

Analysis of factors influencing USA households' choice of ethnic restaurants

USA
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restaurants

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Abstract

Purpose – This study empirically identifies household demographic and socioeconomic characteristics as well as restaurant characteristics that affect the probability of households choosing an ethnic restaurant (American, Asian, European, Mexican and other) in the USA.

Design/methodology/approach – A multinomial logistic regression model is applied using the data derived from the information from the National Household Food Acquisition and Purchase Survey conducted between April 2012 and January 2013.

Findings – The empirical findings suggest that such factors as the unit cost on away-from-home food items (i.e. price), region of residence, primary respondent's ethnicity, race, education level, marital status and employment status as well as such restaurant characteristics as availability of loyalty program and presence of coupons significantly affect the probability of households choosing a particular ethnic restaurant in the USA.

Research limitations/implications – The original dataset employed in this study does not permit the quantification of information associated with size, location, and number of years in operation for the ethnic restaurants considered. Also, the dataset does not permit the classification of the ethnic restaurants included in the "other" category.

Originality/value – To the best of the authors' knowledge, there has been no empirical micro-level analysis associated with determining factors impacting households' choice of ethnic restaurants using a polytomous logistic regression model allowing for a wide range of ethnic restaurants and covering the entire USA, based on an extensive set of household demographic and socioeconomic factors and restaurants characteristics. As such, the current study plugs this research gap, with the empirical findings furnished by this study being of importance to ethnic restaurant operators (owners) in the operators' effort to develop effective marketing strategies.

Keywords Ethnic restaurants, Multinomial logistic regression model,
The national household food acquisition and purchase survey

Paper type Research paper

1. Introduction

The demand for both food-at-home (FAH) and food-away-from-home (FAFH) has been on the rise among American consumers. According to the Economic Research Service (ERS) of the U.S. Department of Agriculture (USDA), USA consumers expended around \$1.9 trillion on food and alcohol in 2020, a 37% increase from around \$1.4 trillion in 2010 (USDA, ERS 2020). Of total nominal food and alcohol expenditures in 2020, expenditures made at FAFH institutions (public eating places such as restaurants, fast-food places, school cafeterias, etc.) accounted for \$896 billion, up by 57% from \$688 billion in 2010 (USDA, ERS 2020). At the same time, in 2020, over \$1 trillion was expended at food retailers (supermarkets, convenience stores and other retailers) on food and alcohol for FAH consumption, recording an increase of 44% from \$694 billion in 2010 (USDA, ERS 2020).



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Restaurants, both full-service and limited-service, have been a major force behind the growth in the demand for FAFH expenditures, accounting for 67% of total nominal food and alcohol away-from-home expenditures, thereby registering an increase of 6% from 61% in 2010 (USDA, ERS 2020). According to the National Restaurant Association's 2000 survey, on average Americans aged 8 and above eat 4.2 meals per week prepared commercially (Ebbin, 2000), with 22 and 18% of meals prepared commercially for men and women, respectively (National Restaurant Association, 2012). Factors influencing the expenditures on FAFH include higher household income, relative rates of increase in FAFH and FAH prices, employment of household members and the time it takes to prepare meal, the presence of children in the household, advertising and promotion expenditures for meals and beverages by restaurants, marital status and gender of the household head and differences in eating-out preferences across generations (Rahkovsky *et al.*, 2018; Saksena *et al.*, 2018).

