AN EMPIRICAL RE-EVALUATION OF THE EFFECTS OF EDUCATION IN NONMARKET PRODUCTION

by

CHRISTIE AGIOUTANTI

A dissertation submitted to the Graduate Faculty in Economics in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

2009

This manuscript has been read and accepted for the
Graduate Faculty in Economics in satisfaction of the
dissertation requirement for the degree of Doctor of Philosophy.

Date	Distinguished Professor Michael Grossman Chair of Examining Committee
Date	Professor Merih Uctum Executive Officer

Distinguished Professor Michael Grossman

Professor Henry Saffer

Professor Chanoch Schreiber

Supervision Committee

THE CITY UNIVERSITY OF NEW YORK

Abstract

AN EMPIRICAL RE-EVALUATION OF THE EFFECTS OF EDUCATION IN NONMARKET PRODUCTION

by

CHRISTIE AGIOUTANTI

Adviser: Distinguished Professor Michael Grossman

This paper tests the empirical validity of the productive efficiency hypothesis effect of education in the nonmarket sector via consumption expenditure patterns, which is essentially the foundation in Michael's (1972) behavioral model. Under the assumption of factor and commodity neutrality, the education effect is expected to be positive for luxuries, negative for necessities and zero for market goods inputs whose income elasticity is equal to one.

Much of the innovation of this paper primarily stems from a preliminary and broad attempt to update Michael's empirical work, while focusing on the demand for inputs in the production of "good health", the incorporation of both grouped and individual observations on consumer expenditures household data as an additional comparison tool, inclusion of all four geographical regions and allowing for zero value market good outlays.

By and large, the empirical analysis of this study fails to support the predicted qualitative relationship between income and education elasticities, regardless of sample classification and item categorization. Consequently, it rejects the accuracy of productive efficiency hypothesis in the neutrality framework. Whether these findings are the byproduct of the limitations set by the theoretical model, the type and

idiosyncratic nature of the dataset used or by the econometric approach employed, the effect of education on household productivity remains a puzzle and a topic that requires more rigorous investigation.

"*The most important of all capital is that invested in human beings.*"

Alfred Marshall

Acknowledgments

I am primarily and immensely indebted to my dissertation adviser Distinguished Professor Michael Grossman for his endless support, guidance and faith in me even as I wandered around for many moons in the program. I consider myself infinitely lucky for having the opportunity to meet and work closely with such a pioneering and brilliant mind, an insightful scholar and teacher, and a sincerely caring, warm and kind soul. Professor Grossman has been a guardian angel to me, a “deus ex machina”, stepping in during difficult times and assisting me in every possible way. I could have never accomplished this work without his continuous reinforcement and generous help. And, I am not sure if there are any words that could adequately express my gratitude to him for his value-added throughout all the time I have known him and for his tireless efforts in this process. Professor Grossman will be a mentor to me for the rest of my life as I will always continue to seek his advice.

I wish to thank Professors Henry Saffer and Chanoch Schreiber for serving in my supervision committee and approving the completion of this project.

I appreciate and extend many thanks to Professor Theodore Joyce for his continued assistance and support in both academic and professional arenas of my apprentice life at the Graduate Center, Baruch and in job seeking.

I am also thankful to Professor Gregory Colman for being a true and dear friend and for his invaluable technical help and comments.

At the same time, I have been extremely blessed with a wonderful family by my side. I am deeply grateful to my terrific and loving parents and brother for providing me with all financial, emotional and moral support and security I needed in every step

along the way. It would have been impossible to produce this dissertation without their enduring encouragement and patience, dependability and unconditional love. I also want to thank them for being the major sources of my motivation, perseverance and confidence during numerous stressful and challenging moments when the big picture seemed to be rapidly fading away. As a small token of my appreciation, love and respect, I dedicate this manuscript to my mother and father, Artemis and Nick, and my brother, George, for enabling me to see a long aspired dream come true and for opening new horizons towards a more fulfilling path in my life.

Table of Contents

List of Tables

Page

List of Diagrams

I. INTRODUCTION

Academic research has massively focused on the effect of formal education on market productivity and earnings and more efforts will perpetuate to analyze this topic as different angles or interests arise, innovative econometric avenues are explored and new industries are born.

Although not new in the literature, the efficiency effects of schooling in the nonmarket sector outcomes have also been long investigated during the past four decades. Theoretical and empirical evidence on the private and social impact of education abounds. Briefly summarizing a few areas of interest, the education's role is well documented on one's demand for health and medical care (Grossman 1972a, Grossman 1972b, Grossman 1975, Grossman and Kaestner 1997), children's health (Shakotko, Edwards and Grossman 1981, Grossman and Joyce 1989), physician's services demand (Pauly 1980), to contraception and family size attainment (Michael 1973b, Rosenzweig and Schultz 1989), marital stability and spouse's earnings (Benham 1974), crime reduction (Ehrlich 1975, Lochner and Moretti 2004), and so on.

Less attention however, if any, has been allotted to the returns of education in nonmarket production pertaining to household or consumption efficiency. In the context of time allocation theory, Michael (1972) pioneered the first formal theoretical framework to test the education effect in nonmarket productivity. If education raises efficiency, with money income, prices and wages constant, real income increases. As such, consumers are expected to shift their expenditures toward commodities that are considered luxuries and out of necessities. Therefore, increases in the level of formal schooling are associated with increases in the demand for inputs for luxury commodities,

decreases for necessities, and will have no effect on input demand for commodities with unitary income elasticity.

An alternative interpretation offered by Michael (1972) is that education changes the consumer's utility level by shifting the indifference map, not through productivity, as a "change in tastes" effect, assuming though the same shape of indifference curves.[1] Morris's (1976) work primarily focuses on examining changes in the shape of the indifference curves, the "lifestyle" effect, and attempts to disentangle the nonmarket productivity and "lifestyle" effects occurring due to changes in education. Based on cross-sectional surveys conducted by the Bureau of the Census, his empirical findings suggest that education significantly alters preferences' structure but does not affect productivity.

The following section provides a synopsis of a few of the more recent and pertinent theoretical and empirical contributions related to this topic.

[1] Appendix A.7, pg.102.

II. RELATED LITERATURE

Research has persistently produced studies that attempt to shed light on the quantitative and qualitative relationship between the returns to education and productivity in nonmarket sector activities. As these efforts vary in terms of nonmarket objectives, econometric methods, underlying theoretical derivations and data selection, the results differ according to the diverse approaches and methodologies undertaken. Some of these are summarized below.

Dee (2003) finds strong statistical evidence in favor of the civic returns to education, measured by increased voting participation and newspaper readership. On the other hand, in an examination performed by Milligan, Moretti and Oreopoulos (2003), the education effect on voter turnout is significant for the U.S. but not for U.K.

The empirical evidence on volunteer work is also mixed. According to Gibson (2001), and based on a sample of twins in order to alleviate the existence of unobservable effects, increases in education not only lower the probability of volunteering but significantly reduce the amount of volunteer time supplied. This is contrary to Dye's (1980) finding of a strong and positive relationship between schooling and voluntary time contributions, more so dominant when schooling is measured at the graduate level.

Less encouraging is the external education effect on sexual behavior. Oettinger (1999) argues that sex education enrollment in the 1970s led to earlier teenage sexual activity in the U.S. for females than for males in that cohort and earlier pregnancy rates for some female groups.

"But can she cook?" is another interesting question to ask and yet to be answered. Sharp, Heath, Smith and Knowlton (2004) claim that the expected positive sign of

education on household productivity may be the byproduct of theoretical misinterpretations limiting nonmarket efficiency to housework productivity[2], or flawed econometric specification lacking market goods inputs, Gronau (1980), and assumptions, Graham and Green (1984). With the use of a 1993 PSID sub-sample of married women, their study supports a negative relationship between women's education and housework productivity, probably attributable to the " morale" effect within the theoretical context in sociology, and perhaps foreign to economists.[3] Interestingly though Gronau's (1977) paper arrives at the same negative education effect on housework for both employed and unemployed married women.

More recent and refreshing ventures are undertaken by Gronau and Hamermesh (2006, 2008) to assess the education effect on relative time and goods intensities of several household commodities productions and on the demand for variety. Starting with the earlier study, Gronau and Hamermesh employ U.S. and Israeli data combining household time use and goods' expenditures. According to their findings, leisure activities are time intensive while lodging, health and travel are relatively goods intensive. More importantly, "*husband's* education increases the relative goods intensity of commodities, and therefore market good purchases, but it hardly affects time intensities." In their latter paper, the authors employ Australia, Israel and West Germany time use data. The empirical estimates derived are consistent with their hypothesis that education increases the choice of activities undertaken in a day (an additional year of schooling leads to a 2% increase in variety). Additionally, their evidence further supports

[2] Michael's definition of nonmarket productivity is by far more encompassing than just housework activities productivity.

[3] According to the "morale model" , more educated women are less willing to perform household work, and therefore, their productivity in this sector decreases.

the productive efficiency effect of education in nonmarket outcomes, more so on weekdays rather than weekends.

Some of the areas mentioned above are of profound interest as they constitute major spending categories in the consumption pattern analysis and are further empirically explored in Section V of this paper. For example, the empirical implications of schooling on medical care (and its disaggregated component expenditures such as doctors' visits, health insurance and so on), smoking and tobacco, alcohol, charitable contributions, recreation and other consumption expenditure items are of primary importance as they have been previously explored in comparable studies.

Yet, the dichotomy over productive or allocative efficiency as the underlying hypothesis still exists, as well as the pending issue of employing time-use data versus consumer expenditures information, or a combination of both. In addition, and to the best of my knowledge, contemporary literature has not produced any formal empirical testing of the education effect on consumption efficiency similar to Michael (1972), neither has it reached unanimous conclusions on the relationship between schooling and certain nonmarket outcomes.

The purpose of this study is to test the empirical validity of Michael's productive efficiency hypothesis within a neutrality framework and household environment. This is accomplished by investigating the relationship between income and education elasticities of market good expenditures at the household level. The contribution of this paper is fundamentally empirical in two aspects. First, it aims at reproducing Michael's work using more recent data, while placing more emphasis on health production inputs outlays. Secondly, it employs both grouped and individual household data on expenditures and other demographic variables, and compares the results from the two samples.

The rest of the paper is organized as follows. Michael's hypothesis and the resulting model's predictions are discussed in section III while Section IV describes and examines the dataset and variables used. Section V consists of the empirical results derived in this study in three different consumption pattern taxonomies and Section VI concludes with the paper's findings and suggestions for further research. The econometric analysis is performed on Stata/V.10 software. Supplementary tables and additional regression estimates used in this study are shown in the Appendix (A-C), section VII.

III. THE MODEL

Based on the household production approach and, Hicksian education neutrality across all production functions and linear homogeneity assumptions, Robert Michael (1972) developed an empirical model to test the productive efficiency hypothesis of education in consumption. After conducting numerous empirical tests on grouped cross-sectional annual data on household consumer expenditures, published by the BLS, to investigate the basis of consumer spending decisions and shifts, his findings support the following results. First, holding money income constant, education triggers real income changes via nonmarket efficiency. Secondly, the commodity basket composition is affected by shifting spending towards luxury goods. Third, and although certain expenditures on market goods exhibit technological non-neutrality, in most cases neutral shifts are observed and as predicted in the data.

Briefly outlined, the theoretical background on which the static one period model is developed lies in the household's utility optimization problem of

$U=f(Z1, \ldots Zn)$,

where the Zs are "commodities", such as good nutrition, good health, house cleanliness, production of children, investment in human capital, etc., and they are produced with market goods and own consumer's time inputs of x and t respectively, and E being an environmental exogenous factor, such as age, level of formal education attained, interpreted as analogous to technology in the firm's production function. E is the human capital variable here. Thus,

$Z=f(x, t; E)$ represents the production function of each commodity "i".

Then, the household maximizes utility subject to a money income constraint:

$I=\Sigma\ p_i\ x_i= V + t_w\ w,$

where t_w is the time allocated to work, "w" is the wage rate and V is the non-wage income and it is exogenous in the one-period model,

and a time constraint:

$\Omega= \Sigma\ t_i + t_{w,}$

where Ω accounts for the total hours available in a year's time frame (8,760 hours).

Combining the two constraints yields the full income constraint, S:

$S= V + w\Omega = \Sigma\ p_i\ x_i + w\ \Sigma\ t_i\ ,$

the sum of income spent on goods and services (x) and forgone earnings, or opportunity cost of time, t.

Next, due to the linear homogeneity assumption in x and t, and allowing for positive or negative marginal products of the factors, education may increase or decrease factor productivity. As such, a positive change in consumption income (the additional value of Zs attributable to higher levels of schooling completed), may be interpreted either as cost reduction in producing a given output level of Z, or as an overall increase of all Zs, holding x and t constant. In other words, education raises real income.

More importantly, education is presumed to be factor neutral and commodity neutral, both in the Hicksian definition. Since neutrality is not required in the theoretical framework, it introduces severe restrictions and explanatory constraints in the empirical findings.

Factor neutrality implies that education increases marginal factor productivities by the same proportion, leading to absent factor substitution in production. Commodity neutrality ascertains equal percentage productivity increases across all production

functions as formal schooling rises. Therefore, no price effects in the absence of commodity consumption and production substitution.

Consequently, the education effect on the commodity demand will be positive when its income elasticity is positive. The neutrality assumptions finally reduce the factor's derived demand to:

$$\tilde{x} = Yc\,(\eta_i - 1), \quad (1)$$

where Yc is consumption income, the ~ (tilde) denotes percentage change and η_i is the commodity's income elasticity.

The model's predictions and testing are performed in the context of equation (1). If education raises real income, consumption income will be positive and, if at the same time $\eta_i > 1$, the relation between education and market good's (x) expenditures will be positive as well. Similarly, spending will decrease if commodity Z is a necessity.

Although the theoretical implications are based on the commodity's income elasticity, Michael's empirical methodology estimates the good's expenditure income elasticity. More precisely, equation (2) defines the Engel curve fitted and specified in the form below:

$$X = f(Y, E, F, A, R), \quad (2)$$

where X is the market good's expenditure, Y is income, A and E are the head of household age and education level respectively, and, F and R represent the household's family size and region.

The Engel curve reduced form above introduces a weakness which he bypasses by

implicitly assuming that a unit of X is used per production of Z.[4] However, what if market good X is used concurrently in multiple commodity production functions? Under the circumstances, neither the commodity production relative prices remain the same, nor the education effect can be clearly set apart from that of the direct inputs.

The empirical approach pursued in this paper is only different from Michael's Engel curve (2) in the definition of the region variable and it is discussed in the next section.

[4] Michael (1972a) shows that the market good's income elasticity can be computed as a weighted average of the commodities' income elasticities using one unit per distinct commodity production.

IV. DATA AND VARIABLES

The dataset employed in this research is a merged family and member records compilation of the Consumer Expenditure Survey (CE) produced by Harris and Sabelhaus (2000) on individual household data for the year 2002. Harris and Sabelhaus constructed many years of sample dataset extracts from Consumer Expenditure Surveys conducted by the Bureau of Labor Statistics. These extracts are readily available at the NBER website. For each household, the four quarterly records have been merged into an annual record.

The sample used in this study has been reduced to 5,861 observations due to the following imposed adjustments to the original dataset. First, and in order to comply with Michael's empirical analysis, only consumer units with head of household information are retained. Secondly, households that did not complete all four quarterly interviews and student households are dropped. Third, the raw data categories (approximately 600 income, wealth and expenditure categories) in the CE have been aggregated to 109 in the extract.

Finally, certain consumption item expenditures in the extracted dataset appear to have zero expenditures across all observations in the sample or negative minimum expenditures. For example, toiletry articles and nondurable household supplies have zero values, while medical drugs and another seven items used in the paper's empirical analysis show up with negative minimum expenditure. Although a zero dollar expense in the two categories above may or may not be true, the negative minimum outlays raise significant accuracy suspicions. In addition, the negative values are dropped from

the grouped data analysis while the same is not performed in the individual analysis. Clearly, the inconsistent negative value treatment might seem as complicating the comparison between grouped and individual observed results. However, this is not true as the negative value observations are only few and do not significantly affect the variables' means at which the elasticities are calculated.

Therefore, the sample set utilized poses a reliability issue, or even a bias concern towards the obtained results, that is introduced by the overall data manipulation, data entry flaws and negative values in the testing approach of the individual data mentioned above.

Michael (1972a) defines the dependent variable as the expenditure on the market good or service by the consumer unit. As he explains, and aside from the unavailable data on quantities purchased at the time of his research, there are two advantages in using expenditures. The first one is that expenditures allow for a composite good aggregation. The second benefit arises from the relation between price and quality variations of the market good. If this is true, expenditures would reflect quality variations in a standard unit and alleviate any distortions in income elasticity estimation.

The second argument though is somewhat less straightforward. Price variations may result from differences among geographical regions or from a correlation between prices paid and the consumer's income according to a search model.[5] In the first case, a regional dummy would capture the price difference effect. The latter introduces a bias in the income effect, yet it imposes an empirical question if the bias is larger when the dependent variable is expenditures as opposed to quantities.

