

DEMOGRAPHIC SEGMENTATION OF THE NEW  
AUTOMOBILE MARKET: A REAPPRAISAL

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Abstract

This research was designed to determine if the traditional demographic correlates of automobile purchase remained effective in the OPEC environment. The study indicates that social class, as measured by the Hollingshead Index of Social Position, is no longer an effective segmentation variable for the new automobile market. Family income and life-cycle remain effective segmentation variables.

Introduction

Successful marketing of goods and services generally requires that the firm match its offerings to specific market segments. This process of market segmentation involves breaking down the total market into differentiated sub-groups for which unique marketing strategies are developed. Since any one company has limited resources to expend on its marketing effort, market segmentation is utilized as a strategic tool in market definition and resource allocation.

The concept as originally defined by Wendell Smith requires an "adjustment of product and marketing effort to (differences in) consumer or user requirements" (1956). Although this seems to be basic, there is a great deal of difficulty in identifying and isolating these segments as they pertain to a particular product or service.

Demographic segmentation has long been successfully used alone (Akers, 1968; Evans, 1959; Evans, 1968; Peat, Gentry, and Brown, 1975; Peters, 1970; Peters, 1970) or in conjunction with behavioral variables (Feldman and Armstrong, 1975; Feldman and Armstrong, 1975; Henry, 1976; Newman and Staelin, 1972; Wiseman, 1971) to define market segments for U.S. and/or foreign automobiles. However, environmental changes can weaken the utility of once effective segmentation variables. The purpose of this study was to determine if the traditional correlates of automobile purchase remained effective in the post-1973 OPEC era. Specifically, the study examines the effect of stage in family life-cycle, annual family income, and social class, as measured by the Hollingshead Index of Social Position, on the purchase of a new automobile from one of four prestige categories.<sup>1</sup>

Research Design

Questionnaires were mailed to a national probability sample of 2,966 individuals who had registered a new automobile in the continental United States during October 1976. Responses were received from 763 new automobile registrants in 229 three-digit zip codes. This equates to a 25.72% response rate.

Non-response bias was evaluated, in part, by conducting three mailings keyed to three-digit zip codes to the sample frame. The first wave was compared to the second and third to determine if any differences existed between the two groups. There were no significant differences between the early and late respondents on the basis of the prestige category of automobiles purchased, stage in family life-cycle, annual family income, or social class.

The income categories were adapted from the 1970 Census and adjusted for inflation.

Social class was measured by the Hollingshead Index of Social Position. The index divides society into five classes on the basis of assigning a weight of seven points for occupation and four points for education. There are seven categories of each variable. In this study, upper class and upper-middle class were combined, as were lower-middle and lower class, due to the limited number of respondents in the upper and lower classes.

The family life-cycle categories were those used by Engel, Kollat, and Blackwell (1973).

Results

Table 1 presents the chi-square analysis and Table 2 the correlation analyses. Respondents 45 or older purchased 82.76% of the High-Prestige Automobiles, although they accounted for only 43.70% of the sample, while those under 45 purchased 73.85% of the Very-Low-Prestige Automobiles, although they accounted for only 56.30% of the sample. The relationship is significant.  $\chi^2(18) = 62.16, p < .001$ . In addition, the correlation between prestige category of automobile purchased and stage in family life-cycle is significant when income ( $p < .01$ ) and social class ( $p < .001$ ) are controlled.

<sup>1</sup> The prestige categories are: (1) High-Prestige Automobile (Lincoln, Cadillac, Mercedes-Benz), (2) Medium-Prestige Automobiles (Chrysler, Oldsmobile, Buick, Pontiac, Dodge, Mercury, Volvo, Peugeot, Triumph, BMW, MBG, Checker), (3) Low-Prestige Automobiles (Ford, Plymouth, Chevrolet), and (4) Very-Low-Prestige Automobiles (Volkswagen, Renault, Opel, Datsun, Toyota, Mazda, Saab, American Motors, Honda, Subaru). The categories were adapted from a classification system used by Birdwell (1968). Pre-tests were conducted to validate the currency of the classification system and to add brands.

TABLE 1

## Chi-square Analyses

(A) Chi-square Analysis of the Effect of Stage in Family Life-Cycle  
on Prestige Category of Automobile

		Stage in Family Life Cycle						
			Young Married	Young Married Oldest Child	Young Married Youngest Child	Older Married With Dependent Children	Older Married No Dependent Children	Older Single
Prestige Category	Code	Young Single 1	No Children 2	Under Six 3	Over Six 4	5	6	7
High	1	0	2	1	2	13	9	2
Medium	2	46	26	20	32	28	68	10
Low	3	45	15	29	36	29	64	15
Very-Low	4	37	17	25	17	11	17	6

$$\chi^2 = 62.16238$$

$$df = 18$$

$$p < .001$$

(B) Chi-square Analysis of the Effect of Income  
on Prestige Category of Automobile