With dining out being a popular choice among Americans, the number of restaurants increased from 2000 through 2015, with fast-food and limited-service restaurants outgrowing full-service restaurants and accounting for about 54% of all restaurants in the USA by 2015 (Saksena *et al.*, 2018). In this increase of the number of restaurants, ethnic restaurants occupy their unique place. According to the Food Marketing Institute (1998), ethnic food is described as a product favored by a particular ethnic or cultural group. In addition, Turgeon and Pastinelli (2002) provide the following definition for an ethnic restaurant "a restaurant whose signboard or publicity clearly promises the national or regional cuisine of another land." In the present study, ethnic restaurants are American, Asian, European, Mexican and other. The growth in diversity of ethnic restaurants observed for the past 15–20 years may be attributed to a change in the ethnic composition of the USA population and the expansion in demand for ethnic foods (Saksena *et al.*, 2018). Budiman and Ruiz (2020), citing estimates from the U.S. Census, note that from 2000 to 2019, in the USA, the Asian, Hispanic, Native Hawaiians and Pacific Islanders, Black and White populations grew 81%, 70%, 61%, 20% and 1%, respectively. Given the American consumers' various racial and cultural heritages, the ethnic cuisine is set to continue to trend up in today's competitive landscape of available diverse food choices, further fueled by the facts that ethnic cuisines are progressively becoming part of everyday America diets (National Restaurant Association, 2015) and that ethnic foods market is expected to grow at a compound annual growth rate of 11.80% in the next five years (Ignite2x 2021). Hence, research aimed at studying the effects of a set of household demographic and socioeconomic factors and restaurant characteristics on households' choice of ethnic restaurants in the USA gains importance.

The research objectives of this study are to: (1) determine household demographic and socioeconomic factors and restaurant characteristics that impact the probability of households choosing an ethnic restaurant (American, Asian, European, Mexican and other) in the USA and (2) compute the elasticities of probabilities associated with a unit change in household demographic and socioeconomic factors and restaurant characteristics. The empirical results from this study are significant to ethnic restaurant operators (owners) in their market segmentation efforts and in developing effective marketing strategies for the sake of retaining the current customers and expanding their traditional customer base, which ultimately translates to an increase in market share.

The rest of this study is organized as follows. The next section provides details on the multinomial logistic regression model together with its empirical specification. In the following section, the data and variables used in the estimation of the model are discussed. Then, the estimation results are presented and discussed in the subsequent section. Summary, conclusions and recommendations for future research comprise the final section.

2. Model

In spite of the growing demand for ethnic foods and the increase in popularity of ethnic restaurants, there is a lack of extensive previous research regarding the effects of various household demographic and socioeconomic and restaurant characteristics on their choice of ethnic restaurants in the USA. Previous research has mostly focused on the analysis dealing with identifying drivers of the expenditures on food-away-from home (McCracken and Brandt, 1987; Nayga and Capps, 1994; Ham *et al.*, 1998; Ham *et al.*, 2004; Ham *et al.*, 2003; Dewes, 2015; Seidu, 2019) and households choice of food store types (Dong and Stewart, 2012; Taylor and Villas-Boas, 2016).

As far as ethnic restaurants, Roseman (2006) assessed if there was a difference associated with ethnic food preferences (Mexican, Italian, American or "other") when dining out, taking into account consumer demographic and socioeconomic characteristics. The analysis was conducted using data collected within the telephone survey of Kentucky residents aged 18 or older and applying one-way ANOVA, *t*-tests, cross-tabulations and chi-square analyses. The empirical findings revealed that the significant demographic characteristics affecting the likelihood of eating ethnic food were race, education and place of residency.

In another study, Monteiro (2000) identified the demographic portrayal of patrons of Indian restaurants and analyzed the factors affecting the decision of patrons to eat out at Indian restaurants in the Twin Cities (Minneapolis and St-Paul, Minnesota), using data collected within a survey of 500 respondents and employing the multivariate analysis of variance technique. The empirical results suggested that quality of food, taste of the food and hygiene and cleanliness were among the most important factors impacting the decision of patrons to dine at Indian restaurants. To the best of our knowledge, there has been no empirical micro-level analysis associated with determining factors impacting households' choice of ethnic restaurants using a polytomous logistic regression model allowing for a wide range of ethnic restaurants and covering the entire USA, based on an extensive set of household demographic and socioeconomic factors and restaurants characteristics. As such, the current study plugs this research gap by analyzing the impact of an extensive set of household demographic and socioeconomic factors and restaurant characteristics on households' choice of ethnic restaurants in the USA, using micro-level data and applying multinomial logistic regression model.

