



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*



*Journal of Food Distribution Research*  
Volume 42, Issue 3

## **Determinants of Meat Purchasing Behavior by Ethnic Groups**

Carlos I. García-Jiménez<sup>a</sup> and Ashok K. Mishra<sup>b</sup>®

<sup>a</sup>*Former Ph.D. Student, Department of Agricultural Economics & Agribusiness, Louisiana State University A&M, 101 Martin D. Woodin Hall, Baton Rouge, Louisiana, 70803, U.S.A*

<sup>b</sup>*Professor, Department of Agricultural Economics & Agribusiness Louisiana State University A&M, 101 Martin D. Woodin Hall, Baton Rouge, Louisiana, 70803, U.S.A.*

---

---

### **Abstract**

The decision to purchase meat products is investigated across ethnic groups with data from the Consumer Expenditure Survey. Particularly, we emphasize the U.S. Hispanics markets since its population increased 43% in the 2000-2010 period. The determinants included socio-economic factors in Probit regressions. Income and household composition were characterized as the most significant determinants, however, the effects varied across ethnic groups. As such, ethnicity can be considered as a major factor influencing the decisions to purchase meat products. The findings can be used to develop marketing tactics to influence the purchasing behavior of ethnic groups.

**Keywords:** ethnicity, expenditures, allocation decisions, market segmentation, consumer behavior

---

®Corresponding author: Tel: +1 225 578-0262  
Email: [amishra@lsu.edu](mailto:amishra@lsu.edu)  
C. I. García-Jiménez: [cgarci8@lsu.edu](mailto:cgarci8@lsu.edu)

## Introduction

The Hispanic market is one of the faster growing ethnic groups in the United States. This demographic change presents challenges and opportunities for the food industry. From 1990 to 2000, the U.S. population grew by 33 million for an overall change of 13% while the Hispanic population grew by 12.9 million that represented a 58% increase (U.S. Census Bureau, 2001). This growing trend was also observed in the 2010 census that exposed 50 million Hispanics which comprised 16.3% of the total population; a positive change from the 2000 census that counted 35 million Hispanics which amounted to 12.5% of the total population (U.S. Census Bureau, 2001, 2011). In other words, there was one Hispanic person for every eight individuals in 2000 whereas in 2010 there was one person of Hispanic descendency for every six individuals—making the U.S. the third largest Spanish speaking country in the world (Humphreys, 2003).

Furthermore, according to population projections by the U.S. Census Bureau (2010), the Hispanic population by 2030 is likely to represent almost 20% of the total population, and by 2050—this market may comprise 25% of the U.S. population. These projections imply that food retailers and wholesalers may have latent business opportunities due to the coincidental increase in the purchasing ability of U.S. Hispanics.

However, consumer behavior studies have shown that Hispanics exhibit different consumption patterns compared to the rest of the U.S. population (Fan and Solis, 1994, 1998; Paulin, 2003). Moreover, Hispanic consumer segments may have their own preferences toward foods since the Hispanic population is not a homogeneous market (Nevaer, 2004; Korzenny and Korzenny, 2011). Such diversity in consumption patterns affect the demand for goods and services provided by companies operating in the United States. Hence, it is expected that consumers will make purchase decisions based on their preferences, income, economic behavior as well as their own culture, traditions and food consumption habits. Thus, it is imperative to understand the consumption patterns of households across ethnic groups.

These conditions altogether with the emergence of consumer market fragments will direct production and marketing strategies, specifically, ethnic foods that tie consumers to their country of origin and/or descendency. Lanfranco (2001) has documented that Hispanics commit a higher percentage of their expenditures to total food relative to other population groups. Thus, if Hispanics consume more beef products than other ethnic groups, then, a rise in Hispanic population would signal an increase in beef demand, *ceteris paribus*; this change may create future opportunities for farmers. Similarly, food companies may change their marketing and advertising strategies not only to deliver their message directed toward the Hispanic population but also for discovering new market opportunities for bringing healthier foods to the marketplace.

As such, it is important to evaluate the meat purchasing behavior of U.S. Hispanics in relation to White, African American, and households of other minorities. Consequently, the aim of this

study is to evaluate the determinants of meat purchasing behavior among various ethnic groups in the United States. The focus of inquiry is centered on answering the following question: is the purchasing behavior for meat products across ethnic groups equally responsive to household composition and income?

## Methods

The meats included in the analysis were ground beef, roast beef, beef steak, other beef, bacon, pork chops, ham, other pork, poultry, and seafood products. The dependent variable, for a particular meat item, takes the value of 1 if the household purchased it and 0 otherwise. The variables evaluated as determinants of purchase decisions of meat products were: prices, income, expenditures on other goods, household size, number of persons less than 18 years old, number of persons over 64 years old, age, sex, food stamp status, urban status, and education of the household head.