[5] Michael (1972), pg.42. According to Mincer's search model, more educated pay less for luxuries and less educated pay less for necessities.

Although the American Time Use Survey (ATUS), measuring the amount of time people spend doing various activities, such as paid work, childcare, volunteering, and socializing is currently available, the purpose of this paper is to keep the analysis consistent and as directly comparable with Michael's (1972a) empirical investigation.

The explanatory variables include the household's total consumption expenditure, the level of formal education attained and age of the head of the household, family size and geographical regions.

Michael's selection of the total consumption expenditure as a proxy for permanent income deserves some attention. While it is argued in his paper that a biased estimate of the coefficient may be obtained and also because of the presence of purchases of durables in total expenditures, grouping the data would yield a more consistent coefficient.

The education variable serves as a proxy of nonmarket productivity and is included to distinguish between money income and nonmarket productivity. The argument here is that permanent income and education "though undoubtedly positively correlated, might not be highly correlated" and Michael reports a +0.59 correlation coefficient between LnConsumption and LnEducation. Interestingly enough, this paper's findings support the non-high correlation premise. The correlation coefficients are +0.4 to as low as +0.2 in the individual and grouped observations datasets respectively.

The incorporation of family size, age and regional variables serves as additional efficiency parameters. For example, as family size increases and expenditures shift towards necessities, the shift could be interpreted as a decrease in efficiency due to lacking information or application of knowledge, or even scale effects. On the other hand, the age effect is not as clear. It could move in either positive or negative directions

depending on the relative magnitudes of human capital accumulation or depreciation due to aging. Perhaps the inclusion of a squared age term as an additional variable might shed light on this ambiguity; Michael has not chosen to do so and neither it is included in this study.

In terms of the region variable, Michael uses a South-NonSouth dummy to account for price, climate differences and so on that may be imposed by the geographical location. Shifts towards luxury goods can be interpreted as shifts due to great efficiency or lower market prices in the region. This paper explicitly includes all regions, Northeast, South, West and Midwest. The rationale for using more detailed regional division is twofold; it offers a more explicit region disaggregation and it allows for a direct comparison of expenditure shifts among the major areas in the country, thus possibly yielding more comprehensive results.

V. EMPIRICAL ANALYSIS

The purpose of this analysis is to empirically test the validity of the neutrality model discussed in Section III and measure the implied income and education elasticities on household expenditures using the CE extract dataset for the year 2002. According to the model, the education elasticity on expenditures is expected to be positive, zero or negative as the income elasticity is greater than one, equal or less than one, although this assumption does not necessarily imply strict neutrality. Even in the absence of any relationship between the education and income elasticities (random selection), both elasticities would exhibit a sign conformity in the 33% of total expenditures neighborhood, as Michael suggests.

The econometric methodology employed was to fit Engel curves for each item or aggregated category by ordinary least squares. The rest of this section is organized in the following manner. Part 1 in each item categorization (A, B or C) examines the neutrality assumption via "grouping" the 2002 CE cross-sectional data and Part 2 findings report the regression results from the "individual" dataset for the same sample period. The "individual" data refer to the original 5,861 usable individual household observations extracted from the Harris and Sabelhaus (2000) sample dataset. These observations comprise the "raw" data in this paper since no adjustments or corrections are made to the observations. For instance, negative or zero value expenditures are neither excluded from the data neither adjusted to small values as in Michael's empirical work ($1.00 or $0.01 for example).

The following regression equations were fitted for both "grouped" and "individual" datasets, in the five forms below:

1.ELASTICITY: LNY=LNC+LNE+A+F+M+S+W
2.LINEAR: Y=C+E+ A+F+M+S+W
3.SEMILOG: Y=LNC+E+A+F+M+S+W
4.DOUBLE LOG: LNY=LNC+E+A+F+M+S+W
5.INTERACTION: LNY=LNC+LNE+A+F+M+S+W +LNC*LNE+LNC*A, [6]

where, Y is the expenditure on the market good or service, C is the total consumption expenditure (proxy for income), E and A is the head of household level of attained schooling and age respectively, F is the size of the household, and the four geographical regions Northeast, South, Midwest and West.

A. GOODS AND SERVICES

Following Michael's methodology, the first set of regression results were obtained by grouping the sample observations by disposable income (10 quantiles)[7], education (4 groups)[8] and region (4 regions) for a total of 158 observations. Each observation therefore gives the mean expenditure on the market good, mean total consumption expenditure, mean level of schooling completed and age of the head of household and mean family size. To restore homoscedasticity of the residual, the regressions are then weighted by the square root of the cell size.[9]

---

[6] The income elasticity and education elasticities are estimated at the means as follows: b1+b8*LNE+b9*A and b2+b8*LNC, where b1, b2 b8 and b9 are the coefficients of LNC, LNE, LNC*LNE, and LNC*A.

[7] Using Stata's "xtile"option. Disposable is defined as gross income minus federal, state and local income taxes.

[8] Elementary school, high school, some college and college graduate.

[9] The weighted estimation is based on Stata's *analytic weights* method, inversely proportional to the variance of the observation and appropriate when dealing with data containing averages.

1. Grouped Data

All items expenditures are aggregated into two major categories, goods and services, exhausting total consumption expenditure with approximately 75% and 25% shares respectively.[10] As per Michael, expenditures on goods include: food at home, tobacco, alcohol, utilities, housing, furniture and durable equipment, clothing, reading and automobile purchase and operation expenses such as gasoline, tolls, insurance, car servicing, etc.

Services expenditures consist of food out, alcohol out (nightclub), household operations (domestic service and other household operations), personal care, medical care, recreation (other than reading), education, travel (transportation other than automobile and operation), premia (pension contributions such as deductions for government retirement, social security), business services (accounting, legal, professional fees, funeral, etc.) life insurance, interest paid by consumers (finance charges other than mortgage and vehicles) and charitable contributions.

The regression coefficients and respective t-values in constant elasticity form are shown in Table 1 below. The t-values for significance testing are assumed at the 5% conventional levels.

[10] Michael reports 72.7% and 27.3% weights accordingly.

Table 1. Regression Results, Constant Elasticity Form

Item	ln C	ln E	A	F	M	S	W	Constant	R^2	Adj. R^2	F test	t-test for inc ≠1
ln GOODS	0.874	-0.0016	-0.002	0.026	-0.031	-0.031	0.003	1.1	0.99	0.99	2804	-8.99
t-values	62.6	-0.08	-2.3	2.41	-2.97	-3.07	0.31	7.68				
ln SERVICES	1.51	-0.01	0.009	-0.09	0.095	0.096	-0.027	-7.17	0.94	0.93	346	8.73
t-values	25.87	-0.11	2.24	-2.02	2.18	2.29	-0.62	-11.96				

The income elasticity for goods is 0.874 and significantly less than one (with a t-value of -8.99) and 1.51 for services, and significantly greater than one (t-value is 8.73), although in both cases, the education elasticity is not different from zero, and therefore not having any impact on nonmarket productivity, contrary to the model predictions and much different from Michael's empirical findings. The weighed sum of income elasticities is 1.033 and for education elasticities is almost zero, or -0.004 (Appendix A1).

The age coefficients for both goods and services are consistent with Michael's results from the 1960 dataset, not only in terms of their sign but also approximately the same in magnitude. Consumer spending seems to be shifting away from goods with age and towards services. Michael explains the shift on the basis of goods' composition that is, primarily consisting of durables purchases at a younger age.

According to Michael, family size should be inversely correlated with efficiency and thus move in the opposite direction compared to education, shifting spending towards necessities as size increases. The latter is true based on the above results, yet inconsistent with the negative education correlation assumption since the education coefficients are not significant in either case. Yet, it must be noted that the size parameter is identical with Michael's, although only to be taken as a purely random empirical result.

The regional coefficients deserve a little more attention as an additional efficiency parameter. First of all, Michael only differentiates between South-nonSouth regions. This paper examines the effects of each one of the four regions separately. Although this may be a very early stage to mention the following, the "West" effect is insignificant in most cases, if not across the board. From the above results, Midwest and Southern regions seem to be shifting towards luxury expenditures as if their real incomes were higher due to lower cost of living, while the opposite is true for households in the Northeast region. In fact, this could be a fairly convincing argument at a first look and based on the following evidence. On average, the cost of living measured by the Consumer Price Index in 2002 was 188.2, 174.9, 173.3 and 184.7 for the Northeast, Midwest, South and West regions respectively[11], with Northeast as the most expensive region compared to lowest cost of living in the South. Clearly, the CPI may not be the most accurate or appropriate measure of average price movements and cost of living; it is, however, the more commonly used index in terms of average prices paid by consumers.

Utilizing Michael's two-way diagram, the results would be consistent with the model's predictions if the goods and services categories fell along the diagonal. Diagram 1 below shows that this is not true. The goods and services dichotomy based on the 2002 grouped dataset does not support the neutrality model. In fact, all regression forms yield the same findings. The linear regression form coefficients are shown in Table 2 below and Appendix A1 shows the results from the remaining three regression forms and weighted income and education elasticities sums.

[11] BLS, CPI databases All Urban Consumers, 2002. http://data.bls.gov/cgi-bin/surveymost

Diagram 1. Elasticities in all Regression Forms

EDUCATION ELASTICITY	INCOME ELASTICITY		
	$\eta>1$	$\eta\approx1$	$\eta<1$
$\varepsilon>0$			
$\varepsilon\approx0$	SERVICES		GOODS
$\varepsilon<0$			

Table 2. Regression Results, Linear Form

Item	C	E	A	F	M	S	W	Constant	R^2	Adj. R^2	F test
GOODS	0.656	-56.42	-96.35	458	-1036.3	-1441	205	9637	0.99	0.99	2299
t-values	62.85	-0.65	-2.42	1.01	-2.41	-3.48	0.47	2.66			
Mean Elasticity	0.887	-0.019									
	-7.8	-0.65									
SERVICES	0.343	56.42	96.35	-458	1036	1441	-205	-9637	0.96	0.95	523
t-values	32.86	0.65	2.42	-1.01	2.41	3.48	-0.47	-2.66			
Mean Elasticity	1.32	0.055									
	7.59	0.65									

Interestingly, the income elasticities 0.887 and 1.32 for goods and services respectively, and education elasticities of -0.019 and .055 are close to those reported by Michael in the linear form, 0.828 and 1.326 for income, and -0.010 and 0.088 for education. However, not much can be said regarding their significance in Michael's results.

Looking at both linear and constant elasticity regression tables, both yield approximately the same results in terms of the signs and significance of coefficients, with the exception of family size. In the linear case, the elasticities are calculated at the means

of goods, services, total spending and education ($38,327, $12,769, $51,097 and 12.2 years respectively).

2. Individual Data

Turning to the individual 5,861 household observations, the goods and services regressions produced notably different outcomes, while all variables' definitions are still the same. Tables 3 and 4 below show the regression results in constant elasticity and linear forms, Diagram 2 summarizes the relationship between income and education elasticities and Appendix A2 includes the weighted sums and regression results in all other forms, as well as the semilog form diagram.

Table 3. Regression Results, Constant Elasticity Form

Item	ln C	ln E	A	F	M	S	W	Constant	R^2	Adj. R^2	F test	t-test for inc ≠1
ln GOODS	0.974	-0.077	-0.0006	0.008	-0.025	-0.02	0.0006	0.185	0.947	0.947	15155	-7.287
t-values	273	-9.5	-4.52	5.14	-3.95	-3.2	0.1	5.23				
ln SERVICES	1.123	0.271	0.002	-0.019	0.076	0.055	-0.016	-3.611	0.698	0.698	1935	10.423
t-values	95.16	10.1	5.39	-3.5	3.58	2.72	-0.76	-30.79				

The income elasticity for goods is 0.974 and less than one (t-value of -7.287) and the education elasticity is negative and significant, as the model predicts. Moreover, the services income elasticity is significantly greater than one, with a magnitude of 1.123 and a t-value of 10.423, and, again as predicted, the education elasticity of 0.271 is positive and significant. All other regression coefficients, except West, are significantly different from zero and exhibit the same sign effects as with those in the grouped data.

Aside from the above, Table 3 results deserve a more rigorous examination. First, education increases productivity in the non market sector and households seem to behave as their real income increases. As such, spending shifts away from goods (necessities) towards services (luxuries), consistent with the model's theoretical predictions. Second, and more importantly, Michael's grouped data elasticities in constant elasticity form are very similar to those shown in Table 3 based on the individual data regressions. More precisely, Michael estimates income and education elasticities of 0.934 and -0.073 for goods, and 1.117 and 0.189 respectively, for services.

Table 4. Regression Results, Linear Form

Item	C	E	A	F	M	S	W	Constant	R^2	Adj. R^2	F test
GOODS	0.733	-344.6	-32.759	-62.2	-733.79	-888	134.73	7239	0.933	0.933	11688
t-values	247	-10.45	-5.29	-0.84	-2.5	-3.16	0.45	10.56			
Mean Elasticity	0.992	-0.118									
	-1.690	-10.440									
SERVICES	0.266	344.6	32.759	62.2	733.79	887.8	-134.73	-7239	0.672	0.671	1713
t-values	89.67	10.45	5.29	0.84	2.5	3.16	-0.45	-10.56			
Mean Elasticity	1.021	0.336									
	1.68	10.4									

Diagram 2. Elasticities in Constant Elasticity, Linear, Double Log and Interaction Forms

EDUCATION ELASTICITY	INCOME ELASTICITY		
	$\eta>1$	$\eta\approx1$	$\eta<1$
$\varepsilon>0$	SERVICES		
$\varepsilon\approx0$			
$\varepsilon<0$			GOODS

B. BROAD CATEGORIES

In this section, the goods and services components are disaggregated into fourteen major consumption categories, the dependent variables, and the following definitions will apply to both grouped and individual datasets and regression analysis. Briefly, the fourteen categories include foodhome, foodout, tobacco, alchohol2, housing2, utilities, houseopr, furnish, clothing, perscare, medical, recreate, educ and transp2, while more elaborate definitions are given below. Since, "personal insurance", "miscellaneous consumption" and "charity" (gifts and contributions) are excluded in this disaggregation analysis but included in total consumption spending, the fourteen categories do not exhaust total consumption outlays. More precisely, the fourteen variables account for 90.5% and 90.13% of total consumption in the grouped and individual data respectively.

The following four item definitions are also applicable to the detailed regressions in Section C. Foodhome refers to expenditures for food at home, foodout refers to food away from home, tobacco covers expenditures on tobacco products (cigarettes, cigars, pipe tobacco and all other tobacco products), and furnish includes furniture and durable household equipment, matching Michael's "Housefurnishings & Equipment" category.

The residual ten categories require further description as they may not exactly match those used in Michael's examination. Alcohol2 includes alcohol on and off premise, meaning at home and at nightclub consumption. The Utilities variable is the sum of electric, gas, water, home fuel and telephone expenditures, while, Houseopr consists of nondurable household supplies and equipment (with zero spending values on supplies across all observations in the sample) and servants (domestic services and other household operations).

Housing2 is defined as the sum of tenant rent, rent for other lodging, the rental equivalent of owned home, outlays on owned housing operations (additions and alterations, repairs, interest payments, mortgage payments, personal property taxes, etc.)[12]

Next, clothing includes spending on clothes, shoes, clothing services and jewelry; perscare consists of personal care products and services; medical accounts for medical care products (i.e. drugs, appliances) and services (i.e. doctors, hospital, nursing homes), including health insurance.

The "recreate" category corresponds to Michael's "leisure" definition and includes expenditures on reading (books, publications), clubs, sports, TV, toys, pets and gambling. Educ covers expenses on higher, elementary and other types of education services and products. And last, transp2 is defined as total spending on automobile purchases (new and used), operations (parts, insurance, etc.) and public transportation (mass transit, air, etc). Transp2 is consistent with Michael's "travel" component.

1. Grouped Data

The empirical evidence from the fourteen items regression equations in all forms is mixed in terms of the neutrality hypothesis, not only within the 2002 grouped dataset but also when compared to Michael's findings. The constant elasticity results are shown in Table 5, Diagrams 3 and 5 show the relation between income and education elasticities in constant elasticity and interaction forms respectively, while Diagram 4 shows the relation between income elasticities and age effects in constant elasticity form. All

[12] Michael defines housing as the ratio of total shelter expenditures minus expenditures for owned dwellings to the percentage of renters.

remaining regression estimates and tables are included in Appendix B1, with the semilog function as the weakest neutrality performer and the interaction form as being the strongest proponent of the model.

Diagram 3. Elasticities in Constant Elasticity Form

EDUCATION ELASTICITY	INCOME ELASTICITY		
	η>1	***η≈1***	***η<1***
ε>0	RECREATE		PERSCARE MEDICAL
ε ≈0	FOODOUT FURNISH	CLOTHING EDUC HOUSEOPR HOUSING2	TOBACCO UTILITIES FOODHOME ALCOHOL2
ε<0	TRANSP2		

Only five of the broad categories classification, or about 36%, and only 29.4% of total spending, support the neutrality model, compared to Michael's 57% estimate. In fact, in a cluster of four out of those five items, the income elasticity is not different from one and, as predicted, the education effect is insignificant. In addition, none of the technologically neutral components matches his results, except "recreate", or "leisure" in his terminology, a luxury, and in accordance with a positive education elasticity as the theory suggests.