In a case where households face unordered choices with a single decision to be made given two or more alternatives, multinomial logit model can be applied to estimate the probability that a given alternative will take place (Greene, 2008). Multinomial logit model envisions m choices with the dependent variable y assuming integer values $1, 2, \dots, m$. Letting p_{ni} represent the probability that the n th household selects alternative i out of J , the multinomial logit model specifies

$$p_{ni} = \frac{e^{\beta' x_{ni}}}{\sum_{j=1}^J e^{\beta' x_{nj}}}, \quad (1)$$

where x_{ni} is a vector of characteristics affecting the choice of alternative i made by the household n and β is the conformable vector of parameters to be estimated. Fixing y_{ni} at one for the chosen alternative i and fixing y_{ni} to zero otherwise, the β parameters in (1) can be estimated by maximizing the following log-likelihood function:

$$\log L = \sum_{n=1}^N \sum_i y_{ni} \log(p_{ni}). \quad (2)$$

The interpretation of the values of β parameters offers little intuition and economic meaning, which is why oftentimes, elasticities are calculated and presented, which are unit-free

measures, showing the magnitude of the explanatory variable changes on outcome probabilities for their marginal effect evaluation. Within the framework of the multinomial logit model, the elasticity with respect to continuous variables (ϵ_{ni}) is computed as:

$$\epsilon_{ni} = \beta_x * x_{ni} * (1 - p_{ni}), \quad (3)$$

where β_x is the parameter estimate associated with the explanatory variable of interest x_{ni} and p_{ni} is from the predicted choice probabilities derived from the model with the estimated β parameters.

For dummy variables (coded as 1 and 0), a “pseudo-elasticity” that captures the approximate elasticity (ϵ_{nk}) of the variable is given as:

$$\epsilon_{nk} = \frac{p_{ni}(\text{given } x_{nk} = 1) - p_{ni}(\text{given } x_{nk} = 0)}{p_{ni}(\text{given } x_{nk} = 0)}, \quad (4)$$

where ϵ_{nk} measures the percentage change in the choice probability p_{ni} when the k th dummy variable x_{nk} changes from 0 to 1.

2.1 Empirical specification of the multinomial logit model

A set of household demographic and socioeconomic characteristics as well as restaurant characteristics are hypothesized to affect households' choice of ethnic restaurants. The possible choices of ethnic restaurants are: American, Asian, European, Mexican and other restaurants. The empirical specification of the multinomial logit model is defined as:

$$\begin{aligned} Pr(y_{ni} = i | x_{ni}) = & \Phi(\beta_0 + \beta_1 price_{ni} + \beta_2 inchhavg_r_{ni} + \beta_3 hhsz_{ni} + \beta_4 region.northeast_{ni} \\ & + \beta_5 region.midwest_{ni} + \beta_6 region.south_{ni} + \beta_7 sex.male_{ni} \\ & + \beta_8 hispanic.yes_{ni} + \beta_9 race.white_{ni} + \beta_{10} race.black_{ni} + \beta_{11} race.asian_{ni} \\ & + \beta_{12} educ.highschorless_{ni} + \beta_{13} educ.somecollege_{ni} + \beta_{14} educ.bachelor_{ni} \\ & + \beta_{15} married_{ni} + \beta_{16} widowed_{ni} + \beta_{17} divorced_{ni} + \beta_{18} separated_{ni} \\ & + \beta_{19} employed_{ni} + \beta_{20} joborbus.not.atwrk_{ni} + \beta_{21} looking.for.work_{ni} \\ & + \beta_{22} worked.looking.for.job_{ni} + \beta_{23} coupon.yes_{ni} + \beta_{24} loyaltycard.yes_{ni}) \\ & + \nu_{ni}, \end{aligned} \quad (5)$$

where y_{ni} is the choice variable representing that the n th household selects alternative i (American, Asian, European, Mexican and other restaurants), Φ is the cumulative distribution function, x_{ni} is the vector of household demographic and socioeconomic characteristics and restaurant characteristics that are included in the model as dummy variables with the exception of item cost ($price$), household income ($inchhavg_r$) and household size ($hhsz$) and ν_{ni} is the error term. The process of construction of all the variables used in the multinomial logit model estimation as well as their names and descriptions are provided in the Data section.