The estimation of a Probit regression for each meat product facilitated the analysis of the determinants of the purchasing behavior; multivariate analyses were limited due to differences in sample size across meat items and ethnic groups. A probit model was defined as

$$(1) \Pr(y_j \neq 0 | x_j) = \Phi(b_j x_j),$$

where  $\Phi(b_j x_j)$  corresponds to the cumulative normal distribution function. Thus, marginal effects are estimated as

$$(2) \frac{\partial \Phi}{\partial x_1} = \varphi(b_j \bar{x}) b_1,$$

which corresponds to the height of the probability density function of the normal distribution (estimated at average values of the remaining variables) multiplied by the corresponding coefficient. Thus, the marginal effect is the infinitesimal change in probability when the independent variable of interest is increased by one unit (Stata, 2005).

The composition of the household is measured by the size of the household in the Amsterdam scale. It represents members of the household by summing a scaled value that gives reference to males 18 years and over with the value of 1; males and females under 14 years are valued as 0.52 equivalent scale; females above 14 years are valued as 0.90 equivalent scale; and males between 14-17 years old are valued as 0.98 equivalent scale (Deaton and Muellbauer, 1980). The use of this scale is common in applied consumer behavior research (Lanfranco, 2001).

## Data

The data for the analysis was obtained from the 2003 Consumer Expenditure Survey (CES) released by the U.S. Bureau of Labor Statistics. Information about prices was obtained from the same bureau. Average monthly prices were matched with surveyed households in the CES by geographic region. The sample contained information of 5,919 households; 821 households of

Hispanic origin (HISP), 4,118 Non-Hispanic White households (WHIT), 664 African American households (AFAM), and 316 households belonged to other minorities (OTEM) that corresponded to 14%, 70%, 11%, and 5% of the sample, respectively (Table 1). In the CES, Hispanics are identified following the guidelines from the U.S. Census Bureau, asking for self-identification of the origin or descendancy. The options included Mexican-American, Chicano, Mexican, Mexicano, Puerto Rican, Cuban, Central or South American, and other Hispanic. Households that belonged to other minorities included Asian, Asian-Pacific, Native Americans and other groups (U.S. Census Bureau, 1993).

**Table 1.** Socio-Economic Characteristics by Ethnic Groups.

Characteristic	HISP	WHIT	AFAM	OTEM
Number of households	821	4118	664	316
Percentage of households	13.87	69.57	11.22	5.34
Average number of persons/household	3.49	2.52	2.90	2.86
Household size (Amsterdam scale)	2.89	2.18	2.39	2.50
Average number of persons under 18 years old	1.22	0.61	1.10	0.66
Average number of persons over 64 years old	0.22	0.42	0.23	0.30
Average age of household head	43.79	51.63	47.38	47.67
Average annual household income (\$/year)	36310.02	45209.14	33906.59	42758.62
Average number of earners	1.60	1.34	1.25	1.52
Average weekly income per earner (\$/week)	435.62	650.95	522.27	541.34
Average weekly household income per adult	241.32	398.70	272.79	329.28
Number of households under poverty threshold	168	340	160	45
Percentage of households under poverty	20.61	8.26	24.10	14.24
Number of food stamps recipients	125	500	133	57
Percentage of food stamps recipients	15.34	12.14	20.03	18.04

<sup>a</sup>The poverty threshold for a household of four members (including two children) was \$18,859.00/year.

The average annual income was \$36,310, \$45,209, \$33,906, and \$42,758 for HISP, WHIT, AFAM and OTEM households, respectively. Hispanic households had the lowest average weekly income per earner and average weekly income per adult equivalent scale, even when they had—on average—more earners. More than 20% of African American households were below the poverty threshold. The same proportion of households was recipient of food stamps. There were more White households below the poverty threshold compared to other groups (Table 1).