Table 5. Regression Results, Constant Elasticity Form

ln Item	ln C	ln E	A	F	M	S	W	Constant	R^2	Adj. R^2	F test	t-test for inc ≠1
FOODHOME	0.351	-0.077	-0.002	0.192	-0.081	-0.009	0.02	4.25	0.926	0.923	270	-24.5
t-values	13.26	-1.83	-1.23	9.09	-4.1	-0.51	1.03	15.61				
FOODOUT	1.145	0.055	-0.015	-0.066	0.128	0.0731	0.037	-4.69	0.929	0.925	280	2.42
t-values	19.1	0.58	-3.65	-1.39	2.86	1.68	0.82	-7.61				
TOBACCO	0.252	-0.333	-0.008	-0.167	0.046	-0.103	-0.138	5.48	0.057	0.011	1.25	-5.03
t-values	1.7	-1.39	-0.8	-1.37	0.43	-1	-1.27	3.72				
ALCOHOL2	0.768	-0.288	-0.017	-0.149	-0.039	-0.085	-0.031	-0.76	0.564	0.544	27	-2.04
t-values	6.77	-1.58	-2.19	-1.64	-0.46	-1.04	-0.37	-0.65				
HOUSING2	1.02	0.099	0.0019	-0.026	-0.094	-0.1001	0.029	-1.53	0.962	0.96	543	0.705
t-values	28.51	1.72	0.76	-0.93	-3.49	-3.84	1.07	-4.15				
UTILITIES	0.508	0.0807	0.004	0.098	0.024	0.106	-0.211	1.75	0.903	0.898	200	-14.7
t-values	15.2	1.5	1.78	3.67	0.96	4.39	-8.28	5.12				
HOUSEOPR	1.08	0.077	0.016	-0.081	0.174	0.447	0.03	-6.6	0.757	0.745	65	0.93
t-values	11.4	0.51	2.56	-1.04	2.51	6.65	0.43	-6.91				
FURNISH	1.18	-0.11	0.003	0.05	0.07	0.08	0.049	-6.7	0.832	0.824	106	2.03
t-values	13.09	-0.8	0.58	0.7	1.1	1.32	0.72	-7.22				
CLOTHING	1.04	0.035	-0.014	0.111	-0.152	-0.103	-0.138	-4.07	0.929	0.926	284	0.77
t-values	17.1	0.36	-3.47	2.27	-3.31	-2.32	-2.96	-6.48				
PERSCARE	0.797	0.24	0.009	0.091	-0.1	-0.001	-0.091	-4.6	0.868	0.861	141	-3.49
t-values	13.74	2.59	2.36	1.97	-2.3	-0.03	-2.07	-7.73				
MEDICAL	0.741	0.288	0.036	-0.012	0.216	0.308	0.029	-3.3	0.625	0.608	36	-3.24
t-values	9.29	2.26	6.52	-0.19	3.61	5.33	0.49	-4.03				
RECREATE	1.29	0.305	-0.005	-0.094	0.012	-0.125	-0.038	-6.73	0.945	0.942	371	5.09
t-values	22.31	3.28	-1.3	-2.04	0.3	-2.99	-0.86	-11.28				
EDUC	1.12	-0.091	-0.045	-0.339	-0.245	-0.077	-0.29	-2.26	0.463	0.434	16	0.48
t-values	4.38	-0.21	-2.51	-1.58	-1.32	-0.43	-1.55	-0.88				
TRANSP2	1.21	-0.272	-0.018	0.05	0.165	0.102	0.033	-3.19	0.913	0.909	227	3.03
t-values	16.99	-2.37	-3.66	0.87	3.07	1.97	0.61	-4.34				

A couple more remarks need to be made at this point. First, “Utilities” and “Foodhome”, are persistently inconsistent with the neutrality assumption throughout all regression forms, necessities with a negligible education effect.

Secondly, comparing Diagrams 3 and 4, the age and education effects match in eight of the categories, while rarely shifting spending to luxuries (alcohol2 being the only exception.)

Diagram 4. Income Elasticities and Age Effects in Constant Elasticity Form

AGE EFFECT	INCOME ELASTICITY		
	η>1	***η≈1***	***η<1***
(+)		HOUSEOPR	PERSCARE MEDICAL
0	FURNISH RECREATE	HOUSING2	TOBACCO UTILITIES FOODHOME
(-)	FOODOUT TRANSP2 ALCOHOL2	CLOTHING EDUC	

The interaction form regressions yield the best results in support of the theoretical model in the grouped dataset categories. According to Diagram 5 below, seven of the fourteen items, or 50%, are consistent with neutrality. In addition, five of the categories (recreate, housing2, transp2, furnish and tobacco) conform to Michael's constant elasticity findings. In terms of the regressions' goodness of fit, the adjusted R^2 values are higher in most cases, or the same, in the interaction form.

Diagram 5. Elasticities in Interaction Form

	$\eta>1$	$\eta\approx1$	$\eta<1$
$\varepsilon>0$	RECREATE	HOUSING2	PERSCARE
$\varepsilon\approx0$	FOODOUT	CLOTHING EDUC MEDICAL HOUSEOPR FURNISH	UTILITIES FOODHOME ALCOHOL2
$\varepsilon<0$	TRANSP2		TOBACCO

2. Individual Data

While employing individual data in the goods and services analysis (Part A2) produced more uniform results, the same coherence is not observed in the case of the broad categorization. In this case, the empirical findings are quite erratic in terms of supporting the neutrality hypothesis across all five regression forms. More precisely, the constant elasticity regression is the strongest opponent of the model, with only one out of the fourteen categories supporting neutrality, or about 7%, while the linear form is the most powerful advocate of the theory with approximately 43% (six out of fourteen categories in favor of neutrality) explanatory power. The semilog, double log and interaction functions seem inadequate as well, justifying only a 21.4%-28.6% of technological neutrality, considerably less than the 33% threshold of random selection. Consequently, only a 35% (linear), 6% (constant elasticity), 17.6% (semilog and double log) and 23.5% (interaction) of total spending is consistent with neutrality predictions.

The linear regression results are given below in Diagram 6 and Table 6. Income and education elasticities are estimated at the means of the 5,861 household observations.

Appendix B2 shows the results of the remaining four regression forms.

Diagram 6. Elasticities in Linear Form

	$\eta>1$	$\eta\approx1$	$\eta<1$
$\varepsilon>0$	RECREATE HOUSEOPR EDUC	FOODOUT	PERSCARE MEDICAL UTILITIES
$\varepsilon\approx0$	HOUSING2	CLOTHING ALCOHOL2	FOODHOME
$\varepsilon<0$	FURNISH TRANSP2		TOBACCO

At this point, comparing the regression results between grouped and individual data may be useful in assessing the education effect on certain consumption categories. For example, the education elasticity for "tobacco" (cigarettes and other tobacco products) is negative and significant in both grouped and individual data regressions (Appendix B1 and B2), except in the case of constant elasticity form (Table 5 and Appendix B2), where it's still negative but not significant. The inverse relationship between education and smoking is also well documented in the literature by Kenkel (1991), Sander (1995), and Gilleskie and Harrison (1998).[13]

[13]Although "tobacco" consumption as defined in the current dataset and "cigarette smoking" (generally measured as number of cigarettes smoked per day or time period) are not equivalent terms in the strict sense, I am somewhat stretching the "tobacco" definition and treating this category as a "smoking" proxy.

Table 6. Regression Results, Linear Form

Item	C	E	A	F	M	S	W	Constant	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test
FOODHOME	0.021	13.74	7.11	743.25	-357.09	-175.7	44.33	528.24	**0.275**	**0.046**	0.479	0.478	768
t-values	33.22	1.88	5.18	45.03	-5.49	-2.82	0.67	3.47	**-0.81**	**1.87**			
FOODOUT	0.027	20.366	-5.57	-58.47	93.92	43.99	-87.31	100.730	**1.002**	**0.192**	0.334	0.333	420
t-values	45.55	3	-4.37	-3.82	1.56	0.76	-1.43	0.71	**1.26**	**3**			
TOBACCO	0.0005	-21.88	-3.46	23.82	25.53	-49.26	-76.66	723.33	**0.084**	**-0.939**	0.022	0.021	19.6
t-values	1.94	-6.98	-5.89	3.37	0.92	-1.84	-2.72	11.09	**-19**	**-6.8**			
ALCOHOL2	0.0062	-2.971	-6.37	-69.59	-12.28	-50.05	32.33	562.31	**0.996**	**-0.121**	0.164	0.163	164
t-values	27.42	-1.18	-13.48	-12.25	-0.55	-2.33	1.43	10.74	**-0.025**	**-1.1**			
HOUSING2	0.45	63.44	20.92	-1019.29	-1357.4	-1545	725.56	-1183.94	**1.123**	**0.040**	0.757	0.757	2615
t-values	116.96	1.49	2.61	-10.58	-3.58	-4.25	1.89	-1.33	**10.5**	**1.48**			
UTILITIES	0.022	20.38	7.6	276.64	-5.46	153.82	-497.67	477.71	**0.396**	**0.093**	0.453	0.452	693
t-values	47.51	4.03	8.01	24.27	-0.12	3.57	-10.94	4.55	**-72**	**4**			
HOUSEOPR	0.018	12.56	6.82	-34.02	101.96	253.93	83.42	-821.57	**1.369**	**0.243**	0.287	0.286	337
t-values	41.58	2.6	7.54	-3.13	2.38	6.17	1.92	-8.19	**8.7**	**2.6**			
FURNISH	0.026	-31.6	-3.19	-68.89	78.56	7.06	11.38	259.76	**1.514**	**-0.468**	0.249	0.248	278
t-values	40.03	-4.32	-2.33	-4.18	1.21	0.11	0.17	1.71	**10.2**	**-4.3**			
CLOTHING	0.024	4.12	-9.14	71.63	-256.18	-231.18	-281.75	486.89	**0.973**	**0.042**	0.367	0.366	485
t-values	45.34	0.71	-8.36	5.45	-4.95	-4.65	-5.37	4.02	**-1.46**	**0.7**			
PERSCARE	0.0038	5.06	1.65	1.56	-8.86	-1.33	-7.99	-87.68	**0.747**	**0.253**	0.252	0.251	283
t-values	36.39	4.3	7.49	0.59	-0.85	-0.13	-0.75	-3.58	**-10.6**	**4.3**			
MEDICAL	0.03	45.4	60.61	44.81	338.57	653.4	189.35	-3184.39	**0.61**	**0.235**	0.157	0.156	156
t-values	21.84	2.98	21.22	1.31	2.5	5.04	1.38	-10.07	**-13**	**2.97**			
RECREATE	0.054	44.06	-10.9	-37.05	167.46	-161.47	61.91	-200.8	**1.103**	**0.229**	0.375	0.374	503
t-values	48.41	3.56	-4.7	-1.33	1.52	-1.53	0.56	-0.78	**3.7**	**3.55**			
EDUC	0.0265	63.23	-6.97	128.92	-186.14	-290.3	-390.5	-1123.22	**1.621**	**0.983**	0.166	0.165	166
t-values	24.2	5.2	-3.06	4.7	-1.72	-2.8	-3.57	-4.45	**6.6**	**5.09**			
TRANSP2	0.19	-384.9	-49.11	-134.93	1002.7	858.18	188.51	5680.8	**1.22**	**-0.628**	0.393	0.392	542
t-values	55.36	-10.12	-6.88	-1.57	2.96	2.65	0.55	7.18	**8**	**-10**			

Kenkel (1991) also obtains a negative and significant education effect on alcohol consumption. This paper's estimates fail to confirm Kenkel's findings. The education elasticity on "Alcohol2" (alcoholic beverages consumed at home and at restaurants, bars, etc.), is consistently negative but insignificant across all forms in the individual (Table 6

and Appendix B2) and grouped data regressions (Table 5 and Appendix B1). Education is negative and significant only in the grouped set when fitted in linear form, that is one out of ten regressions.

Medical care is largely controversial in terms of theoretical and empirical homogeneity. In the grouped dataset, the education elasticity is positive but not significant in the interaction and double log regression forms, while it's positive and significant in the linear, constant elasticity and semilog forms (Table 5 and Appendix B1). Within the context of individual dataset regressions, the education elasticity is positive and significant, although small, ranging from 0.16 to 0.24 approximately, in all regressions except the semilog form. In the semilog form, the education elasticity is 0.105 and insignificant (Table 6 and Appendix B2).

Grossman's (1972b) findings report a positive but not significant effect of education on medical care, contrary to his model's theoretical predictions on preventive care. On the other hand, Gilleskie and Harrison (1998) find a positive and significant correlation between education and curative medical care for males.

The age coefficient for medical care is consistently positive and significant, except in the case of the interaction regression form on grouped data where it is still positive but insignificant. In addition, age and education are both positive and significant in eight out of ten regressions, as if age adds up to human capital through experience. Only in the double log (grouped) and semilog (individual) age is positive while the education elasticity is positive but not significant.

Alternatively, the effect of family size on medical care is suspiciously erratic in terms of its sign and insignificant in eight out of ten regressions. Size has a direct and significant impact on care in the grouped data linear regression form and the constant

elasticity form in the individual data, interpreting children and medical care as complements. Michael (1972, pg.44) argues that nonmarket productivity falls as family size increases, altering the consumer's basket composition by shifting spending towards necessities.

Turning to the education effect on the remaining broad categories, its impact on "transp2" is unanimously negative and significant, and positive and significant for "recreate" except in the grouped data linear regression where it is positive but insignificant. For "houseopr" the results are identical with regard to sign and significance in both grouped and individual data. The education elasticities are not different from zero in the constant elasticity, double log and interaction regressions, and positive and significant in the linear and semilog forms. Additional schooling also has a strong and direct effect on "educ" (education spending) in all regression models in the individual data, and in the semilog form in the grouped data. The education effect is mostly insignificant in the grouped dataset (in the other four regressions). In seven out of ten regressions, education has a positive and significant effect on "housing2", primarily in the grouped data, and it is not different from zero in the remaining three (constant elasticity in both sets and linear in the individual data). The schooling effect on "Furnish" (household furnishings and durable equipment expenditures) is contradictory when comparing the results from the grouped and individual data. Education elasticities are consistently not different from zero within the grouped observations and mostly negative and significant in the individual dataset (the coefficient is not different from zero in the interaction form).

The "foodhome" (expenditures for food at home preparation) category deserves a more elaborate analysis. First of all, the education effect is not significantly different

from zero in all regressions and in both grouped and individual data. Secondly, and according to Gronau and Hamermesh (2006) findings, "Eating" is a goods intensive commodity. As such, market good inputs and expenditures for food preparation should fall as husband's education increases.

Furthermore, let's recall what we are trying to evaluate here. The independent education variable is measured as the number of years of formal schooling completed for the *head of the household*, be it male or female. The current dataset does not make this distinction and even if it did, this is a task beyond the scope of this study. As such, we cannot be sure about who (male or female) purchases the necessary market goods and prepares the meals at home. Therefore, if the head of household is assumed to be a male, and if the "food at home" expenditures are part of women's housework productivity, it may be fairly intuitive that *his* education has no effect on the "foodhome" consumption expenditure.

"Foodout" on the other hand is more straightforward and directly and significantly affected by the household head's education across all individual data regressions and the semilog form in the grouped data. Aside from this, additional schooling has an insignificant effect on "foodout" in the grouped body of data.

The education elasticity on "clothing" is not different from zero in the grouped data, as well as the liner and semilog regressions in the individual data. Yet, the effect is positive and significant in the individual observations constant elasticity, double log and interaction forms.

For "Perscare", personal care expenditures, education has a strong and direct impact in all grouped and individual observations, except the grouped linear form. On the contrary, the schooling effect on "utilities" is not different from zero in all forms except

the individual data linear regression when it is positive and significant.

C. DETAILED ITEMS

The fourteen broad consumption categories are further disaggregated into forty-three detailed items exhausting total consumption spending (Table 7). The Engel curves for the first thirty-eight items are fitted in all five regression forms as in Parts A and B above and the results are shown below, Tables 8 and 9, and in Appendix C1 and C2. The empirical analysis is limited to the first thirty-eight items in order to be more compatible and in conjunction with Michael's (1972) detailed item expenditures category.