Multinomial logit models are valid under the assumption of Independence of Irrelevant Alternatives (IIA) that states that characteristics of one particular choice alternative do not influence the relative probabilities of choosing other alternatives (Hausman and McFadden, 1984). To test for a possible violation of the IIA assumption, the Hausman test was conducted with the null hypothesis stating that IIA holds. Based on the p -values of the χ^2 statistic that range from 0.462 to close to one for the five ethnic restaurants considered, we fail to reject the null hypothesis and conclude that IIA holds.

Another empirical issue that merits consideration is related to the possible endogeneity in the *price* variable. The presence of possible endogeneity in the price arises from the fact that along with the market price variations, the price also reflects quality variations, which are impacted by the composition of household purchases over the individual products (Dong *et al.*, 1998; Dong and Kaiser, 2005). The two-step approach designed for testing for a possible price endogeneity and developed by Wooldridge (2014) is used. This method envisions the incorporation of residuals obtained from the first-step regression of endogenous explanatory variables on a set of exogenous variables (household demographic variables and additional instruments such as hourly mean wage in restaurant industry, average retail electricity price and average retail gas price) into the multinomial logit model. Then, if the *t*-test associated with the coefficient of the residual is significant, it implies that the price is endogenous, otherwise it is exogenous. In our case, the *p*-values of the *t*-test associated with the residuals in the multinomial logistic regression model for the considered ethnic restaurant types vary from 0.059 to 0.204, suggesting that the price is exogenous. Hence, the rest of the analysis is conducted treating the price as exogenous.

3. Data

The dataset for this analysis is developed using the information from the National Household Food Acquisition and Purchase Survey (FoodAPS), which was sponsored by the USDA and managed by USDA's ERS with support from USDA's Food and Nutrition Service (FNS). This nationally representative survey was conducted between April 2012 and January 2013 on a stratified sample of 4,826 households. The survey includes detailed information on food item purchases and acquisitions for at-home and away-from-home consumption during seven days for the primary respondent and for the other members of the household. Also, the survey contains information for food items acquired through USDA's food assistance program recording the amount and the source of payment for food. Finally, the survey includes rich demographic and socioeconomic characteristics, health status, diet and nutrition knowledge, non-food expenditures, income, Supplemental Nutrition Assistance Program (SNAP) and Women, Infants and Children (WIC)-related information for both individuals and households, as well as acquisition place type and its characteristics.

Each participating household is labeled as American, Asian, European, Mexican and other based on the maximum number of times they went to a particular type of restaurant (primary restaurant type). For example, a household is labeled American if it went to an American restaurant most of the time and Asian if an Asian restaurant was its choice most of the time. The FoodAPS data permit the classification of households into five distinct groups (American, Asian, European, Mexican and other (non-American, non-Asian, non-European and non-Mexican)) based on the number of times they bought food items from these ethnic restaurants. Household demographic and socioeconomic characteristics pertain to the cost for one unit of item on away-from-home food items (i.e. unit value, a proxy for price, henceforth price refers to item cost), average household income (as sum of average imputed income per member), household size, region of residence, primary respondent's sex, Hispanic ethnicity, race, education level, marital status and employment status. Also, restaurant characteristics hypothesized to affect the probability of households choosing a particular ethnic restaurant include availability of loyalty program and presence of coupons.

Table 1 depicts the variable names and their description along with their descriptive statistics. The number of observations is 2,585, reflecting only those households that actually visited one of the ethnic restaurants considered during the study period. In other words, the present study is conditional upon households visiting an ethnic restaurant (future research can attempt to also include households that did not visit any ethnic restaurant as a separate category). Out of 2,585 households 244 (9.44%) visited American restaurants, 100 (3.87%) visited Asian restaurants, 36 (1.39%) visited European restaurants, 187 (7.23%) visited