Prestige Category	Code	Income			
		\$0 to \$13,999 1	\$14,999 to \$20,999 2	\$21,000 to \$34,999 3	\$35,000 or More 4
High	1	1	2	5	21
Medium	2	56	62	71	39
Low	3	73	71	62	22
Very-Low	4	42	47	30	9

$$\chi^2 = 95.33386$$

$$df = 9$$

$$p < .001$$

(C) Chi-square Analysis of the Effect of Social Class  
on Prestige Category of Automobile

Prestige Category	Code	Social Class		
		Upper and Upper-Middle 1	Middle 2	Lower-Middle and Middle 3
High	1	6	15	4
Medium	2	30	110	61
Low	3	24	98	77
Very-Low	4	16	55	46

$$\chi^2 = 9.11241$$

$$df = 6$$

$$p = .1674$$

TABLE 2

## Partial Correlation Analyses of Dependent and Independent Variables

## (A) Zero Order Partial Correlation Coefficients

	Prestige Category of Automobile	Stage in Family Life-Cycle	Family Income	Social Class
Prestige Category of Automobile	1.00	-.18*	-.25*	.10**
Stage in Family Life-Cycle		1.00	.29*	.04***
Family Income			1.00	-.29*
Social Class				1.00

(B) First Order Partial Correlation between Prestige Category  
and Stage in Family Life-Cycle

Variable Controlled	Correlation Coefficient
Family Income	-.11**
Social Class	-.18*

(C) First Order Partial Correlation  
between Prestige Category and Social Class

Variable Controlled	Correlation Coefficient
Stage in Family Life-Cycle	.11**
Family Income	.03***

(D) First Order Partial Correlation  
between Prestige Category and Family Income

Variable Controlled	Correlation Coefficient
Stage in Family Life-Cycle	-.22*
Social Class	-.23*

df = 535

\* p &lt; .001

\*\* p &lt; .01

\*\*\* p Not Significant

Respondents earning in excess of \$35,000 purchased 72.40% of the High-Prestige category automobiles, although they accounted for only 14.80% of the respondents. This relationship is significant.  $X^2(9) = 95.33$ ,  $p < .001$ . In addition, the correlation between prestige category of automobile purchased and family income is significant when stage in family life-cycle ( $p < .001$ ) and social class ( $p < .001$ ) are controlled.

In contrast, there was no significant relationship between social class and prestige category of automobile purchased. A zero order partial correlation coefficient between social class and prestige category of automobile was significant ( $p < .01$ ) as was the correlation coefficient between social class and income ( $p < .001$ ). However, when the effect of income was controlled for the correlation between social class and prestige category of automobile was no longer significant.

The foregoing analyses indicate that a significant relationship exists between prestige category of automobile purchased and family income and stage in family life-cycle. A significant relationship does not exist between prestige category of automobile purchased and social class.

#### Conclusions

The significant relationship between family life-cycle and prestige category was as expected. The effect of the individual stages is particularly interesting. Those in the first three stages show a strong preference for automobiles from the Very-Low-Prestige Category -- the small foreign and domestic makes. Peters (1970) observed a similar situation with regard to age, between 25-35, and a preference for small domestic automobiles. Henry (1976) found a significant relationship ( $p < .05$ ) between family size (no children) and purchase of sub-compact automobiles. Peters (1970) also noted that the independent variable son or daughter usually drives car was positively related to the purchase of a compact automobile. He concluded that this might indicate a long-term trend towards smaller cars. His tentative conclusions appear to be borne out by this study since they, the children, would now be in the first three stages of the family life-cycle.

The significant relationship between family income and prestige category was as expected. The importance of the variable family income in excess of \$35,000 for the purchase of High- and Medium-Prestige Automobiles was also expected. Henry (1976) had found that the variable category family income was significant ( $p < .01$ ) in the identification of purchasers of full- and intermediate-sized automobiles. With the variable family income in excess of \$50,000 per year associated with the former ( $p < .05$ ) and family income between \$25,000-\$49,999 ( $p < .05$ ) associated with the latter.

The ineffectiveness of social class as a market segmentation variable was not expected. Using the Hollingshead Index of Social Position, Henry (1976) had found a slight positive relationship between upper-middle and upper class and ownership of intermediate sized automobiles. Mathews and Slocum (1969) had found the ISP to be effective in segmenting credit card usage patterns.

The lack of a significant relationship between automobile purchase and social class seems to invite further analysis. It is possible that the increasing numbers of students attending, and completing, college has caused social class distinctions based on education levels to become obsolete.

The major strategic implication of this study is that market segmentation remains an appropriate strategy for the automobile industry in the post-OPEC operating environment. Stage in family life-cycle and annual family income remain effective market segmentation variables. However, social class, as a function of education and occupation, appears to offer minimal segmentation value.

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