The foodhome, foodout, tobacco and furnish item definitions are identical to those in Part B. Alcohol2 is now split into alcohol in (at home) and out. Items 6 through 12 comprise the previously defined "Housing2" variable, Utilities2 refer to expenditures on gas, water, home fuel and electricity (excluding "telephone"), Clothing is separated in items 17-19, and Medical care is itemized in 21-26. Items 27-30 correspond to Recreate, 30-32 relate to Educ and Transp2 consists of the detailed spending on items 33 through 35. More specifically, "Autos" includes all new and used automobile purchases, Autoopr (#34) consists of expenditures on parts, servicing, gasoline, insurance, etc., and "Travel" refers to public transportation (mass transit, other transportation expenses and airfare). Miscellaneous personal consumption expenditures (#36) include business services (accounting, legal, IT service fees, professional dues, etc.), gambling (pari-mutuel net receipts), and interest and finance charges paid by consumers excluding mortgage and vehicles. Personal insurance is defined as the sum of pension contributions (deductions for government or railroad retirement and social security) and life insurance (insurance

policy provisions other than health insurance). Last, “Charity”, or “Gifts and Contributions”, accounts for monetary contributions made to political, religious and other organizations, other than educational.

Table 7. Detailed Items

NUMBER	VARIABLE NAME	ITEM
1	FOOD HOME	FOOD HOME
2	FOOD OUT	FOOD OUT
3	TOBACCO	TOBACCO
4	ALCOHOL	ALCOHOL IN
5	NITECLUB	ALCOHOL OUT
6	RENTHOME	RENT
7	OWNOCCUP	RENTAL EQUIVALENT OF OWNED HOME
8	OHINT	OWNED HOME MORTGAGE INTEREST
9	OHTAX	OWNED HOME PROPERTY TAX
10	OHMAINT	OWNED HOME REPAIRS
11	HOUSADD	OTHER HOME ADDITIONS & ALTERATIONS
12	RENTOTHR	LODGING OUT OF TOWN
13	UTILITIES2	UTILITIES
14	TELEPHON	TELEPHONE
15	SERVANTS	HOUSEHOLD SERVICES
16	FURNISH	HOUSEHOLD FURNITURE & DURABLE EQP
17	CLOTHES	CLOTHING & SHOES
18	TAILORS	CLOTHING SERVICES
19	JEWELRY	JEWELRY & WATCHES
20	HLTHBEAU	PERSONAL CARE SERVICES
21	HELTHINS	MEDICAL PREMIA
22	HOSPITAL	MEDICAL HOSPITAL
23	NURSHOME	MEDICAL OUTSIDE HOSPITAL
24	DOCTORS	MEDICAL, DENTAL, EYE ETC.
25	ORTHOPD	MEDICAL APPLIANCES
26	DRUGS	MEDICAL DRUGS
27	RECSPORT	TV, RADIO, PARTICIPATION SPORTS
28	OTHREC	SPECTATOR ADMISSION, CLUB,PET,TOYS
29	READING	READING

Table 7. Continued

NUMBER	VARIABLE NAME	ITEM
30	HIGHEDU	HIGHER EDUCATION EXPENSES
31	LOWEDU	NURSERY,ELEMENTARY & SECONDARY EX
32	OTHEDU	OTHER EDUCATION SERVICES
33	AUTOS	AUTOMOBILE PURCHASE
34	AUTOOPR	AUTOMOBILE OPERATIONS
35	TRAVEL	PUBLIC TRANSPORTATION
36	MISCELCON	MISCELLANEOUS PERS.CONS. EXPENDIT
37	PERSINS	PERSONAL INSURANCE(PREMIA,LIFE INS)
38	CHARITY	GIFTS & CONTRIBUTIONS
39	OHPRINC	OWNED HOUSE MORTGAGE PRINCIPAL
40	OHLUMP	OWNED HOUSE MORTGAGE LUMP PMTS
41	OHTRANS	OWNED HOUSE TRANSACTION COSTS
42	PPROPTAX	PERSONAL PROPERTY TAXES
43	OTHTAX	OTHER TAX NOT INCLUDED IN PROP TAX

1. Grouped data

In this body of data, four out of five regression models perform better at supporting the neutrality model. Thirteen out of the thirty-eight items (34.2%), or about 3 0.2% of total consumption spending, satisfy the model's predictions. In the linear form, only eleven out of the thirty-eight items fall in the diagonal, that is about 29%, or approximately 26% of total consumption spending (Table 8, Diagram 7 and Appendix C1).

These estimates are significantly lower in magnitude and importance compared to Michael's (1972) results. Based on his findings from the 1960 BLS data, 56% of all items encountered, or 54% of total consumption expenditures, fulfill the qualitative relationship between the income and education elasticities in the linear regression estimation. The

constant elasticity form yields even higher prediction success rates with a 60%, or 68% of total spending being consistent with the neutrality assumptions.

Diagram 7. Elasticities in Constant Elasticity Form

	$\eta>1$	$\eta\approx1$	$\eta<1$
$\varepsilon>0$	LODGING OUT OF TOWN HOUSEHOLD SERVICES GIFTS & CONTRIBUTIONS	MEDICAL,DENTAL,EYE MEDICAL APPLIANCES CLUB,ADMISSION,SPECT FEES,PETS,TOYS READING	OWN HOME RENTAL EQUIV UTILITIES2 PERSONAL CARE SERVICES MEDICAL PREMIA MEDICAL DRUGS
$\varepsilon\approx0$	FOODOUT ALCOHOL OUT OWN HOME MTGE INT OWN HOME OTH ADD JEWELRY & WATCHES TV,RADIO,SPORTS FURNISH HIGHER EDU EXPENSES OTHER EDU EXPENSES	OWN HOME PROP TAX OWN HOME REPAIRS CLOTHING & SHOES CLOTHING SERVICES MEDICAL HOSPITAL MEDICAL OUTSIDE HOSPITAL LOWER EDU EXPENSES AUTOMOBILE PURCHASE PUBLIC TRANSPORTATION MISCELLANS CONS EXPENDITURES	FOODHOME TOBACCO ALCOHOL IN RENT TELEPHONE AUTOMOBILE OPERATION
$\varepsilon<0$	PERSONAL INSURANCE		

Table 8. Regression Results, Constant Elasticity

ln Item	ln C	ln E	A	F	M	S	W	Constant	R^2	Adj. R^2	F test Pr>F	t-test for inc ≠1
FOODHOME	0.351	-0.077	-0.002	0.192	-0.081	-0.009	0.02	4.25	0.926	0.923	270	-24.5
t-values	13.26	-1.83	-1.23	9.09	-4.1	-0.51	1.03	15.61				
FOODOUT	1.145	0.055	-0.015	-0.066	0.128	0.0731	0.037	-4.69	0.929	0.925	280	2.42
t-values	19.1	0.58	-3.65	-1.39	2.86	1.68	0.82	-7.61				
TOBACCO	0.252	-0.333	-0.008	-0.167	0.046	-0.103	-0.138	5.48	0.057	0.011	1.25	-5.03
t-values	1.7	-1.39	-0.8	-1.37	0.43	-1	-1.27	3.72				
ALCOHOL IN	0.448	-0.238	-0.0103	-0.049	-0.094	0.054	0.096	1.68	0.39	0.36	13	-5.36
t-values	4.36	-1.45	-1.44	-0.6	-1.24	0.74	1.25	1.6				
ALCOHOL OUT	1.49	0.008	-0.046	-0.599	0.158	-0.203	0.108	-7.29	0.709	0.695	49	2.61
t-values	7.91	0.03	-3.54	-3.87	1.17	-1.56	0.79	-3.86				
RENT	0.197	0.007	-0.012	0.0009	-0.462	-0.347	-0.02	7.2	0.33	0.3	10.00	-5.55
t-values	1.36	0.03	-1.31	0.01	-4.61	-3.59	-0.21	5.14				
OWN HOME RENTAL EQUIV	0.843	0.233	0.006	-0.05	-0.109	-0.07	0.017	-0.653	0.909	0.904	214	-3.37
t-values	18.2	3.14	2.13	-1.36	-3.15	-2.1	0.51	-1.37				
OWN HOME MTGE INT	1.41	0.26	-0.036	-0.033	0.153	0.311	0.336	-6.21	0.85	0.84	120	3.09
t-values	10.57	1.21	-3.9	-0.31	1.52	3.21	3.31	-4.54				
OWN HOME PROP TAX	1.03	0.202	0.011	-0.096	-0.222	-0.416	-0.577	-4.38	0.8	0.79	91	0.38
t-values	11.96	1.46	1.82	-1.4	-3.43	-6.66	-8.77	4.94				
OWN HOME REPAIRS	1.03	0.519	0.008	0.035	0.242	0.21	0.23	-6.49	0.57	0.55	28	0.20
t-values	5.72	1.8	0.7	0.24	1.83	1.64	1.71	-3.56				
OWN HOME OTHER ADDITIONS	1.79	0.614	0.009	0.107	0.051	-0.231	0.013	-15.44	0.52	0.5	21	2.10
t-values	4.75	0.94	0.37	0.34	0.19	-0.89	0.05	-4.14				
LODGING OUT OF TOWN	1.51	0.91	-0.03	-0.206	0.0009	0.172	0.0006	-11.04	0.76	0.74	63	2.55
t-values	7.56	2.81	-2.14	-1.23	0.01	1.23	0	-5.45				
UTILITIES2	0.367	0.157	0.008	0.112	0.009	0.038	-0.226	2.53	0.86	0.85	132	-19.80
t-values	11.52	3.07	3.72	4.4	0.38	1.65	-9.31	7.74				
TELEPHONE	0.481	0.015	-0.004	0.034	0.008	0.121	-0.062	1.8	0.88	0.87	164	-15.02
t-values	13.95	0.28	-1.8	1.27	0.33	4.86	-2.39	5.1				
HOUSEHOLD SERVICES	1.21	0.414	0.018	-0.166	0.195	0.389	0.202	-8.33	0.83	0.82	104	2.36
t-values	13.63	2.91	2.99	-2.27	3.01	6.23	3.08	-9.38				

Table 8. Continued

ln Item	ln C	ln E	A	F	M	S	W	Constant	R^2	Adj. R^2	F test Pr>F	t-test for inc ≠1
FURNISH	1.18	-0.11	0.003	0.05	0.07	0.08	0.049	-6.7	0.832	0.824	106	2.03
t-values	13.09	-0.8	0.58	0.7	1.1	1.32	0.72	-7.22				
CLOTHING & SHOES	0.993	0.089	-0.013	0.147	-0.113	-0.094	-0.145	-4.01	0.92	0.91	247	-0.09
t-values	15.47	0.87	-2.88	2.86	-2.35	-2.02	-2.97	-6.08				
CLOTHING SERVICES	0.806	0.265	0.02	0.114	-0.408	-0.134	-0.07	-5.89	0.53	0.51	24	-1.30
t-values	5.43	1.12	1.96	0.93	-3.77	-1.29	-0.64	-3.96				
JEWELRY & WATCHES	1.51	0.174	-0.009	0.096	-0.234	-0.29	-0.242	-11.8	0.67	0.65	41	2.28
t-values	6.73	0.49	-0.62	0.52	-1.43	-1.84	-1.46	-5.25				
PERS CARE SERVICES	0.76	0.347	0.012	0.074	-0.049	-0.007	-0.043	-4.31	0.84	0.84	119	-3.94
t-values	12.56	3.58	2.95	1.54	-1.09	-0.18	-0.94	-6.93				
MEDICAL PREMIA	0.429	0.583	0.03	0.08	0.065	0.116	-0.058	-0.73	0.52	0.49	23	-7.06
t-values	5.31	4.5	5.35	1.24	1.09	1.99	-0.94	-0.88				
MEDICAL HOSPITAL	0.711	0.357	0.038	0.171	0.676	0.855	0.477	-7.36	0.16	0.11	3.47	-0.76
t-values	1.9	0.53	1.36	0.53	2.55	3.33	1.76	-1.92				
MEDICAL OUTSIDE HOSPITAL	0.508	-2.26	-0.163	-0.85	-2.46	-3.79	-1.81	16	0.46	0.33	4	-0.38
t-values	0.4	-0.97	-1.9	-0.79	-2.22	-3.51	-1.66	1.46				
MEDICAL, DENTAL, EYE	0.904	0.667	0.013	-0.023	0.212	0.432	0.396	-6	0.6	0.58	32	-0.64
t-values	6.11	2.82	1.26	-0.2	1.92	4.04	3.51	-3.93				
MEDICAL APPLIANCES	0.692	0.89	0.016	0.198	0.151	-0.12	0.249	-6.82	0.53	0.5	22	-1.58
t-values	3.57	2.76	1.2	1.21	1.08	-0.89	1.75	-3.5				
MEDICAL DRUGS	0.198	0.44	0.042	0.09	0.275	0.495	-0.024	0.067	0.32	0.29	10	-6.40
t-values	1.59	2.19	4.87	0.91	2.95	5.47	-0.25	0.05				
TV, RADIO, SPORTS	1.4	0.288	-0.0451	-0.251	0.305	0.24	0.48	-6.76	0.79	0.78	81	2.50
t-values	8.77	1.12	-4.02	-1.97	2.55	2.08	3.97	-4.12				
CLUB, ADMISSION SPECT FEES, PETS,TOYS	0.99	0.5	0.001	-0.034	-0.029	-0.087	-0.047	-4.73	0.925	0.921	265	-0.17
t-values	17.66	5.58	0.37	-0.76	-0.71	-2.16	-1.1	-8.21				
READING	0.989	0.5	-0.006	-0.06	0.069	-0.101	-0.007	-5.84	0.86	0.85	132	-0.12
t-values	11.79	3.73	-1.07	-0.97	1.11	-1.67	-0.13	-6.8				

Table 8. Continued

ln Item	ln C	ln E	A	F	M	S	W	Constant	R^2	Adj. R^2	F test Pr>F	t-test for inc ≠1
HIGHER EDU EXPENSES	2.31	0.57	-0.08	-0.91	0.006	-0.48	-0.156	-14.34	0.59	0.56	232	2.69
t-values	4.74	0.62	-2.26	-2.07	0.02	-1.53	-0.47	-3.02				
LOWER EDU EXPENSES	1.69	0.239	-0.066	0.38	-0.091	0.071	-0.722	-11.15	0.66	0.64	31	1.63
t-values	3.98	0.32	-2.22	1.08	-0.33	0.27	-2.58	-2.68				
OTHER EDU SERVICES	2.14	0.425	-0.023	-0.336	0.99	0.87	1.22	-19.22	0.6	0.58	28	3.09
t-values	5.78	0.68	-0.9	-1.09	3.75	3.43	4.56	-5.23				
AUTOMOBIL PURCHASE	1.04	-0.369	-0.014	0.06	0.155	0.188	0.018	-1.55	0.57	0.54	27	0.22
t-values	5.93	-1.28	-1.17	0.43	1.19	1.49	0.14	-0.86				
AUTOMOBIL OPERATION	0.81	-0.052	-0.015	0.055	0.099	0.11	0.055	0.22	0.91	0.91	232	-3.65
t-values	15.7	-0.63	-4.29	1.34	2.56	2.98	1.4	0.42				
PUBLIC TRANSPORT	0.92	0.176	0.002	0.103	-0.201	-0.133	-0.185	-4.65	0.62	0.6	34	-0.54
t-values	6.39	0.76	0.21	0.9	-1.87	-1.28	-1.69	-3.13				
MISCELLANS CONS EXP	0.836	0.109	-0.006	-0.204	0.039	0.043	0.155	-1.91	0.54	0.52	26	-1.27
t-values	6.53	0.53	-0.75	-1.99	0.41	0.47	1.59	-1.46				
PERSONAL INSURANCE	2.58	-1.05	-0.005	-0.225	0.058	0.207	-0.166	-16.4	0.76	0.75	71	7.69
t-values	12.55	-3.14	-0.38	-1.37	0.38	1.4	-1.06	-7.76				
GIFTS & CONTRIBUTE	1.27	0.558	0.031	-0.099	0.45	0.46	0.37	-10.01	0.74	0.73	61	2.29
t-values	10.59	2.88	3.76	-1.02	4.99	5.36	4.1	-8.09				

2. Individual data

The individual dataset observations yield strikingly different results, and disappointingly, significantly lower than the presently employed grouped body of data and Michael's. In this case, the linear form performs best at explaining the neutrality model, with eleven out of thirty-eight items (29%), or approximately 26% of total

consumption expenditures. In the meantime, the constant elasticity form is the worst proponent explaining only about 11.6% of total spending, while the remaining regressions satisfy a mere 21% of the theoretical predictions (Table 9, Diagram 8 and Appendix C2).