Variable name	Description	Mean	Std. Dev
price	Cost for one unit of item, \$	18.4663	26.7878
inchhavg_r	Household average (monthly) income per member, \$	3914.3830	383.0192
hhszise	Number of people at residence	2.7698	1.6831
region_northeast	Census region: Northeast	0.1563	0.3632
region_midwest	Census region: Midwest	0.2441	0.4296
region_south	Census region: South	0.3799	0.4855
region_west*	Census region: West	0.2197	0.4141
sex_male	Respondent's sex: Male	0.2781	0.4482
sex_female*	Respondent's sex: Female	0.7219	0.4482
hispanic_yes	Ethnicity: Hispanic	0.1950	0.3963
hispanic_no*	Ethnicity: non-Hispanic	0.8050	0.3963
race_white	Race: White	0.6932	0.4612
race_black	Race: Black	0.1462	0.3534
race_asian	Race: Asian	0.0480	0.2137
race_other*	Race: other (non-White or non-Black or non-Asian)	0.1126	0.3161
educ_highschorless	Education: High school or less	0.4321	0.4955
educ_somecollege	Education: Some college	0.3335	0.4715
educ_bachelor	Education: Bachelor's degree	0.1582	0.3650
educ_master*	Education: Master's degree	0.0762	0.2654
married	Marital status: Married	0.4070	0.4914
widowed	Marital status: Widowed	0.0700	0.2552
divorced	Marital status: Divorced	0.1938	0.3954
separated	Marital status: Separated	0.0507	0.2194
single*	Marital status: Single	0.2785	0.4484
employed	Employment status: Employed	0.4549	0.4981
joborbus_not_atwork	Employment status: With a job or business but not at work	0.0325	0.1773
looking_for_work	Employment status: Looking for work	0.0847	0.2785
worked_looking_for_job	Employment status: Worked, but currently looking for a job	0.0077	0.0876
unemployed*	Employment status: Unemployed	0.4201	0.4937
coupon_yes	Coupons were used	0.0186	0.1350
coupon_no*	Coupons were not used	0.9814	0.4346
loyaltycard_yes	Loyalty card was used	0.0031	0.0556
loyaltycard_no*	Loyalty card was not used	0.9969	0.4254

Table 1.
Description and
descriptive statistics of
variables used in the
multinomial
logit model

Note(s): Number of observations is 2,585. Asterisk indicates the base category
Source(s): Researcher(s)' own analyses calculated (or derived) based on data from the National Household Food Acquisition and Purchase Survey (FoodAPS)

Mexican restaurants and 2,018 (78.07%) visited other restaurants, making other restaurants the most popular ethnic restaurant. Since the actual prices are not available in FoodAPS data, the reported cost for one item (unit value) is used as a proxy for price with the average cost for one item being \$18.47. According to Table 1, the mean of average monthly household income per member is \$3,914.38. Also, the average number of people living at residence is 2.77.

It needs to be mentioned that the rest of household demographic and restaurant characteristics are operationalized with the help of binary variables (coded 1 and 0). In particular, region of residence is classified into four categories: Northeast, Midwest, South and West with about 38% of households living in the South region.

Primary respondent's sex consists of two categories: male and female, and in 72% of households, the primary respondent is a female. The ethnicity characteristic is broken down into two categories: Hispanic and non-Hispanic, with non-Hispanic households comprising about 81% of the sample. The race characteristic consists of four categories: White, Black, Asian and other with White households accounting for almost 70% of the sample.

The level of education of primary respondents is broken down into four categories: high school or less, some college, bachelor's degree and master's degree, with 43% reporting educational attainment of high school or less. The marital status of the primary respondents consists of five categories: married, widowed, divorced, separated and single. Households with married primary respondents comprise about 41% of the sample. The employment status of the primary respondents is broken down into five categories: employed, with a job or business but not at work, looking for work, worked, but currently looking for a job and unemployed, with around 46% of households having employed primary respondents. As far as the restaurant characteristics such as the presence of loyalty cards and coupons, approximately 99.7 and 98% of sample households reported not using loyalty cards and coupons, respectively.

4. Estimation results

To identify the household demographic and socioeconomic characteristics as well as restaurant characteristics that impact household's choice of ethnic restaurants, a multinomial logit model is developed and estimated using STATA 14 statistical software package. Table 2 presents the maximum likelihood parameter estimates (coefficients) and elasticities with respect to each ethnic restaurant type from the multinomial logistic regression, using other restaurants as the base outcome. These parameter estimates do not provide any direct intuitive economic interpretation and only qualitatively indicate the effects of significant contributing factors on choosing a particular ethnic restaurant. To remedy this, Table 2 also depicts elasticities to quantify the magnitude of the changes in explanatory variables on corresponding predicted choice probabilities. The interpretation of the estimation results is done in terms of significant elasticities relative to corresponding base categories at all conventional significance levels (1%, 5% and 10%), holding the effects of other variables constant.