The average weekly expenditures on total food was \$131.00, \$127.00, \$104.00, \$120.00 for Hispanic, White, African American and households of other minorities, respectively. Those expenditures corresponded to approximated average weekly budget shares on food of 19%, 15%, 16%, and 15%, respectively. Hispanic households lead on average weekly expenditures on total food and food at home—with an average spending of about \$131.00 and \$94.00, respectively. But, White households lead on food away from home spending—with a \$40.00 average weekly expenditure (Table 2). Hispanics had the highest average weekly expenditures on meats followed by other minorities and trailed by African American households. Hispanic households allocated

**Table 2.** Income, Expenditures, and Purchasing Decisions by Ethnic Groups.

Category	Decisions*	HISP	WHIT	AFAM	OTEM
Average weekly income <sup>a</sup>		698.27	869.41	652.05	822.28
Total Food	Expenditure	130.66	127.04	103.74	120.49
Food at Home	Expenditure	93.61	86.63	77.58	84.75
Food away from Home	Expenditure	37.06	40.41	26.16	35.74
Meat Expenditures	Expenditure	24.60	19.31	22.61	23.27
Ground beef	Non-Purchase <sup>b</sup>	443	2266	353	204
	Purchase <sup>b</sup>	378	1852	311	112
	Expenditure	3.02	2.96	3.01	2.19
Roast beef	Non-Purchase	699	3588	583	284
	Purchase	122	530	81	32
	Expenditure	1.63	1.24	1.31	0.97
Beef steak	Non-Purchase	552	3187	515	242
	Purchase	269	931	149	74
	Expenditure	4.19	2.84	2.76	2.43
Other beef	Non-Purchase	742	3829	612	296
	Purchase	79	289	52	20
	Expenditure	0.95	0.73	0.60	0.46
Bacon	Non-Purchase	652	3178	483	258
	Purchase	169	940	181	58
	Expenditure	0.84	0.95	1.15	0.73
Pork chops	Non-Purchase	665	3548	516	268
	Purchase	156	570	148	48
	Expenditure	1.41	0.91	1.57	1.23
Ham	Non-Purchase	609	3420	563	274
	Purchase	212	698	101	42
	Expenditure	1.36	1.12	1.08	0.70
Other pork	Non-Purchase	664	3530	535	239
	Purchase	157	588	129	77
	Expenditure	1.50	1.25	1.59	2.10
Poultry	Non-Purchase	313	2076	250	138
	Purchase	508	2042	414	178
	Expenditure	5.45	4.08	5.35	4.95
Seafood	Non-Purchase	501	2552	386	122
	Purchase	320	1566	278	194
	Expenditure	4.25	3.23	4.19	7.52

<sup>a</sup>Income and expenditures are measured in U.S. Dollars/week at the household level.

<sup>b</sup>Number of households.

on average 3.5% of the average weekly income on meat expenditures which represented 19% of total food expenditures. Hispanics allocated 22%, 17.3% and 17% of meat expenditures on poultry, seafood products and beef steak products respectively (Table 2).

Overall, the highest non-purchase behavior (zero expenditure) was found in other beef products, followed by roast beef and trailed by pork chops and other pork. In the case of Hispanic households, non-purchase behavior above 80% was found in other beef, roast beef and other pork; for White households such level was found in pork chops. African Americans were similar to White households; in addition, they had high zero-expenditure in ham products (Table 2).

## Results

Across ethnic groups, most of the price variables, in nominal and real values, were insignificant factors on the decision to purchase meat products. Different ways of scaling the price variables were evaluated, but, the same results were obtained. Likewise, across ethnic groups, a few socio-economic variables had significant effects on the decision to purchase different meat products; in part, due to the prevailing effects of household size and income.

The inclusion of demographic variables did not produce significant differences in the average probability to consume. The practice of including only household's weekly income and household size as explanatory variables was favored since it produced less insignificant likelihood ratio (LR) tests in which the combined estimated coefficients were hypothesized to be equal to zero. Furthermore, surprisingly, those explanatory variables produced very slight changes in the classification tables of the predicted purchase decisions in comparison with the results from models that included greater number of explanatory variables. Henceforth, the regressions only included household size in Amsterdam scale and logarithm of the household weekly income, such approach is also followed by Lanfranco (2001) in the study of meat purchase decisions.

After the estimation of the coefficients in the Probit regressions, marginal effects were also calculated. They measure the infinitesimal change in probability when the independent variable is increased by one unit, evaluated at the means. For example, the marginal effect of logarithm weekly income for the purchase of a particular meat item is interpreted as the change in probability that occurs when the logarithm of weekly income is increased by one unit; in the same fashion, the household size marginal effect corresponds to the change in probability when the household is increased by one unit (Amsterdam scale) while holding other factors constant. Hispanic households were less likely to be influenced by income in their purchase decisions in comparison to African American and households of other minorities. Income had a significant effect on purchase decisions of beef steak and other beef products at the 95% level of confidence. Consequently, as weekly income of Hispanics increases from \$700 to \$1900<sup>1</sup>, they are 5% more likely to purchase beef steaks and 3% less likely to purchase other beef products.

---

<sup>1</sup> The difference between \$1900 and \$700 corresponds to an increase of one unit of logarithm of weekly income, the lower limit \$700 corresponds to the average weekly income of Hispanic households.