Table 9. Regression Results, Linear Form

Item	C	E	A	F	M	S	W	Constant	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
FOODHOME	0.021	13.74	7.11	743.25	-357.09	-175.7	44.33	528.24	**0.275**	**0.046**	0.479	0.478	768
t-values	33.22	1.88	5.18	45.03	-5.49	-2.82	0.67	3.47	**-81**	**1.87**			
FOODOUT	0.027	20.366	-5.57	-58.47	93.92	43.99	-87.31	100.73	**1.002**	**0.192**	0.334	0.333	420
t-values	45.55	3	-4.37	-3.82	1.56	0.76	-1.43	0.71	**1.26**	**3**			
TOBACCO	0.0005	-21.88	-3.46	23.82	25.53	-49.26	-76.66	723.33	**0.084**	**-0.939**	0.022	0.021	19.6
t-values	1.94	-6.98	-5.89	3.37	0.92	-1.84	-2.72	11.09	**-19**	**-6.8**			
ALCOHOL IN	0.003	-2.64	-2.47	-19.24	-18.17	-17.64	23.4	235.44	**0.883**	**-0.198**	0.109	0.108	103
t-values	22.27	-1.73	-8.61	-5.58	-1.34	-1.35	1.7	7.4	**-2.100**	**-1.73**			
ALCOHOL OUT	0.0031	-0.327	-3.9	-50.35	5.89	-32.41	8.93	326.86	**1.10**	**-0.03**	**0.134**	0.133	130
t-values	23.08	-0.22	-13.72	-14.73	0.44	-2.51	0.66	10.38	**1.96**	**-0.216**			
RENT	-0.028	22.08	-41.85	1.04	-1030.14	-1204.1	303.46	5675.03	**-0.85**	**0.17**	**0.123**	0.122	117
t-values	-19.92	1.41	-14.25	0.03	-7.41	-9.03	2.16	17.45	**-38**	**1**			
OWN HOME RENTAL EQUIV	0.167	216.8	83.13	-108.98	-897.63	-534.36	346.92	-5451.9	**0.88**	**0.29**	**0.554**	0.554	1041
t-values	69.65	8.12	16.58	-1.81	-3.78	-2.35	1.44	-9.82	**-8**	**8.1**			
OWN HOME MTGE INT	0.095	13.77	-45.63	-59.68	229.42	610.75	886.79	260.83	**1.47**	**0.05**	**0.477**	0.476	762
t-values	59.19	0.77	-13.65	-1.49	1.45	4.02	5.54	0.7	**14.00**	**0.77**			
OWN HOME PROP TAX	0.033	6.58	13.24	-62.34	-411.75	-687.1	-924.72	-362.73	**1.20**	**0.06**	**0.346**	0.345	442
t-values	46.77	0.83	8.88	-3.48	-5.84	-10.15	-12.94	-2.2	**6.60**	**0.83**			
OWN HOME REPAIRS	0.027	-13.71	10.89	-137.98	100.6	61.68	17.91	-566.4	**1.52**	**-0.20**	**0.112**	0.111	106
t-values	24.56	-1.12	4.72	-4.98	0.92	0.59	0.16	-2.22	**6.26**	**-1.11**			

Table 9. Continued

Item	C	E	A	F	M	S	W	Constant	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
OWN HOME OTHER ADDITIONS	0.052	-124.9	1.96	-260.34	130.75	-4.98	49.18	287.24	**3.27**	**-2.00**	**0.109**	**0.108**	102
t-values	25.65	-5.52	0.46	-5.1	0.65	-0.03	0.24	0.61	**8.00**	**-5.07**			
LODGING OUT OF TOWN	0.01	20.55	3.18	-13.67	27.05	36.08	-3.038	-614.45	**1.56**	**0.81**	**0.201**	**0.200**	210
t-values	31	5.71	4.71	-1.68	0.84	1.17	-0.09	-8.2	**8.14**	**5.60**			
UTILITIES2	0.014	13.26	12.23	213.26	-6.58	48.04	-423.67	-85.11	**0.383**	**0.09**	**0.387**	**0.387**	530
t-values	39.84	3.39	16.64	24.15	-0.19	1.44	-12.03	-1.05	**-62.00**	**3.38**			
TELEPHONE	0.0075	7.12	-4.63	63.38	1.11	105.77	-73.99	562.83	**0.40**	**0.10**	**0.259**	**0.258**	293
t-values	30.62	2.59	-8.97	10.22	0.05	4.51	-2.99	9.85	**-44.00**	**2.58**			
HOUSEHOLD SERVICES	0.018	12.56	6.82	-34.02	101.96	253.93	83.42	-821.57	**1.37**	**0.24**	**0.287**	**0.286**	337
t-values	41.58	2.6	7.54	-3.13	2.38	6.17	1.92	-8.19	**8.70**	**2.60**			
FURNISH	0.026	-31.6	-3.19	-68.89	78.56	7.06	11.38	259.76	**1.514**	**-0.47**	0.249	0.248	278
t-values	40.03	-4.32	-2.33	-4.18	1.21	0.11	0.17	1.71	**10.2**	**-4.3**			
CLOTHING & SHOES	0.018	7.42	-7.32	96.04	-154.4	-158.90	-211.37	296.65	**0.885**	**0.093**	**0.358**	0.357	466
t-values	42.38	1.58	-8.27	9.04	-3.69	-3.96	-4.98	3.03	**-4.95**	**1.57**			
CLOTHING SERVICES	0.0023	-0.725	-0.99	-5.38	-56.44	-23.17	-33.53	96.11	**1.06**	**-0.085**	**0.144**	0.143	141
t-values	26.17	-0.73	-5.29	-2.39	-6.36	-2.72	-3.73	4.63	**1.6**	**-0.72**			
JEWELRY & WATCHES	0.0034	-2.58	-0.832	-19.02	-45.08	-49.08	-36.85	94.12	**1.591**	**-0.307**	**0.062**	0.061	56
t-values	17.59	-1.18	-2.04	-3.87	-2.34	-2.64	-1.88	2.08	**4.800**	**-1.18**			
PERS CARE SERVICES	0.0038	5.06	1.65	1.56	-8.86	-1.33	-8	-87.68	**0.75**	**0.253**	**0.252**	0.251	283
t-values	36.39	4.3	7.49	0.59	-0.85	-0.13	-0.75	-3.58	**-10.600**	**4.3**			
MEDICAL PREMIA	0.0106	37.16	31.52	72.64	85.4	141.8	-43.14	-1593	**0.418**	**0.372**	**0.157**	0.156	156
t-values	17.54	5.52	24.94	4.79	1.43	2.47	-0.71	-11.39	**0.418**	**0.37**			
MEDICAL HOSPITAL	0.0007	-3.77	0.568	6.19	48.15	62.2	37.74	10.5	**0.43**	**-0.59**	**0.006**	0.005	4.99
t-values	3.92	-1.8	1.44	1.31	2.58	3.47	2	0.24	**-4.540**	**-1.78**			
MEDICAL OUTSIDE HOSPITAL	0.0003	2.66	0.563	-1.9	-15.22	-23.34	-4.86	-48.1	**1.06**	**2.38**	**0.002**	0.001	2.02
t-values	1.7	1.39	1.57	-0.44	-0.89	-1.43	-0.28	-1.21	**0.08**	**1.230**			0.0488

Table 9. Continued

Item	C	E	A	F	M	S	W	Constant	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
MEDICAL, DENTAL, EYE	0.0144	2.62	9.29	-40.97	95.85	277	188.6	-692.06	**1.19**	**0.06**	**0.044**	0.043	39
t-values	14.11	0.23	4.36	-1.6	0.95	2.86	1.85	-2.93	**1.850**	**0.23**			
MEDICAL APPLIANCES	0.001	4.78	2.05	2.06	14.58	-6.2	16.26	-151.64	**0.60**	**0.73**	0.035	0.034	31
t-values	9.07	3.53	8.08	0.68	1.21	-0.54	1.33	-5.39	**-4.27**	**3.48**			
MEDICAL DRUGS	0.0027	1.93	16.62	6.77	109.8	201.9	-5.28	-710	**0.33**	**0.06**	**0.127**	0.126	122
t-values	8.71	0.56	25.41	0.86	3.55	6.8	-0.17	-9.8	**-16.800**	**0.55**			
TV, RADIO, SPORTS	0.019	-7.32	-9.19	-24.5	219.46	60.17	197	225.2	**1.38**	**-0.13**	**0.105**	0.104	98
t-values	21.7	-0.74	-4.97	-1.1	2.51	0.72	2.22	1.1	**4.700**	**-0.74**			
CLUB, ADMISSION SPECT FEES, PETS,TOYS	0.027	37.87	-1.82	-25.65	-85.96	-141.3	-125.8	-317.8	**1.05**	**0.37**	**0.40**	0.40	559
t-values	50.72	6.38	-1.64	-1.92	-1.63	-2.79	-2.36	-2.57	**2.060**	**6.35**			
READING	0.0066	20.71	-0.227	24.7	36.86	-50.5	-17.53	-249.4	**0.83**	**0.66**	**0.297**	0.296	353
t-values	35.3	9.91	-0.58	5.24	1.98	-2.83	-0.93	-5.74	**-6.300**	**9.8**			
HIGHER EDU EXPENSES	0.0133	29.26	-2.16	-18.88	-141.66	-208.18	-188.2	-372.86	**1.71**	**0.96**	**0.067**	0.065	60
t-values	15.82	3.14	-1.24	-0.9	-1.71	-2.62	-2.24	-1.93	**4.580**	**3.07**			
LOWER EDU EXPENSES	0.0104	26.11	-5.26	146.8	-89	-116.9	-257.7	-519.4	**1.49**	**0.95**	**0.103**	0.102	96
t-values	15.29	3.45	-3.7	8.59	-1.32	-1.81	-3.78	-3.3	**3.740**	**3.37**			
OTHER EDU SERVICES	0.003	7.85	0.452	0.93	44.5	34.8	55.4	-230.9	**1.72**	**1.27**	**0.05**	0.05	45
t-values	13.43	3.42	1.05	0.18	2.18	1.78	2.68	-4.84	**4.000**	**3.3**			
AUTOMOBIL PURCHASE	0.13	-419.03	-38.8	-385.9	837.9	787.6	71.9	5212	**1.74**	**-1.42**	**0.224**	0.223	242
t-values	38.9	-11.26	-5.56	-4.6	2.53	2.48	0.21	6.73	**11.400**	**-10.7**			
AUTOMOBIL OPERATION	0.05	8.08	-11.06	291	281.6	233.55	131.7	749.2	**0.68**	**0.03**	**0.41**	0.4	581
t-values	48.62	0.71	-5.16	11.3	2.77	2.4	1.28	3.16	**-20.000**	**0.7**			
PUBLIC TRANSPORT	0.009	26.07	0.775	-40	-116.86	-162.9	-15.17	-280.6	**1.19**	**0.86**	**0.136**	0.135	132
t-values	23.11	5.85	0.93	-3.99	-2.95	-4.29	-0.38	-3.03	**3.120**	**5.75**			
MISCELLANS CONS EXP	0.012	-0.181	1.01	-27.06	-3.61	34.44	71.45	100	**0.86**	**-0.0033**	**0.065**	0.063	58
t-values	17.61	-0.02	0.72	-1.6	-0.05	0.54	1.06	0.64	**-2.670**	**-0.024**			
PERSONAL INSURANCE	0.0606	110	-37.4	77.88	-103.8	7.18	-483.15	636.8	0.93	**0.43**	**0.444**	0.443	668
t-values	50.24	8.21	-14.87	2.58	-0.87	0.06	-4.01	2.29	**-3.340**	**8.17**			

Table 9. Continued

Item	C	E	A	F	M	S	W	Constant	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
GIFTS & CONTRIBUTE	0.029	31.93	26.76	69.16	479.24	463.01	425.07	-2813.9	1.42	**0.40**	**0.106**	0.105	100
t-values	20.73	2.07	9.23	1.98	3.49	3.52	3.06	-8.76	**4.600**	**2.06**			

Diagram 8. Elasticities in Linear Form

	$\eta>1$	$\eta\approx1$	$\eta<1$
$\varepsilon>0$	GIFTS & CONTRIBUTIONS PUBLIC TRANSPORTATION LODGING OUT OF TOWN HOUSEHOLD SERVICES CLUB,ADMISSION,SPECT FEES,PETS,TOYS HIGHER EDU EXPENSES LOWER EDU EXPENSES OTHER EDU EXPENSES	FOODOUT	OWN HOME RENTAL EQUIV PERSONAL CARE SERVICES MEDICAL PREMIA MEDICAL APPLIANCES READING PERSONAL INSURANCE TELEPHONE UTILITIES2
$\varepsilon\approx0$	TV,RADIO,SPORTS MEDICAL,DENTAL,EYE OWN HOME MTGE INT ALCOHOL OUT OWN HOME PROP TAX OWN HOME REPAIRS JEWELRY & WATCHES	CLOTHING SERVICES MEDICAL OUTSIDE HOSPITAL	MEDICAL DRUGS RENT FOODHOME AUTOMOBILE OPERATION MISCELLANS CONS EXPENDITURES CLOTHING & SHOES ALCOHOL IN MEDICAL HOSPITAL
$\varepsilon<0$	OWN HOME OTH ADD FURNISH AUTOMOBILE PURCHASE		TOBACCO

Regardless of the overall poor performance of the neutrality model with respect to detailed consumption patterns, certain categories are worthy of a more elaborate treatment.

"Medical, dental, eye" refers to expenditures on doctors' services. According to Pauly (1980), more educated people are less likely to be subjected to demand manipulation by physicians, and as such, physicians' visits should decrease. Stretching

Pauly's (1980) results and assuming all else fixed, that is no changes in doctors' fees, health insurance and same doctors visited, and so on for this paper's analysis purposes, a decrease in visits could also imply a decrease in allocated expenditures to doctors.

In contrast, and assuming that physicians' visits are of the curative type input, Gilleskie and Harrison (1998) argue that more schooling is positively associated with curative medical care resources for males. Extending this notion, the same would be true for other inputs in curative health care such as appliances, prescription drugs, hospitalization, etc.

Medical care is still a mystery, even when decomposed to its different components, items 21-26, Table 7. If education enhances nonmarket efficiency, and therefore health productivity as a subset, consumption of preventive medical care inputs should move in the opposite direction (Grossman 1972b). For example, "medical, dental, eye" (doctors) education elasticity is positive throughout, yet it is significant only in the constant elasticity, linear and semilog forms in the grouped data, and only three out of ten regressions in both datasets.

"Medical appliances", as a form of curative care, are not only an empirical miracle but also consistent with the Gilleskie and Harrison predictions. It is the first time that the education effect is consistently positive and significant across all regression formats and both datasets. Yet the education effect on another curative medical input, "medical drugs" (prescription) is unreliable both in terms of sign and significance. It is positive in all grouped data regressions but significant in only the constant elasticity and linear forms. In the individual data, the education elasticity is more erratic, alternating signs and being insignificant. It is negative and significant only in the double log form.

Health insurance, defined as "medical premia" in this paper and in Michael (1972,

pg 54.), is consistent with Grossman's (1972b) estimates of a positive correlation with education. In nine out of ten regressions, the education elasticity is positive and significant. Only in the individual data double log form is education insignificant but still positive.

Let's turn to alcohol consumption once again and recall that education was negative but not significant in nine out of regressions in Part B, Broad Categories Pattern. Here, the previously defined "Alcohol2" variable is decomposed to "Alcohol In" (home use) and "Alcohol Out" (beverages purchased at bars, etc.). Apparently, and amazingly enough, education does not seem to be related to either one alcohol variable description, still duplicating the results obtained in Part B. For example, education is consistently negative but insignificant on "Alcohol In" in both grouped and individual data classification, with the exception of linear regression on grouped data when it is negative and significant (same as in Part B). With regard to "Alcohol Out", schooling is always insignificant but erratic in terms of its sign in both bodies of data.

Charity, specified as monetary "Gifts and Contributions" in this context, is constantly positively and significantly affected by the level of formal education, across all fitted forms and both datasets. This finding raises an interesting empirical and theoretical question. Are time and monetary contributions substitutes or complements? And if so, is this true with respect to the tax price of money or education enhancing nonmarket efficiency?

The answer to the above inquiry is not only unambiguous but certainly beyond the scope of this study as well. However, and albeit not directly comparable, it is worth mentioning the positive and strong relationship between education and time contributions implied in Dye (1980), particularly for those with graduate schooling completion.

Moreover, tax policies affecting monetary distribution, alter time contributions in the same direction. In contrast, Gibson (2001) finds that volunteer time decreases with education in his time-use based study.

With regard to "Reading", and along parallel lines, Fahr (2005) asserts a positive relationship between education and informal schooling time investment. According to her study, more educated people prefer leisure activities adding to their market productivity (wage effect due to higher opportunity costs of time) and they also favor "high quality" leisure (due to tastes). Similarly, Dee (2003) finds a positive effect of schooling on newspaper readership. If the "Reading" variable used in this paper (books, newspapers, magazines, periodicals, encyclopedia subscriptions or otherwise), a component of leisure outlays, serves as a not far-fetched proxy for informal education and readership, this paper's estimates are absolutely consistent with Fahr's and Dee's findings. The elasticity of "reading" with respect to education is consistently positive and significant in all fitted Engel curves and both datasets.[14]

If on the other hand, "Other Edu" (other education services expenditures on tuition for other schools, book and equipment rentals, and other school related expenses, including contributions to educational organizations), serves as an informal education and readership proxy, additional schooling is positive and significant across all individual data fitted forms but the same is not true in the grouped observations set. The education elasticities are still positive in the grouped data but significant only in the semilog and double log regression forms.

Strikingly so, formal schooling of the head of household is not at all related to

[14] For both grouped and individual observations datasets, "Reading" is about 16.5% of 'leisure' (Recreate) and "Other Edu" comprises only 9.7% of 'education' (Educ) outlays.

"higher education" and "lower education" (elementary and secondary) expenditures. Although schooling is always positive, it is significant only in the grouped and individual data semilog fitted regressions.

