecdotal at this point in time.

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Appendix

The first step in the statistical analysis was to model whether a household purchased some food at a full-service and/or a fast food establishment. These two decisions are motivated by the following random utility model:

$$Y^*_{mh} = \gamma'_m W_h + U_{mh}$$

where Y^*_{mh} is the difference between the benefit and cost of consumption in market segment m for household h, W_h is a vector of household characteristics, γ_m is vector of parameters relating W_h to Y_{mh}, and U_{mh} is a normally distributed error term. Variables included in W_h are the explanatory variables in table 2, which are thought to determine a household's likelihood of purchasing food away from home, as well as variables to control for the year when the survey was administered, the season when the survey was administered, and the household's region. It is then assumed that households buy some food in market m if and only if $Y^*_{mh} > 0$, i.e., the benefits exceed the costs for some nonzero level of spending. We next denote household h's observed decision at the first stage as

$$Y_{mh} = 1 \text{ if } Y^*_{mh} > 0$$
$$Y_{mh} = 0 \text{ if } Y^*_{mh} \leq 0$$

Finally, given our assumption that U_{mh} is normally distributed, the probability that household h makes some positive purchase in market m is represented as

$$\text{Pr ob}(Y^*_{mh} > 0) = \Phi(\gamma'_m W_h) \quad (1)$$

where $\Phi(\gamma'_m W_h)$ is the cumulative normal distribution evaluated at $\gamma'_m W_h$. The statistical analysis of (1) produces the coefficient values reported in appendix table 1, as well as the reported standard errors of these estimates.

In the second step of the model of Shonkwiler and Yen (1999), we estimate a household's expenditures using our estimates of the unknown parameters, $\hat{\gamma}_m$, from the first step. In particular, expenditure by the hth household in the mth market is modeled as

$$\text{FAFH}_{mh} = \Phi(\hat{\gamma}_m W_h) X'_h \beta_m + \delta_m \varphi(\gamma'_m W_h) + \varepsilon_{mh} \quad (2)$$

where FAFH_{mh} is h's total expenditure in market m, $\varphi(\gamma'_m W_h)$ is the normal probability distribution evaluated at $\hat{\gamma}_m W_h$, X_h is a vector of household characteristics explaining expenditures, β_m and δ_m are a vector of unknown parameters, and ε_{mh} is a normally distributed error term.

The variables in X_h also include many of the explanatory variables in table 2, with a notable exception. As other authors using two-step models have also done, we omit hours worked by the household manager from X_h. "Market labor hours constrains the amount of time available for household production and so is assumed to have a positive effect on the decision to consume food-away-from-home," argue Byrne et al. (1996). "However, once the decision to consume food-away-from-home is made, there is little basis to suggest that the number of hours worked would affect the expenditure level."

Maximum likelihood estimates of the unknown parameters are reported in appendix table 2. The standard errors of these coefficient estimates have been calculated using the method of Murphy and Topel (1985) and are also reported in the table.

Appendix table 1—Parameter estimates and standard errors for selected variables at first step

	Full-service	Fast food
Constant	-0.1866*	1.319*
	(0.0744)	(0.0864)
Income	0.0011*	0.0004*
	(0.0001)	(0.0001)
Income-squared	-0.0000002*	-0.00000008*
	(0.00000002)	(0.00000001)
Hours worked by manager	0.0026*	0.0064*
	(0.0007)	(0.0008)
Size of household	-0.003	0.036*
	(0.0110)	(0.0131)
Age of manager	0.0007	-0.0137*
	(0.0007)	(0.0008)
College-educated manager	0.2338*	0.1557*
	(0.0275)	(0.0327)
Single-person household	-0.3301*	-0.3827*
	(0.0437)	(0.0516)
Single-parent family	-0.2603*	-0.1924*
	(0.0423)	(0.0492)
Multiple adults without children	-0.0219	-0.0629
	(0.0329)	(0.0399)
Asian household	-0.1046*	-0.2182*
	(0.0525)	(0.0599)
Black household	-0.4926*	-0.1939*
	(0.0400)	(0.0429)
Hispanic household	-0.1979*	-0.1716*
	(0.0372)	(0.0426)
Log-likelihood	-9139.236	-6629.114
Likelihood ratio index	0.07767	0.09805

*Denotes statistical significance at the 5 percent level

Appendix table 2—Estimated coefficients and standard errors for selected variables at second step

	Full-service	Fast food
$\Phi(\gamma'_m W_h)$	10.90 (6.764)	13.07 (0.8989)
$\Phi(\gamma'_m W_h)$ X Income	0.0118* (0.0056)	0.0056* (0.0011)
$\Phi(\gamma'_m W_h)$ X Income-squared	-0.0000007 (0.0000015)	-0.0000012* (0.0000002)
$\Phi(\gamma'_m W_h)$ X Size of household	-1.293* (0.3017)	-1.024* (0.1294)
$\Phi(\gamma'_m W_h)$ X Age of manager	0.0247 (0.0206)	0.0013 (0.0211)
$\Phi(\gamma'_m W_h)$ X College-educated manager	0.8359 (1.173)	-1.107* (0.3786)
$\Phi(\gamma'_m W_h)$ X Single-person household	9.874* (1.819)	7.201* (0.6376)
$\Phi(\gamma'_m W_h)$ X Single-parent family	1.152 (1.646)	0.6045 (0.4780)
$\Phi(\gamma'_m W_h)$ X Multiple adults w/o children	3.519* (0.8206)	1.574* (0.3776)
$\Phi(\gamma'_m W_h)$ X Asian household	2.975* (1.474)	2.776* (0.7031)
$\Phi(\gamma'_m W_h)$ X Black household	1.078 (2.785)	1.959* (0.5841)
$\Phi(\gamma'_m W_h)$ X Hispanic household	0.9039 (1.466)	1.911* (0.4975)
$\varphi(\hat{\gamma}'_m W_h)$	-4.120 (7.696)	-14.40* (3.5200)
System-weighted R^2	0.3453	

*Denotes statistical significance at the 5-percent level.