**Table 3.** Marginal Effects to Purchase Meat Products by Ethnic Groups.

Product	Hispanics	White	AFAM	OTEM
<i>Weekly Income</i>				
Ground beef	-0.024	-0.017	-0.054**	-0.068*
Roast beef	-0.014	-0.009	-0.001	0.001
Beef steak	0.051**	0.032***	0.027	0.087**
Other beef	-0.029**	0.008	0.010	0.044**
Bacon	0.027	-0.011	-0.013	-0.022
Pork chops	0.010	-0.015*	0.002	0.002
Ham	0.024	0.004	-0.040**	0.038
Other pork	-0.005	0.004	0.013	-0.020
Poultry	0.047	0.002	-0.063**	0.062
Seafood	0.022	0.014	0.051**	0.008
<i>Household Size</i>				
Ground beef	0.047***	0.084***	0.061***	0.051**
Roast beef	0.010	0.027***	0.007	0.034**
Beef steak	0.016	0.016*	0.011	-0.008
Other beef	0.021***	0.012***	0.012	0.000
Bacon	-0.010	0.032***	0.020	0.037**
Pork chops	0.012	0.029***	0.035***	-0.006
Ham	0.036***	0.005	0.017	-0.005
Other pork	0.028***	0.029***	0.007	0.091***
Poultry	0.067***	0.054***	0.054***	0.026
Seafood	-0.002	0.015*	-0.002	0.045*

Levels of significance: \*=0.10, \*\*=0.05, \*\*\*=.01

Unlike income, household size among Hispanic households played a more important role in their decisions to purchase meat products. At the 5% level of significance, significant positive marginal effects of household size were found in ground beef, ham, poultry, and other pork products (Table 3). Thus, an additional household size unit in the Amsterdam scale results in the probability to purchase ground beef to increase by 5%, ham by 4%, other pork by 3%, and poultry products by 7%. So, Hispanics are more likely to consume meat products as household size increases. This finding is noteworthy, since Hispanics tend to live in much bigger households than Whites, African Americans, and households of other minorities (Table 1).

In the case of White households, in general, meat purchase decisions were less influenced by income—implying that it is an irrelevant factor—thus, it is deducted that household size is the major determinant, *ceteris paribus*. Only beef steaks and pork chops were significantly affected by income. Holding household size constant, as weekly income increases from \$869 to \$2,363, the probability to purchase beef steaks increases by 3% and decreases 2% for pork chops; the



effects are statistically different from zero at the 5% and 10% level of significance, respectively. The purchase decisions of meat products were consistently influenced by Household size among White households—the marginal effects were significantly positive at the 90% confidence level—with the exception of ham products (Table 3).

African American households, at the 95% confidence level, had significant and negative effects of income on ground beef, ham, and poultry products. In contrast, purchase decisions of seafood products were positively and significantly affected by income. As AFAM households increase the household size by one unit in the Amsterdam scale, there is a significant positive change in the probability to purchase ground beef by 6%, pork chops by 3%, and poultry products by 5%. On the whole, African Americans were less likely to be influenced by household size in comparison to HISP, WHIT, and OTEM households (Table 3).

Households of other minorities presented significant and negative marginal effect of income effect on the purchase decisions of ground beef products at the 90% confidence level. On the contrary, significant and positive marginal effects of income were found on beef steak and other beef products at the 95% confidence level. Thus, as the weekly income of OTEM households changed from \$822 to \$2235, the probability to purchase meat products changed by -7% for ground beef, 9% for beef steak and 4% for other beef products. As such, it can be inferred that as OTEM households increase their income, they are more likely to consume beef steak compared to other meat products like chicken, pork and seafood products (Table 3).

As household size increases by one unit, at the 95% confidence level, OTEM households had significant positive changes in the probability to purchase meat products; for instance, the likelihood to purchase ground beef increased by 5% while roast beef, bacon, and other pork products increased by 3%, 4%, and 9%, respectively (Table 3). Moreover, at the 90% confidence level, OTEM households significantly increased the likelihood to purchase seafood products by 4%.

## Discussion and Conclusions

The marginal effects from Probit regressions showed that Hispanic households are more likely to purchase beef steaks as income increases and less likely to purchase other beef products as their income increases. These results contrast with those of Lanfranco (2001) who found that Hispanics had positive marginal effects of income in almost all meat products, with the exception of other pork. Moreover, the results of Lanfranco also showed that most of the household size marginal effects were significant at the 10% level of significance.