VI. SUMMARY AND CONCLUSIONS

A tremendous amount of research effort has concentrated on explaining the returns to education on segregated aspects of nonmarket efficiency such as housework and health productivity, fertility and volunteer work to name a few. As it stands in the academic literature, the views are largely polarized. Many prior studies have found strong evidence in favor of the positive effects of education on a number of areas, while other work has failed to support the same conclusion. This is mainly due to the fact that any pertinent empirical endeavor is sensitive to the underlying theory employed, imposed assumptions, selection of data and econometric analysis orientation.

To the best of knowledge, much less attention, if not any at all, has been devoted to examining the effects of education on overall household productivity measured by consumption pattern outcomes. Using cross-sectional household data on detailed item consumer expenditures and other demographics, this study attempted to empirically verify the underlying assumption in Michael's model of consumer behavior. According to his productive efficiency hypothesis of education, additional schooling will have a positive impact on market good or service inputs whose income elasticity is greater than one, negative for inputs with income elasticity less than one, and a zero effect on factors of production with unitary elasticities.

The empirical results of this paper present evidence against the overall validity of the productive efficiency hypothesis in the context of neutral household productions. At

its best, the evidence is mixed if not poor.[15] The model performs exceptionally well in terms of the predicted qualitative relationship between income and education elasticities of the goods and services dichotomy in the individual data. In four out of the five regression forms, exhausting total consumption, goods (necessities) and services (luxuries) have the expected education sign. On the other hand, the grouped and individual data broader categorizations come at second and third places, explaining only about 41% and 35% of total consumption spending respectively. Last but not least, the detailed item sorting is the toughest opponent of the model, with a total consumption expenditures explanatory power range of 30.2% in the grouped and 26% in the individual data formats.

However, it must be acknowledged that the empirical findings, in this area of research, may also be severely susceptible to data selection and aggregation, as well as, the application of more sophisticated econometric approaches and appropriate functional form specifications,[16] and more importantly, the model itself.

Undoubtedly, the model's theoretical predictions are extremely better when all expenditure items are aggregated in the goods and services categorization in the individual sample of observations. On the same note, Michael's durables-nondurables dichotomy yielded the best results in terms of the education effect, aside from goods and services, and, according to Grossman (2006), nondurables is a better measure of actual consumption. Then perhaps, a larger or more appropriate item aggregation might serve as

[15] The following conclusions are solely based on the best fitted item regression form(s) in the grouped and individual sample sets.

[16] Michael (1972) suggests time budget studies and probit econometric specifications as alternative empirical methods in future research, and both have somehow already been incorporated in other comparable research studies.

a testing improvement of the model compared to more relaxed disaggregated taxonomies.

Yet, it is not clear if cross-sectional time-use data compared to goods expenditures would do more justice to Michael's model, whereas incorporating both time and expenditures input data might be a worthwhile undertaking. Furthermore, when explaining the returns to education, should aggregate data be avoided when individual level data are available, and if so, under what circumstances? To this effect, Pritchett's (2006) dilemma rests on whether cross-national data account for output externalities of schooling. And, "… are cross-national data appropriate when exploring the returns to schooling on differences in economic environments?"

A less obvious empirical implication arises from Michael's theoretical setting exclusions itself. To which degree, if any possible, can routine household production activities inputs be disentangled? Raising a reasonable concern on the issue regarding joint commodity production inputs, Afriat (1974) questions "of what and for what is the efficiency."

Similarly, while formal schooling might possibly enhance household productivity for some commodities, trying to make inferences about the effects of education on nonmarket efficiency pertaining to *all types* of commodities produced may be misleading. Corman (1986) attempts to shed light to this puzzle by differentiating between "non-credit home productivity enhancing education and labor market productivity enhancing education." She finds both types of education complementary rather than substitutes.

As a concluding remark, when it comes to nonmarket efficiency, more so specific to segregated household production activities, which definition of schooling would serve as a more appropriate measure of education? Is it quantity, quality or both? Clearly, this may prove to be to be challenging endeavor as it opens another Pandora's Box and new

horizons, further complicating the theoretical implications and empirical assessment of Michael's model, but it could be a worthy venture yielding much rewarding results. Thus far, the effect of education on nonmarket productivity as measured by consumption efficiency is still an unresolved issue and a promising area for additional research efforts.

VII. APPENDIX : SUPPLEMENTARY AND REGRESSION ESTIMATES

A1. GOODS & SERVICES, GROUPED DATA

Table 10. REGRESSION RESULTS, SEMILOG

Item	ln C	E	A	F	M	S	W	Constant	R^2	Adj. R^2	F test
GOODS	32840	380.2	386	1982	-1584	-1682	526.2	-339933	0.91	0.91	238
t-values	17.55	1.44	3.27	1.39	-1.23	-1.35	0.4	-18.61			
Mean Elasticity	0.842	0.13									
	-3.23	1.44									
SERVICES	17316	270	349	256	759	1328	-30.3	-193590	0.87	0.87	155
t-values	15.76	1.74	5.03	0.31	1.01	1.82	-0.04	-18.05			
Mean Elasticity	1.26	0.264									
	3.18	1.74									

Table 11. REGRESSION RESULTS, DOUBLE LOG

Item	ln C	E	A	F	M	S	W	Constant	R^2	Adj. R^2	F test
ln GOODS	0.873	-0.000029	-0.002	0.027	-0.031	-0.031	0.003	1.1	0.99	0.99	2804
t-values	57.33	-0.01	-2.31	2.36	-2.98	-3.07	0.31	7.41			
Mean Elasticity	0.873	-0.0003									
	-8.270	-0.01									
ln SERVICES	1.53	-0.005	0.008	-0.113	0.095	0.096	-0.026	-7.29	0.94	0.93	347
t-values	24.13	-0.65	2.05	-2.34	2.2	2.3	-0.6	-11.75			
Mean Elasticity	1.53	-0.078									
	8.4	-0.65									

Table 12. REGRESSION RESULTS, INTERACTION

Item	ln C	ln E	A	F	M	S	W	lnCs* lnE	lnC* A	Constant	R^2	Adj. R^2	F test
ln GOODS	0.956	0.063	0.012	0.027	-0.031	-0.029	0.005	-0.005	-0.001	0.236	0.99	0.99	2171
t-values	7.63	0.23	0.86	2.39	-2.95	-2.91	0.47	-0.21	-1.03	0.18			
Mean Elasticity	0.868	0.003											
	-8.38	0.140											
ln SERVICES	1.41	0.77	-0.058	-0.102	0.095	0.094	-0.03	-0.08	0.006	-6.08	0.94	0.94	275
t-values	2.72	0.67	-0.99	-2.19	2.19	2.23	-0.72	-0.72	1.17	-1.13			
Mean Elasticity	1.560	-0.073											
	8.8	-0.74											

Table 13. SHARES & WEIGHTED SUM ELASTICITIES

CONST ELAS		RATIO	INC ELAS	SUM INC	EDU ELS	SUM EDU
	GDS	0.7501	0.874	0.656	-0.00168	-0.001
	SVCES	0.2499	1.51	0.377	-0.0107	-0.003
	SUM RATIOS	**1**	**WGHT INC**	**1.033**	**WGHT EDU**	**-0.004**
LINEAR	GDS	0.7501	0.887	0.665	-0.0194	-0.015
	SVCES	0.2499	1.321	0.330	0.0553	0.014
	SUM RATIOS	**1**	**WGHT INC**	**0.995**	**WGHT EDU**	**-0.001**
SEMILOG	GDS	0.7501	0.842	0.632	0.1308	0.098
	SVCES	0.2499	1.265	0.316	0.264	0.066
	SUM RATIOS	**1**	**WGHT INC**	**0.948**	**WGHT EDU**	**0.164**
DOUBLE LOG	GDS	0.7501	0.873	0.655	-0.00039	-0.0003
	SVCES	0.2499	1.53	0.382	-0.078	-0.019
	SUM RATIOS	**1**	**WGHT INC**	**1.037**	**WGHT EDU**	**-0.020**
INTERACTION	GDS	0.7501	0.869	0.652	0.00337	0.003
	SVCES	0.2499	1.56	0.390	-0.073	-0.018
	SUM RATIOS	**1**	**WGHT INC**	**1.042**	**WGHT EDU**	**-0.016**

A2. GOODS & SERVICES, INDIVIDUAL DATA

Table 14. REGRESSION RESULTS, SEMILOG

Item	ln C	E	A	F	M	S	W	Constant	R^2	Adj. R^2	F test
GOODS	35171.8	-247.4	-17.92	-163.8	-1818.4	-2023	-1.036	-329624	0.757	0.756	2607
t-values	112	-3.84	-1.52	-1.13	-3.25	-3.77	0	-108.31			
Mean Elasticity	0.899	-0.085									
	-11	-3.8									
SERVICES	12292	425.5	39.25	109.9	326.4	440.6	-159.5	-125350	0.533	0.533	957
t-values	62.61	10.56	5.32	1.21	0.93	1.31	-0.45	-65.9			
Mean Elasticity	0.893	0.415									
	-6.7	10.5									

Table 15. REGRESSION RESULTS, DOUBLE LOG

Item	ln C	E	A	F	M	S	W	Constant	R^2	Adj. R^2	F test
ln GOODS	0.978	-0.008	-0.0006	0.0079	-0.026	-0.02	0.001	0.063	0.948	0.948	15327
t-values	270	-11.05	-4.71	4.76	-4.05	-3.18	0.18	1.81			
Mean Elasticity	0.978	-0.110									
	-6.000	-11.000									
ln SERVICES	1.114	0.028	0.002	-0.017	0.076	0.055	-0.018	-3.2	0.7	0.7	1954
t-values	92.6	11.42	5.43	-3.19	3.58	2.69	-0.84	-27.47			
Mean Elasticity	1.114	0.376									
	9.470	11.400									

Table 16. REGRESSION RESULTS, INTERACTION

Item	ln C	ln E	A	F	M	S	W	lnC* lnE	lnC* A	Constant	R^2	Adj. R^2	F test
ln GOODS	1.02	0.093	0.0006	0.008	-0.025	-0.02	0.001	-0.016	-0.0001	-0.32	0.947	0.947	11790
t-values	37.83	1.01	0.33	5.05	-3.97	-3.15	0.16	-1.85	-0.63	-1.14			
Mean Elasticity	0.973	-0.083											
	-6.950	-9.480											
ln SERVICES	1.214	0.254	0.022	-0.02	0.077	0.058	-0.013	0.002	-0.001	-4.58	0.699	0.698	1507
t-values	13.58	0.83	3.34	-3.61	3.62	2.83	-0.63	0.08	-2.98	-4.96			
Mean Elasticity	1.117	0.280											
	10.35	9.69											

Table 17. SHARES & WEIGHTED SUM ELASTICITIES

CONST ELAS		RATIO	INC ELAS	SUM INC	EDU ELS	SUM EDU
	GDS	0.739	0.974	0.720	-0.077	-0.057
	SVCES	0.26	1.123	0.292	0.271	0.070
	SUM RATIOS	**0.999**	**WGHT INC**	**1.012**	**WGHT EDU**	**0.014**
LINEAR	GDS	0.739	0.991	0.732	-0.118	-0.087
	SVCES	0.26	1.021	0.265	0.336	0.087
	SUM RATIOS	**0.999**	**WGHT INC**	**0.998**	**WGHT EDU**	**0.000**
SEMILOG	GDS	0.739	0.899	0.664	-0.085	-0.063
	SVCES	0.26	0.893	0.232	0.415	0.108
	SUM RATIOS	**0.999**	**WGHT INC**	**0.897**	**WGHT EDU**	**0.045**
DOUBLE LOG	GDS	0.739	0.978	0.723	-0.11	-0.081
	SVCES	0.26	1.114	0.290	0.376	0.098
	SUM RATIOS	**0.999**	**WGHT INC**	**1.012**	**WGHT EDU**	**0.016**
INTER	GDS	0.739	0.973	0.719	-0.083	-0.061
	SVCES	0.26	1.117	0.290	0.28	0.073
	SUM RATIOS	**0.999**	**WGHT INC**	**1.009**	**WGHT EDU**	**0.011**

Diagram 9. ELASTICITIES IN SEMILOG FORM

EDUCATION ELASTICITY	INCOME ELASTICITY		
	η>1	***η≈1***	***η<1***
ε>0			SERVICES
ε ≈0			
ε<0			GOODS

B1. BROAD CATEGORIES, GROUPED DATA

Table 18. SHARES & WEIGHTED SUM ELASTICITIES, CONSTANT ELASTICITY

CONST ELAS	RATIO	INC ELAS	EDU ELS	SUM INC	SUM EDU
FOODHOME	0.081	0.351	-0.077	0.02843	-0.00624
FOODOUT	0.0258	1.145	0.055	0.02954	0.00142
TOBACCO	0.0059	0.252	-0.333	0.00149	-0.00196
ALCOHOL2	0.0063	0.768	-0.288	0.00484	-0.00181
HOUSING2	0.4068	1.025	0.099	0.41697	0.04027
UTILITIES	0.057	0.508	0.080	0.02896	0.00456
HOUSEOPR	0.0129	1.088	0.077	0.01404	0.00099
FURNISH	0.0165	1.184	-0.116	0.01954	-0.00191
CLOTHING	0.0253	1.047	0.035	0.02649	0.00089
PERSCARE	0.005	0.797	0.240	0.00399	0.00120
MEDICAL	0.0484	0.741	0.288	0.03586	0.01394
RECREATE	0.0467	1.295	0.305	0.06048	0.01424
EDUC	0.0138	1.120	-0.091	0.01546	-0.00126
TRANSP2	0.154	1.217	-0.272	0.18742	-0.04189
	0.9054			**0.87348**	**0.02244**
PERSINS	0.0616	2.58	-1.05	0.158928	-0.06468
MISCELCON	0.0147	0.836	0.109	0.0122892	0.0016023
CHARITY	0.0192	1.27	0.558	0.024384	0.0107136
	1.0009			**1.06908**	**-0.02992**

Table 19. REGRESSION RESULTS, LINEAR FORM

Item	C	E	A	F	M	S	W	Constant	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test
FOODHOME	0.025	-22.33	-10.27	727	-352.9	-166.3	19.76	1767	0.332	-0.074	0.919	0.915	244
t-values	13.57	-1.45	-1.44	8.92	-4.58	-2.24	0.25	2.72	-27.14	-1.44			
FOODOUT	0.03	17.7	-3.46	-5.85	106.1	63.12	-106	-238	1.120	0.166	0.932	0.929	297
t-values	22.3	1.58	-0.67	-0.1	1.9	1.17	-1.87	-0.5	2.32	1.58			
TOBACCO	-0.0002	-27.49	-10.85	1.39	18.11	-65.7	-81.28	1288	-0.040	-1.180	0.242	0.207	7
t-values	-0.28	-3.76	-3.22	0.04	0.5	-1.87	-2.2	4.2	-6.98	-3.73			
ALCOHOL2	0.008	-10.1	-6.22	-92	-12.9	-43.9	28.6	612.0	1.290	-0.414	0.828	0.82	103
t-values	15.19	-2.32	-3.09	-4	-0.59	-2.1	1.3	3.3	3.25	-2.32			
HOUSING2	0.418	221	37.7	-1059	-1551	-1777	945	-2319.0	1.040	0.140	0.968	0.966	652
t-values	34.12	2.19	0.81	-1.99	-3.08	-3.66	1.85	0.6	1.35	2.18			
UTILITIES	0.021	17.79	-0.86	283	-12.21	143	-516	971.0	0.378	0.08	0.916	0.912	235
t-values	16.17	1.65	-0.17	4.99	-0.23	2.76	-9.47	2.2	-26.3	1.65			
HOUSEOPR	0.017	26.2	16.3	-50.85	116	264	109	-1424.0	1.315	0.509	0.821	0.812	98
t-values	14.25	2.62	3.53	-0.96	2.35	5.5	2.17	-3.4	3.24	2.62			
FURNISH	0.022	-12.6	-3.69	-16.04	71.6	-15.8	22.2	79.5	1.33	-0.187	0.857	0.851	129
t-values	15.69	-1.05	-0.66	-0.25	1.19	-0.27	0.36	0.16	3.74	-1.04			
CLOTHING	0.028	-11.5	-2.77	36.2	-227	-193	-271	177	1.16	-0.118	0.908	0.904	212
t-values	19.51	-0.95	-0.49	0.57	-3.75	-3.31	-4.41	0.35	2.64	-0.95			
PERSCARE	0.004	1.99	1.88	-0.885	-5.9	2.34	-11.8	-107	0.961	0.099	0.9	0.896	194
t-values	19.55	0.96	1.97	-0.08	-0.57	0.24	-1.13	-1.24	-0.76	0.96			
MEDICAL	0.013	118	45.7	318	255	548	161	-3152	0.265	0.608	0.497	0.474	21
t-values	3.9	4.24	3.56	2.17	1.84	4.1	1.15	-2.69	-10.7	4.2			
RECREATE	0.058	29.1	-10.27	-166	232	-100	97	18.17	1.196	0.151	0.915	0.911	232
t-values	19.93	1.2	-0.92	-1.3	1.93	-0.87	0.79	0.02	3.13	1.2			
EDUC	0.037	30.36	15.35	-119	-177	-220	-380	-1819	2.347	0.482	0.767	0.756	71
t-values	11.79	1.15	1.26	-0.86	-1.35	-1.74	-2.85	-1.64	5.84	1.14			
TRANSP2	0.139	-200	-90	571	884	557	72.7	6305	0.892	-0.327	0.854	0.847	126
t-values	14.2	-2.48	-2.41	1.34	2.2	1.43	0.18	1.86	-1.67	-2.47			