The likelihood ratio χ^2 statistic has a value of 24809.41 with its *p-value* equal to 0.0001, implying that the parameter estimates are jointly statistically significant. The low value of the pseudo R^2 of 0.0932 is not uncommon in cross-sectional data analysis. According to the estimation results in Table 2, *price* (item cost) is a significant factor impacting only the probability of choosing other restaurants. In particular, a 1% increase in the own price results in 0.0416% decrease in the probability of choosing other restaurants, indicative of an inelastic response. This information on inelastic response can be used in pricing decisions which have revenue maximization implications. In general, in case of an inelastic response on part of consumers, it is recommended to increase the price to maximize revenue in the short-run. This result is consistent with the one by Monteiro (2000) who found price to be an important factor when deciding where to dine.

Region of residence is found to be an important factor in choosing ethnic restaurants. In comparison to households living in the West, residing in the Northeast increases the probability of choosing American restaurants and decreases the probability of choosing other restaurants by 0.7865 and 0.1257%, respectively. Also, compared to households living in the West, residing in the Midwest increases the probability of choosing American restaurants by 1.19% and decreases the probability of choosing other restaurants by 0.1465%. The probability of choosing American restaurants increases by 0.6373%, while decreasing by 1.1426% for choosing Asian restaurants for households living in the South, relative to households residing in the West. It is noteworthy that Roseman (2006) found place of residency to be a determinant of the likelihood to eat ethnic food.

Hispanic ethnicity is found to be a statistically significant driver of the probability of choosing ethnic restaurants. Relative to non-Hispanic households, being Hispanic increases the probability of choosing Mexican restaurants by 1.4920% and decreases the probability of

	American		Asian	
	Coefficient	Elasticity	Coefficient	Elasticity
price	0.0070	0.1305	0.0104	0.2117
inchhavg_r	0.00003	0.1646	0.000002	-0.0029
hhsz	-0.0643	-0.1228	0.0924	0.2339
region_northeast	0.9122**	0.7865**	-0.2623	-0.3879
region_midwest	1.3366***	1.1900***	-0.3934	-0.5400
region_south	0.6608**	0.6373**	-1.1192**	-1.1426**
sex_male	0.1543	0.1331	-0.0637	-0.0849
hispanic_yes	0.1471	0.0258	0.0400	-0.0812
race_white	-0.4582*	-0.5410*	1.2577	1.1750
race_black	-1.1349**	-1.0895**	1.1055	1.1509
race_asian	-0.1190	0.1478	2.2464***	2.5132***
educ_highschorless	0.1671	0.1870	-1.0959**	-1.0760**
educ_somecollege	0.6462*	0.5975*	-1.4134***	-1.4620***
educ_bachelor	0.5400	0.4543	-0.1714	-0.2572
married	0.0383	0.0229	0.3039	0.2885
widowed	0.9245**	0.7971**	0.6208	0.4933
divorced	0.1811	0.0767	1.1785**	1.0740**
separated	0.9266	0.8229	0.2244	0.1206
employed	-0.3986*	-0.3869*	0.4216	0.4333
joborbus_not_atwork	-0.1532	-0.0865	0.0300	0.0966
looking_for_work	-0.7624*	-0.6999*	0.0678	0.1303
worked_looking_for_job	-1.3065	0.3757	-25.4730***	-23.7909***
coupon_yes	-0.0371**	1.5585**	-25.1203	-23.5247
loyaltycard_yes	0.1678***	3.0652***	-24.9613	-22.0639
constant	-2.9466		-4.2987	