Our results indicate that White households were more likely to purchase beef steaks and less likely to purchase pork chops as income increased. But, in general, their decisions to purchase meat products were more influenced by the size of the household whereas the influence of income was irrelevant in comparison with African Americans and households of other minorities. These results contrast those of Stegling (2001) who found that regardless of the

ethnic origin, household size was more important than income on the decision to purchase meat products.

As a general result, the empirical evidence shows that different ethnic groups are more likely to purchase meat products as the household size increases. Surprisingly, however, some ethnic groups presented insignificant-negative marginal effects of household size. The influence of income on meat purchase decisions was mixed. For instance, it influenced positively the purchase decisions of beef steaks among Hispanic, White, and households of other minorities; but, higher income decreased the likelihood to purchase ground beef among African American and households of other minorities.

As the U.S. consumer market for food is faced with a growing population composed of many ethnic minorities from around the world, the food industry cannot ignore this structural change since the demand for products will be influenced by the purchasing behavior of consumers. Thus, in this paper the purchasing decisions of meat products by different ethnic groups is analyzed, finding that household composition and income were the most important determinants, but, the importance of the effects varied across ethnic groups and meat products.

This result implies that targeting ethnic markets is justified since U.S. food consumers' decisions to purchase meats are not homogeneously responsive to socio-economic factors. As such, when possible, we recommend that future consumer behavior research studies should report the influence of ethnicity along with their major findings since it is at the core of individuals' conduct. All in all, the reported findings may be used to strategically develop marketing campaigns with the aim of encouraging meat demand across ethnic groups, specifically, on tactics focused at motivating the decision to purchase.

## Acknowledgements

We thank Dr. Chung Huang from The University of Georgia for the cooperation on answering questions and sharing research reports. We also thank Mr. Mark Anderson, an economist with the Bureau of Labor Statistics for the assistance with the Consumer Expenditure Survey.

## References

- Deaton, A., J. Muellbauer. 1980. *Economics and Consumer Behavior*. New York: Cambridge University Press.
- Fan, J. X., V. Z. Solis. 1994. "Budget Allocation Patterns of Hispanic Versus Non-Hispanic White Households." *Consumer Interest Annual* 40(1): 89-95.
- Fan, J. X., V. Z. Solis. 1998. "A Comparison of Household Budget Allocation Patterns between Hispanic Americans and Non-Hispanic White Americans." *Journal of Family and Economic Issues* 19 (2): 151-174.

- Humphreys, Jeffrey M. 2003. "The Multicultural Economy 2003, America's Minority Buying Power." Selig Center for Economic Growth, University of Georgia. 63(2):1-27.
- Korzenny, Felipe, Betty A. Korzenny. 2011. *Hispanic Marketing: Connecting with the New Latino Consumer*. 2<sup>nd</sup> ed. Boston: Butterworth-Heinemann.
- Lanfranco, Bruno A. 2001. "Characteristics of Hispanics Households' Demand for Meats: A Comparison with other Ethnic Groups Utilizing an Incomplete System of Censored Equations." Dissertation. Dept. of Agricultural Economics & Applied Economics, University of Georgia.
- Nevaer, Louis E.V. 2004. *The Rise of the Hispanic Market in the United States: Challenges, Dilemmas, and Opportunities for Corporate Management*. Armonk, NY. M E Sharp Inc.
- Paulin, Geoffrey. 2003. "A Changing Market: Expenditures by Hispanic Consumers, Revisited." *Monthly Labor Review* 126 (8): 1-24.
- StataCorp. 2005. *Stata Statistical Software: Release 9*. College Station, TX: Stata Corp.
- Stegelin, Forrest E. 2002. "Demand for Meats: A Comparison of Ethnic Groups." *Journal of Food Distribution Research* 33(1): 179-181.
- U.S. Census Bureau. 1993. *The Hispanic Population in the United States: March 1993, Current Population Reports, Population Characteristics, Series P20-475*.  
<http://www.census.gov/population/www/socdemo/hispanic/hispdef.html> (Accessed June 30, 2010)
- U.S. Census Bureau. 2001. *The Hispanic Population in the United States: March 2002 Detailed Tables (PPL-165)*. <http://www.census.gov/population/socdemo/hispanic/ppl-65/tab12-1.xls> (Accessed June 30, 2010).
- U.S. Census Bureau. 2010. *Projected Population of the United States, by Race and Hispanic Origin: 2000 to 2050*. <http://www.census.gov/population/www/projections/popproj.html> (Accessed June 30, 2010).
- U.S. Census Bureau. 2011. *Overview of Race and Hispanic Origin: 2010*. 2010 Census Briefs. <http://www.census.gov/prod/cen2010/briefs/c2010br-02.pdf> (Accessed Nov. 06, 2011).