Diagram 10. ELASTICITIES IN LINEAR FORM

	$\eta>1$	$\eta\approx1$	$\eta<1$
$\varepsilon>0$	HOUSEOPR	HOUSING2	MEDICAL
$\varepsilon\approx0$	RECREATE EDUC FOODOUT CLOTHING FURNISH	PERSCARE	UTILITIES FOODHOME
$\varepsilon<0$	ALCOHOL2		TOBACCO TRANSP2

Table 20. SHARES & WEIGHTED SUM ELASTICITIES, LINEAR FORM

LINEAR	RATIO	INC ELAS	EDU ELS	SUM INC	SUM EDU
FOODHOME	0.081	0.332	-0.074	0.02689	-0.00599
FOODOUT	0.0258	1.120	0.166	0.02890	0.00428
TOBACCO	0.0059	-0.040	-1.180	-0.00024	-0.00696
ALCOHOL2	0.0063	1.290	-0.414	0.00813	-0.00261
HOUSING2	0.4068	1.040	0.140	0.42307	0.05695
UTILITIES	0.057	0.378	0.08	0.02155	0.00456
HOUSEOPR	0.0129	1.315	0.509	0.01696	0.00657
FURNISH	0.0165	1.33	-0.187	0.02195	-0.00309
CLOTHING	0.0253	1.16	-0.118	0.02935	-0.00299
PERSCARE	0.005	0.961	0.099	0.00481	0.00050
MEDICAL	0.0484	0.265	0.608	0.01283	0.02943
RECREATE	0.0467	1.196	0.151	0.05585	0.00705
EDUC	0.0138	2.347	0.482	0.03239	0.00665
TRANSP2	0.154	0.892	-0.327	0.13737	-0.05036
	0.9054			**0.81979**	**0.04399**
PERSINS	0.0616	2.157	-0.974	0.1328712	-0.0599984
MISCELCON	0.0147	0.599	0.114	0.0088053	0.0016758
CHARITY	0.0192	1.343	0.71	0.0257856	0.013632
	1.0009			**0.98726**	**-0.00070**

Table 21. REGRESSION RESULTS, SEMILOG FORM

Item	ln C	E	A	F	M	S	W	Constant	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test
FOODHOME	1301	-8.5	8.48	768	-372	-172	33.6	-12003	0.323	-0.0280	0.892	0.887	179
t-values	10.08	-0.47	1.04	7.79	-4.19	-2.02	0.37	-9.52	-21.03	-0.47			
FOODOUT	1445	44.7	18.54	102.8	76.48	45.8	-94.5	-15802	1.015	0.421	0.851	0.844	123
t-values	11.96	2.62	2.43	1.11	0.92	0.57	-1.12	-13.39	0.17	2.61			
TOBACCO	164.55	-45.18	-10.4	-96	29.4	-50.00	-72.8	-17.88	0.526	-1.940	0.290	0.257	9
t-values	3.21	-6.23	-3.22	-2.46	0.84	-1.47	-2.03	-0.04	-2.86	-6.08			
ALCOHOL2	385	-3.21	-0.386	-64.8	-20.59	-48.24	31.76	-3529	1.177	-0.131	0.734	0.722	59
t-values	9.8	-0.58	-0.16	-2.16	-0.76	-1.85	1.16	-9.2	1.42	-0.58			
HOUSING2	19207	668	338	846	-2006	-2081	1066	-211059	0.909	0.424	0.866	0.86	139
t-values	12.79	3.14	3.57	0.74	-1.94	-2.09	1.02	-14.4	-1.24	3.14			
UTILITIES	1252	12.2	15.33	223	-17.4	152	-496	-11863	0.427	0.055	0.914	0.91	228
t-values	15.83	1.09	3.07	3.7	-0.32	2.91	-8.97	-15.36	-21.13	1.09			
HOUSEOPR	792	44.7	28.7	28.03	98.03	251	114	-10034	1.146	0.8680	0.721	0.708	56
t-values	8.76	3.49	5.03	0.41	1.58	4.19	1.82	-11.37	1.08	3.49			
FURNISH	1140	3.29	13.12	40.9	52.06	-24.8	33.16	-12077	1.261	0.048	0.785	0.775	78
t-values	10.61	0.22	1.93	0.5	0.7	-0.35	0.44	-11.51	2.11	0.216			
CLOTHING	1284	22.6	17.8	186	-260	-217	-265	-13877	0.988	0.2330	0.805	0.796	89
t-values	10	1.25	2.19	1.9	-2.96	-2.55	-2.95	-11.08	-0.116	1.24			
PERSCARE	231	6.63	5.44	18.14	-10.86	-0.684	-10.11	-2607	0.860	0.3300	0.804	0.795	88
t-values	10.99	2.22	4.09	1.13	-0.75	-0.05	-0.69	-12.68	-1.74	2.22			
MEDICAL	1273	65.79	57.6	10.57	282	597	198	-15160	0.489	0.339	0.58	0.56	30
t-values	6.91	2.52	4.95	0.07	2.23	4.88	1.54	-8.42	-7.17	2.51			
RECREATE	2878	72.14	32.48	-7.72	181	-125	123	-30730	1.119	0.3760	0.843	0.835	115
t-values	12.05	2.13	2.15	-0.04	1.11	-0.79	0.74	-13.18	1.24	2.13			
EDUC	1199	123	40.6	344	-251	-294	-395	-16313	1.419	1.9500	0.612	0.594	34
t-values	4.86	3.53	2.61	1.82	-1.49	-1.8	-2.29	-6.77	1.37	3.44			
TRANSP2	8264	-237	16.74	173	851	621	204	-78365	1.007	-0.388	0.851	0.844	123
t-values	13.97	-2.84	0.45	0.38	2.09	1.58	0.49	-13.57	0.096	-2.84			

Diagram 11. ELASTICITIES IN SEMILOG FORM

	η>1	*η≈1*	*η<1*
ε>0		HOUSING2 RECREATE EDUC FOODOUT HOUSEOPR	MEDICAL PERSCARE
ε ≈0	FURNISH	CLOTHING ALCOHOL2	UTILITIES FOODHOME
ε<0		TRANSP2	TOBACCO

Table 22. SHARES & WEIGHTED SUM ELASTICITIES, SEMI-LOG FORM

SEMILOG	RATIO	INC ELAS	EDU ELS	SUM INC	SUM EDU
FOODHOME	0.081	0.323	-0.0280	0.02616	-0.00227
FOODOUT	0.0258	1.015	0.421	0.02619	0.01086
TOBACCO	0.0059	0.526	-1.940	0.00310	-0.01145
ALCOHOL2	0.0063	1.177	-0.131	0.00742	-0.00083
HOUSING2	0.4068	0.909	0.424	0.36978	0.17248
UTILITIES	0.057	0.427	0.055	0.02434	0.00314
HOUSEOPR	0.0129	1.146	0.8680	0.01478	0.01120
FURNISH	0.0165	1.261	0.048	0.02081	0.00079
CLOTHING	0.0253	0.988	0.2330	0.02500	0.00589
PERSCARE	0.005	0.860	0.3300	0.00430	0.00165
MEDICAL	0.0484	0.489	0.339	0.02367	0.01641
RECREATE	0.0467	1.119	0.3760	0.05226	0.01756
EDUC	0.0138	1.419	1.9500	0.01958	0.02691
TRANSP2	0.154	1.007	-0.388	0.15508	-0.05975
	0.9054			**0.77246**	**0.19260**
PERSINS	0.0616	2.162	-0.7602	0.1331792	-0.04682832
MISCELCON	0.0147	0.854	-0.162	0.0125538	-0.0023814
CHARITY	0.0192	1.298	0.907	0.0249216	0.0174144
	1.0009			**0.94311**	**0.16080**

Table 23. REGRESSION RESULTS, DOUBLE-LOG FORM

ln Item	ln C	E	A	F	M	S	W	Constant	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test
FOODHOME	0.356	-0.007	-0.002	0.191	-0.081	-0.008	0.021	4.08	**0.356**	**-0.096**	0.926	0.923	270
t-values	12.31	-1.75	-1.13	8.68	-4.11	-0.46	1.07	14.47	**-22.2**	**-1.75**			
FOODOUT	1.119	0.009	-0.014	-0.047	0.128	0.072	0.036	-4.48	**1.119**	**0.130**	**0.929**	0.926	282
t-values	17.14	1.05	-3.55	-0.96	2.86	1.67	0.8	-7.04	**1.83**	**1.04**			
TOBACCO	0.569	-0.088	-0.018	-0.416	0.053	-0.098	-0.128	3.62	**0.569**	**-1.180**	**0.142**	0.1	3.39
t-values	3.67	-4.03	-1.97	-3.41	0.52	-0.99	-1.23	2.46	**-2.77**	**-4.03**			
ALCOHOL2	0.721	-0.013	-0.014	-0.099	-0.042	-0.082	-0.03	-1.12	**0.721**	-0.177	0.559	0.538	27
t-values	5.78	-0.75	-1.78	-1.04	-0.5	-1	-0.35	-0.93	**-2.23**	**-0.75**			
HOUSING2	0.969	0.019	0.003	0.014	-0.095	-0.101	0.027	-1.13	**0.969**	**0.257**	**0.964**	0.962	579
t-values	25.47	3.56	1.52	0.5	-3.64	-4.03	1.02	-3.06	**-0.8**	**3.55**			
UTILITIES	0.55	-0.0022	0.002	0.06	0.025	0.105	-0.21	1.75	**0.55**	-0.030	0.9	0.897	197
t-values	15	-0.43	0.88	2.15	1.02	4.33	-8.22	4.89	**-12.23**	**-0.432**			
HOUSEOPR	1.046	0.014	0.018	-0.048	0.174	0.445	0.028	-6.3	**1.046**	**0.195**	**0.758**	0.746	66
t-values	10.03	0.99	2.81	-0.59	2.51	6.65	0.41	-6.34	**0.44**	**0.98**			
FURNISH	1.133	0.001	0.006	0.095	0.072	0.087	0.049	-6.73	**1.133**	**0.013**	**0.831**	0.823	105
t-values	11.47	0.07	1.01	1.27	1.07	1.33	0.72	-6.98	**1.35**	**0.072**			
CLOTHING	1.025	0.007	-0.014	0.127	-0.152	-0.103	-0.139	-3.92	**1.025**	**0.096**	**0.93**	0.926	285
t-values	15.37	0.77	-3.38	2.5	-3.32	-2.34	-2.98	-6.03	**0.38**	**0.76**			
PERSCARE	0.755	0.027	0.01	0.115	-0.099	-0.004	-0.094	-3.99	**0.755**	**0.367**	**0.87**	0.86	144
t-values	12.04	3.08	2.53	2.4	-2.31	-0.11	-2.16	-6.53	**-3.88**	**3.08**			
MEDICAL	0.81	0.008	0.032	-0.08	0.219	0.304	0.028	-3.02	**0.81**	**0.117**	**0.614**	0.596	34
t-values	9.17	0.7	5.77	-1.19	3.62	5.19	0.46	-3.5	**-2.14**	**0.7**			
RECREATE	1.29	0.024	-0.006	-0.103	0.014	-0.13	-0.041	-6.14	**1.29**	**0.334**	**0.944**	0.941	364
t-values	20.18	2.75	-1.67	-2.12	0.34	-3.06	-0.92	-9.83	**4.55**	**2.75**			
EDUC	1.001	0.017	-0.04	-0.233	-0.248	-0.077	-0.292	-1.96	**1.001**	**0.2320**	**0.463**	0.435	16
t-values	3.56	0.43	-2.25	-1.03	-1.34	-0.43	-1.56	-0.73	**0.006**	**0.42**			
TRANSP2	1.343	-0.0469	-0.022	-0.041	0.167	0.106	0.039	-4.18	**1.343**	**-0.631**	**0.921**	0.917	250
t-values	17.94	-4.43	-4.68	-0.72	3.24	2.15	0.75	-5.73	**4.58**	**-4.43**			

Diagram 12. ELASTICITIES IN DOUBLE-LOG FORM

	$\eta>1$	$\eta\approx1$	$\eta<1$
$\varepsilon>0$	RECREATE	HOUSING2	PERSCARE
$\varepsilon \approx 0$	FOODOUT	CLOTHING EDUC HOUSEOPR FURNISH	UTILITIES FOODHOME ALCOHOL2 MEDICAL
$\varepsilon<0$	TRANSP2		TOBACCO

Table 24. SHARES & WEIGHTED SUM ELASTICITIES, DOUBLE-LOG FORM

DOUBLE LOG	RATIO	INC ELAS	EDU ELS	SUM INC	SUM EDU
FOODHOME	0.081	0.356	-0.096	0.02884	-0.00778
FOODOUT	0.0258	1.119	0.130	0.02887	0.00335
TOBACCO	0.0059	0.569	-1.180	0.00336	-0.00696
ALCOHOL2	0.0063	0.721	-0.177	0.00454	-0.00112
HOUSING2	0.4068	0.969	0.257	0.39419	0.10455
UTILITIES	0.057	0.55	-0.030	0.03135	-0.00172
HOUSEOPR	0.0129	1.046	0.195	0.01349	0.00252
FURNISH	0.0165	1.133	0.013	0.01869	0.00021
CLOTHING	0.0253	1.025	0.096	0.02593	0.00243
PERSCARE	0.005	0.755	0.367	0.00378	0.00184
MEDICAL	0.0484	0.81	0.1170	0.03920	0.00566
RECREATE	0.0467	1.29	0.3340	0.06024	0.01560
EDUC	0.0138	1.001	0.2320	0.01381	0.00320
TRANSP2	0.154	1.343	-0.631	0.20682	-0.09711
	0.9054			**0.87312**	**0.02468**
PERSINS	0.0616	2.77	-1.62	0.170632	-0.099792
MISCELCON	0.0147	0.89	-0.0464	0.013083	-0.00068208
CHARITY	0.0192	1.17	0.857	0.022464	0.0164544
	1.0009			**1.07930**	**-0.05934**

Table 25. SHARES & WEIGHTED SUM ELASTICITIES, INTERACTION FORM

INTERACTION	RATIO	INC ELAS	EDU ELS	SUM INC	SUM EDU
FOODHOME	0.081	0.347	-0.072	0.02811	-0.00583
FOODOUT	0.0258	1.110	0.096	0.02864	0.00248
TOBACCO	0.0059	0.611	-0.788	0.00360	-0.00465
ALCOHOL2	0.0063	0.729	-0.241	0.00459	-0.00152
HOUSING2	0.4068	0.946	0.184	0.38483	0.07485
UTILITIES	0.057	0.570	0.006	0.03249	0.00034
HOUSEOPR	0.0129	0.999	0.186	0.01289	0.00240
FURNISH	0.0165	1.029	0.054	0.01698	0.00089
CLOTHING	0.0253	0.998	0.094	0.02525	0.00238
PERSCARE	0.005	0.712	0.332	0.00356	0.00166
MEDICAL	0.0484	0.879	0.129	0.04254	0.00624
RECREATE	0.0467	1.320	0.262	0.06164	0.01224
EDUC	0.0138	0.805	0.216	0.01111	0.00298
TRANSP2	0.154	1.410	-0.489	0.21714	-0.07531
	0.9054			**0.87338**	**0.01915**
PERSINS	0.0616	2.7	-1.19	0.16632	-0.073304
MISCELCON	0.0147	0.953	-0.0123	0.0140091	-0.0001808
CHARITY	0.0192	1.32	0.527	0.025344	0.0101184
	1.0009			**1.07905**	**-0.04421**