	European		Mexican		Other
	Coefficient	Elasticity	Coefficient	Elasticity	Elasticity
price	-0.0010	-0.0666	0.0027	0.0239	-0.0416*
inchhavg_r	-0.00004	-0.2480	-0.00001	-0.0457	-0.0154
hhsz	-0.1703	-0.3640	-0.0857	-0.1715	0.0236
region_northeast	0.8578	0.7322	0.2692	0.1436	-0.1257**
region_midwest	0.7324	0.5859	-0.0828	-0.2294	-0.1465**
region_south	0.6350	0.6116	-0.3241	-0.3475	-0.0234
sex_male	0.1269	0.1057	0.0635	0.0423	-0.0212
hispanic_yes	0.4804	0.3592	1.6132***	1.4920***	-0.1212**
race_white	3.4979***	3.4152***	0.3811	0.2983	-0.0828
race_black	2.8495**	2.8949**	-0.1738	-0.1284	0.0454
race_asian	-22.0820***	-21.8153***	0.8764*	1.1432*	0.2668*
educ_highschorless	-1.7757***	-1.7558***	0.6319	0.6519	0.0199
educ_somecollege	-0.5146	-0.5633	0.6935	0.6448	-0.0486
educ_bachelor	-0.6003	-0.6861	0.7053	0.6196	-0.0858
married	0.0065	-0.0089	-0.0245	-0.0398	-0.0154
widowed	0.2485	0.1211	-0.1496	-0.2770	-0.1275*
divorced	-0.0781	-0.1825	0.6399	0.5355	-0.1044*
separated	0.1711	0.0673	-0.2614	-0.3652	-0.1038
employed	0.3193	0.3310	0.1974	0.2091	0.0117
Joborbus_not_atwork	0.5850	0.6517	-1.0407	-0.9740	0.0667
looking_for_work	1.6306	1.6931	-0.1109	-0.0484	0.0625
worked_looking_for_job	-25.6323***	-23.9502***	-0.7444	0.9377	1.6822***
coupon_yes	-25.2075	-23.6119	-2.1465	-0.5509	1.5956***
loyaltycard_yes	-24.7877	-21.8904	-25.1161	-22.2188	2.8974***

Table 2.
Multinomial logit
coefficients and
elasticities

(continued)

	European		Mexican		Other
	Coefficient	Elasticity	Coefficient	Elasticity	Elasticity
constant	-6.8054		-3.8295		
Pseudo R^2	0.0932				
# of observations	2,585				
LR $\chi^2(96)$	24809.41				
p -value > χ^2	0.0001				

Note(s): Single, double and triple asterisks (*, ** and ***) indicate statistical significance at the 10%, 5% and 1% level, respectively. The base category omitted in the estimation is other. Elasticities are calculated at the sample means

Source(s): Researcher(s)' own analyses calculated (or derived) based on data from the National Household Food Acquisition and Purchase Survey (FoodAPS)

Table 2.

choosing other restaurants by 0.1212%. Race emerges as an important factor affecting the probability of households' choosing ethnic restaurants. In particular, compared to households of other race types, for White households, the probability of choosing American restaurants goes down by 0.5410% and goes up by 3.4152% for choosing European restaurants. Relative to households of other race types, for Black households, the probability of choosing American restaurants declines by 1.0895% and rises by 2.8949% for choosing European restaurants. Also, compared to households of other race types, for Asian households, the probability of choosing Asian, Mexican and other restaurants increases by 2.5132%, 1.1432% and 0.2668%, respectively, and decreases by 21.8153% for choosing European restaurants. It needs to be mentioned that race emerged as an important demographic characteristic impacting the probability of eating ethnic food in a study by Roseman (2006).

Education level is found to be an important driver of the probability of choosing ethnic restaurants. For households with primary respondents with high school or less education, the probability of choosing Asian and European restaurants decreases by 1.076 and 1.7558%, respectively, compared to households with primary respondents with a Master's degree. Relative to households with primary respondents with a Master's degree, for households with primary respondents with some college education, the probability of choosing American and Asian restaurants increases by 0.5975% and decreases by 1.462%, respectively. This result compares favorably with the one by Saksena *et al.* (2018), where education is found to be positively associated with increases in expenditures on FAFH items. Also, education was an important driver of the likelihood to eating ethnic food in a study by Roseman (2006).

Marital status emerges as a statistically significant factor influencing the probability of choosing ethnic restaurants. For households with widowed primary respondents, the probability of choosing American and other restaurants goes by 0.7971% and goes down by 0.1275%, respectively, compared to households with single primary respondents. For households with divorced primary respondents, the probability of choosing Asian and other restaurants increases by 1.074% and decreases by 0.1044%, respectively, compared to households with single primary respondents. This finding is in line with the one by Saksena *et al.* (2018), where marital status impacted the FAFH expenditures.

Employment status is found to be a statistically significant determinant of the probability of choosing ethnic restaurants. Compared to households with unemployed primary respondents, households with employed primary respondents have a lower probability of choosing American restaurants by 0.3869%. Relative to households with unemployed primary respondents, households with primary respondents looking for work have a lower probability of choosing American restaurants by 0.6999%. Compared to households with unemployed primary respondents, for households with primary respondents who worked,

but currently are looking for a job, the probability of choosing Asian and European restaurants goes down by 23.7909 and 23.9502%, respectively, while going up by 1.6822% for choosing other restaurants. Similarly, employment was found to statistically significantly affect the FAFH expenditures in a study by [Saksena et al. \(2018\)](#).

As far as restaurant characteristics, it needs to be noted that using coupons emerges as a statistically significant determinant of choosing ethnic restaurants positively affecting the probability of selecting a certain ethnic restaurant. In particular, relative to not using coupons, using coupons increases the probability choosing American and other restaurants by 1.5585 and 1.5956%, respectively. At the same time, the presence of loyalty card is also found to be a statistically significant determinant of the probability of choosing ethnic restaurants. Relative to not using loyalty cards, for households using loyalty cards, the probability of choosing American and other restaurants goes up by 3.0652 and 2.8974%, respectively. It needs to be noted that the effects of income, household size and sex of the primary respondent are found to be statistically insignificant factors impacting the probability of choosing ethnic restaurants.

5. Summary, conclusions and recommendations for future research

This study uses a multinomial logistic regression model to empirically identify household demographic and socioeconomic characteristics as well as restaurant characteristics that affect the probability of households choosing an ethnic restaurant (American, Asian, European, Mexican and other) in the USA. The data underlying the analysis are derived using the information from the National Household Food Acquisition and Purchase Survey (FoodAPS) conducted between April 2012 and January 2013. The empirical findings suggest that such factors as the unit cost on away-from-home food items (price), region of residence, primary respondent's ethnicity, race, education level, marital status and employment status as well as such restaurant characteristics as availability of loyalty program and presence of coupons significantly affect the probability of households choosing a specific ethnic restaurant in the United States. In particular, the finding associated with the inelastic response on part of consumers in the form of decreasing probability in response to an increase in price, implies that restaurant owners (other ethnic restaurants) need to consider a price increase for short-run revenue maximization. With respect to ethnicity, given the increase in Hispanic population, the demand for Mexican restaurants will likely increase. Also, European restaurants are expected to be more popular with White and Black populations, while Asians prefer Asian, Mexican and other restaurants. This information can serve as guidelines to restaurant operators (owners) in terms of establishing corresponding ethnic restaurants in areas populated by these race groups. Household heads with relatively higher level of education are more likely to have higher income and hence more discretionary income to allocate for spending at ethnic restaurants. As such, to the extent that the average educational attainment rises, a shift towards Asian and European ethnic restaurants is anticipated. As far as employment, to the extent that the unemployment rate is reduced, the households will exhibit a stronger preference towards other restaurants. Given the positive association between coupons and the likelihood of choosing an ethnic restaurant, American and other restaurants need to offer more coupons in an effort to expand their customer base. Similarly, American and other restaurants need to consider administering loyalty programs which will translate to an increase in their customer base with a possible expansion beyond it. Overall, the empirical findings furnished by this study are of importance to ethnic restaurant operators (owners) in their effort to divide the market into segments and develop effective marketing strategies in an attempt to retain the current customers and expand their traditional customer base, which ultimately will lead to an increase in market share. A couple of recommendations for future research is worth mentioning. First, future research would

benefit from extending the dataset for multiple years and including information on households that did not choose any ethnic restaurant as a possible choice. Second, it will be worthwhile for future research to include information on specific types of ethnic restaurants (for example, in place of Asian restaurants have separate categories as Chinese or Indian or Vietnamese and other types of specific Asian ethnic restaurants).

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