Table 26. REGRESSION RESULTS, INTERACTION FORM

ln Item	ln C	ln E	ln C* ln E	ln C* ln A	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test
FOODHOME	0.142	-0.514	0.041	0.001	**0.347**	**-0.072**	0.927	0.922	209
t-values	0.6	-0.97	0.82	0.76	**-21.9**	**-1.61**			
FOODOUT	0.272	-2.07	0.204	0.006	**1.110**	**0.096**	0.93	0.92	220
t-values	0.51	-1.74	1.79	1.12	**1.71**	**0.95**			
TOBACCO	4.33	12.35	-1.23	-0.013	**0.611**	**-0.788**	0.205	0.154	4.0
t-values	3.45	4.38	-4.56	-1.04	**-2.48**	**-3.3**			
ALCOHOL2	0.245	-1.9	0.156	0.002	**0.729**	**-0.241**	0.566	0.539	21
t-values	0.24	-0.84	0.72	0.18	**-2.12**	**-1.250**			
HOUSING2	0.858	-1.49	0.158	-0.005	**0.946**	**0.184**	0.967	0.965	482
t-values	2.84	-2.22	2.45	**-1.69**	-1.41	3.22			
UTILITIES	1.36	2.69	-0.252	-0.003	**0.570**	**0.006**	0.915	0.909	177
t-values	4.84	4.27	-4.19	-1.13	**-12.2**	**0.128**			
HOUSEOPR	0.001	-3.36	0.334	0.003	**0.999**	**0.186**	0.764	0.749	52
t-values	0	-1.79	1.86	0.39	**-0.008**	**1.150**			
FURNISH	1.07	-2.83	0.271	-0.013	**1.029**	**0.054**	0.845	0.836	90
t-values	1.35	-1.6	1.6	-1.54	**0.29**	**0.361**			
CLOTHING	0.268	-2.21	0.217	0.003	**0.998**	**0.094**	0.931	0.927	224
t-values	0.49	-1.82	1.86	0.65	**-0.02**	**0.910**			
PERSCARE	0.573	-1.55	0.178	-0.005	**0.712**	**0.332**	0.875	0.868	116
t-values	1.13	-1.37	1.64	-0.99	**-4.53**	**3.450**			
MEDICAL	1.99	4.89	-0.448	-6E-04	**0.879**	**0.129**	0.659	0.638	32
t-values	2.91	3.19	-3.05	-0.08	**-1.4**	**0.99**			
RECREATE	2.003	2.17	-0.18	-0.004	**1.320**	**0.262**	0.946	0.943	291
t-values	3.86	1.88	-1.62	-0.79	**5.09**	**2.67**			
EDUC	0.001	-7.42	0.719	-0.017	**0.805**	**0.216**	0.484	0.449	14
t-values	0	-1.37	1.4	-0.7	**-0.675**	**0.49**			
TRANSP2	1.58	3.7	-0.394	0.014	**1.410**	**-0.489**	0.932	0.928	227
t-values	2.77	2.89	-3.22	2.37	**5.85**	**-4.51**			

B2. BROAD CATEGORIES, INDIVIDUAL DATA

Table 27. REGRESSION RESULTS, CONSTANT ELASTICITY FORM

ln Item	ln C	ln E	A	F	M	S	W	Constant	R^2	Adj. R^2	F test	t-test for inc ≠1
FOODHOME	0.337	-0.039	0.0009	0.1819	-0.079	-0.009	0.029	4.14	0.506	0.505	853	-73.66667
t-values	37.36	-1.91	2.8	42.71	-4.84	-0.61	1.77	46.16				
FOODOUT	1.031	0.255	-0.009	-0.037	0.133	0.069	0.044	-4.39	0.396	0.395	513	1.4351852
t-values	47.63	5.13	-11.8	-3.82	3.52	1.9	1.16	-20.28				
TOBACCO	0.203	-0.117	0.0015	0.0055	0.064	-0.135	-0.19	4.58	0.022	0.018	5.86	-18.19635
t-values	4.63	-1.14	0.83	0.28	0.8	-1.75	-2.25	10.17				
ALCOHOL2	0.765	-0.1015	-0.016	-0.157	-0.071	-0.135	-0.062	-1.28	0.114	0.113	68.9	-5.581948
t-values	18.17	-1.02	-10.7	-8.5	-1.04	-1.99	-0.91	-3.06				
HOUSING2	1.104	0.0403	0.003	-0.042	-0.083	-0.088	0.025	-2.28	0.739	0.739	2362	10.4
t-values	109.56	1.75	9.66	-8.95	-4.59	-5.07	1.4	-22.75				
UTILITIES	0.52	0.0363	0.002	0.088	0.023	0.103	-0.207	1.85	0.46	0.45	709	-46.60194
t-values	50.34	1.55	6.6	18.26	1.26	5.79	-10.97	18.04				
HOUSEOPR	1.22	0.068	0.016	-0.028	0.231	0.44	0.044	-8.27	0.315	0.313	295	7.0063694
t-values	38.87	0.97	14.29	-2.07	4.46	8.71	0.84	-25.56				
FURNISH	1.3	-0.1823	-0.0017	-0.316	0.08	0.063	0.039	-7.31	0.265	0.264	238	8.3102493
t-values	35.9	-2.28	-1.33	-2	1.32	1.06	0.63	-20.43				
CLOTHING	0.973	0.124	-0.014	0.1	-0.173	-0.133	-0.14	-3.518	0.407	0.406	543	-1.173913
t-values	42.22	2.34	-16.32	9.45	-4.22	-3.36	-3.38	-15.35				
PERSCARE	0.751	0.25	0.007	0.029	-0.103	-0.014	-0.089	-3.87	0.255	0.255	263	-11.16592
t-values	33.64	4.83	8.81	2.9	-2.64	-0.37	-2.27	-17.38				
MEDICAL	0.759	0.2424	0.033	0.025	0.216	0.287	0.022	-3.35	0.286	0.285	312	-9.341085
t-values	29.43	4.18	33.83	2.1	4.79	6.59	0.5	-12.81				
RECREATE	1.143	0.398	-0.008	-0.036	0.002	-0.148	-0.033	-5.35	0.505	0.504	835	7.371134
t-values	58.69	8.99	-10.83	-4.03	0.07	-4.45	-0.94	-27.7				
EDUC	1.0008	0.844	-0.022	0.069	-0.357	-0.238	-0.403	-5.76	0.152	0.149	52	0.0103761
t-values	12.97	4.4	-7.4	2.17	-2.86	-1.9	-3.23	-7.16				
TRANSP2	1.396	-0.241	-0.009	0.012	0.174	0.124	0.046	-5.58	0.527	0.526	905	18.857143
t-values	66.5	-5	-11.98	1.26	4.71	3.49	1.25	-26.54				

Diagram 13. ELASTICITIES IN CONSTANT ELASTICITY FORM

	$\eta>1$	$\eta\approx1$	$\eta<1$
$\varepsilon>0$	RECREATE	FOODOUT CLOTHING EDUC	PERSCARE MEDICAL
$\varepsilon\approx0$	HOUSEOPR HOUSING2		TOBACCO ALCOHOL2 UTILITIES FOODHOME
$\varepsilon<0$	FURNISH TRANSP2		

Table 28. SHARES & WEIGHTED SUM ELASTICITIES, CONSTANT ELASTICITY

CONSTANT ELAS	RATIO	INC ELAS	SUM INC	EDU ELS	SUM EDU
FOODHOME	0.0763	0.337	0.02571	-0.039	-0.00298
FOODOUT	0.0269	1.031	0.02773	0.255	0.00686
TOBACCO	0.0059	0.203	0.00120	-0.117	-0.00069
ALCOHOL2	0.0062	0.765	0.00474	-0.1015	-0.00063
HOUSING2	0.4006	1.104	0.44226	0.0403	0.01614
UTILITIES	0.0555	0.52	0.02886	0.0363	0.00201
HOUSEOPR	0.01315	1.22	0.01604	0.068	0.00089
FURNISH	0.0171	1.3	0.02223	-0.1823	-0.00312
CLOTHING	0.0246	0.973	0.02394	0.124	0.00305
PERSCARE	0.005	0.751	0.00376	0.25	0.00125
MEDICAL	0.0491	0.759	0.03727	0.2424	0.01190
RECREATE	0.0489	1.143	0.05589	0.398	0.01946
EDUC	0.0163	1.0008	0.01631	0.844	0.01376
TRANSP2	0.1557	1.396	0.21736	-0.241	-0.03752
SUM RATIOS	0.90125	WGHT INC	0.92330	WGHT EDU	0.03040
PERSINS	0.0652	1.08	0.070416	0.184	0.011997
MISCELCON	0.0139	0.897	0.012468	0.008	0.000111
CHARITY	0.0204	0.99	0.020196	0.396	0.008078
SUM RATIOS	1.00075	WGHT INC	1.02638	WGHT EDU	0.05058

Table 29. SHARES & WEIGHTED SUM ELASTICITIES, LINEAR

LINEAR	RATIO	INC ELAS	SUM INC	EDU ELS	SUM EDU
FOODHOME	0.0763	0.275	0.02098	0.046	0.00351
FOODOUT	0.0269	1.002	0.02695	0.192	0.00516
TOBACCO	0.0059	0.084	0.00050	-0.939	-0.00554
ALCOHOL2	0.0062	0.996	0.00618	-0.121	-0.00075
HOUSING2	0.4006	1.123	0.44997	0.040	0.01612
UTILITIES	0.0555	0.396	0.02198	0.093	0.00516
HOUSEOPR	0.01315	1.369	0.01800	0.243	0.00320
FURNISH	0.0171	1.514	0.02589	-0.468	-0.00800
CLOTHING	0.0246	0.973	0.02394	0.042	0.00103
PERSCARE	0.005	0.747	0.00374	0.253	0.00127
MEDICAL	0.0491	0.61	0.02995	0.235	0.01154
RECREATE	0.0489	1.103	0.05394	0.229	0.01120
EDUC	0.0163	1.621	0.02642	0.983	0.01602
TRANSP2	0.1557	1.22	0.18995	-0.628	-0.09778
SUM RATIOS	0.90125	WGHT INC	0.89838	WGHT EDU	-0.03786
PERSINS	0.0652	0.93	0.060636	0.43	0.028036
MISCELCON	0.0139	0.86	0.011954	-0.003	-4.17E-05
CHARITY	0.0204	1.42	0.028968	0.4	0.00816
SUM RATIOS	1.00075	WGHT INC	0.99994	WGHT EDU	-0.00171

Table 30. REGRESSION RESULTS, SEMILOG FORM

Item	ln C	E	A	F	M	S	W	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test
FOODHOME	1179	4.05	7.24	716.82	-385.62	-199.77	33.49	**0.292**	**0.0135**	**0.473**	0.472	752
t-values	32.11	0.54	5.25	42.28	-5.9	-3.19	0.51	**-76**	**0.53**			
FOODOUT	1309.6	26.49	-4.94	-57.8	52.02	-0.96	-91.15	**0.920**	**0.250**	**0.268**	0.267	306
t-values	36.84	3.63	-3.7	-3.52	0.82	-0.02	-1.42	**-2.85**	**3.6**			
TOBACCO	75.57	-26.58	-3.57	14.87	26.17	-46.40	-79.33	**0.241**	**-1.141**	**0.026**	0.025	22.4
t-values	4.84	-8.29	-6.08	2.06	0.94	-1.74	-2.82	**-15**	**-8**			
ALCOHOL2	306.9	-3.015	-6.27	-72.06	-21.2	-59	30.72	**0.933**	**-0.123**	**0.141**	0.14	138
t-values	24.09	-1.15	-13.09	-12.25	-0.94	-2.71	1.34	**-1.5**	**-1.15**			
HOUSING2	20687	206.3	32.04	-926.8	-2047.15	-2305.45	687.25	**0.977**	**0.131**	0.581	0.581	1162
t-values	73.85	3.59	3.04	-7.17	-4.11	-4.82	1.36	**-1.5**	**3.5**			
UTILITIES	1202	7.2	7.64	243.82	-32.55	132.84	-510.32	**0.410**	**0.033**	**0.454**	0.453	696
t-values	47.69	1.39	8.07	20.95	-0.73	3.09	-11.23	**-66**	**1.4**			
HOUSEOPR	766.63	24.55	7.42	-18.68	72.35	218.54	85.25	**1.102**	**0.4744**	0.2	0.19	209
t-values	30.04	4.69	7.74	-1.59	1.59	5.02	1.85	**2.36**	**4.66**			
FURNISH	1157	-18	-2.41	-53.8	36.61	-41.45	11.94	**1.274**	**-0.2663**	**0.173**	0.172	175
t-values	30.25	-2.29	-1.68	-3.05	0.54	-0.63	0.17	**5.26**	**-2.28**			
CLOTHING	1090	12.07	-8.54	77.26	-292.8	-271.7	-283.6	**0.836**	**0.1243**	**0.296**	0.296	353
t-values	35.56	1.92	-7.41	5.46	-5.37	-5.19	-5.13	**-6.29**	**1.91**			
PERSCARE	190.65	5.01	1.72	-0.011	-14.39	-6.86	-9.007	**0.709**	**0.2502**	**0.218**	0.217	233
t-values	31.71	4.06	7.61	0	-1.35	-0.67	-0.83	**-12**	**4**			
MEDICAL	1734	20.3	60.51	-13.33	303.17	629.7	168.15	**0.667**	**0.105**	**0.163**	0.162	163
t-values	22.92	1.31	21.26	-0.38	2.25	4.88	1.23	**-10**	**1.3**			
RECREATE	2483	61.03	-9.57	-26.27	84.78	-252.5	57.23	**0.959**	**0.3168**	**0.297**	0.297	355
t-values	37.92	4.54	-3.89	-0.87	0.73	-2.26	0.48	**-1.4**	**4.5**			
EDUC	928	99.75	-5.63	186.61	-235.3	-356.87	-377.61	**1.073**	**1.5504**	**0.115**	0.114	110
t-values	14.85	7.78	-2.4	6.47	-2.12	-3.35	-3.35	**0.86**	**7.4**			
TRANSP2	9699.7	-418.8	-46.72	-270.9	740.33	610.7	121.6	**1.178**	**-0.6835**	**0.345**	0.345	442
t-values	49.18	-10.35	-6.3	-2.98	2.11	1.81	0.34	**6.16**	**-10.2**			

Diagram 14. ELASTICITIES IN SEMILOG FORM

	η>1	*η≈1*	*η<1*
ε>0	HOUSEOPR	HOUSING2 RECREATE EDUC	PERSCARE FOODOUT
ε ≈0		ALCOHOL2	MEDICAL UTILITIES FOODHOME CLOTHING
ε<0	FURNISH TRANSP2		TOBACCO

Table 31. SHARES & WEIGHTED SUM ELASTICITIES, SEMILOG FORM

SEMILOG	RATIO	INC ELAS	SUM INC	EDU ELS	SUM EDU
FOODHOME	0.0763	0.292	0.02228	0.0135	0.00103
FOODOUT	0.0269	0.920	0.02474	0.250	0.00672
TOBACCO	0.0059	0.241	0.00142	-1.141	-0.00673
ALCOHOL2	0.0062	0.933	0.00578	-0.123	-0.00076
HOUSING2	0.4006	0.977	0.39139	0.131	0.05244
UTILITIES	0.0555	0.410	0.02273	0.033	0.00183
HOUSEOPR	0.01315	1.102	0.01450	0.4744	0.00624
FURNISH	0.0171	1.274	0.02179	-0.26630327	-0.00455
CLOTHING	0.0246	0.836	0.02056	0.1243	0.00306
PERSCARE	0.005	0.709	0.00354	0.2502	0.00125
MEDICAL	0.0491	0.667	0.03277	0.105	0.00515
RECREATE	0.0489	0.959	0.04691	0.3168	0.01549
EDUC	0.0163	1.073	0.01749	1.5504	0.02527
TRANSP2	0.1557	1.178	0.18342	-0.68350224	-0.10642
SUM RATIOS	**0.90125**	**WGHT INC**	**0.80932**	**WGHT EDU**	**0.00002**
PERSINS	0.0652	0.89	0.058028	0.399	0.0260148
MISCELCON	0.0139	0.85	0.011815	-0.075	-0.0010425
CHARITY	0.0204	0.95	0.01938	0.872	0.0177888
SUM RATIOS	**1.00075**	**WGHT INC**	**0.89855**	**WGHT EDU**	**0.04278**

Table 32. REGRESSION RESULTS, DOUBLE LOG FORM

ln Item	ln C	E	A	F	M	S	W	Constant	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test
FOODHOME	0.335	-0.002	0.001	0.182	-0.078	-0.008	0.029	4.102	**0.335**	**-0.027**	0.506	0.505	856
t-values	36.49	-1.24	2.93	42.89	-4.83	-0.57	1.8	46.04	**-72**	**-1.24**			
FOODOUT	1.016	0.025	-0.009	-0.036	0.135	0.0702	0.045	-3.93	**1.016**	**0.336**	**0.396**	0.396	515
t-values	46.21	5.8	-11.74	-3.74	3.6	1.92	1.19	-18.4	**0.77**	**5.8**			
TOBACCO	0.231	-0.0269	0.0012	-0.002	0.062	-0.142	-0.192	4.37	**0.231**	**-0.361**	**0.025**	0.021	6.7
t-values	5.22	-2.65	0.62	-0.09	0.78	-1.84	-2.28	10.07	**-17**	**-2.65**			
ALCOHOL2	0.76	-0.0104	-0.016	-0.154	-0.073	-0.131	-0.055	-1.361	**0.76**	-0.140	0.113	0.111	68
t-values	17.84	-1.25	-10.69	-8.4	-1.06	-1.93	-0.8	-3.29	**-5.6**	**-1.25**			
HOUSING2	1.1	0.005	0.003	-0.041	-0.082	-0.087	0.026	-2.19	**1.1**	**0.067**	**0.740**	0.74	2375
t-values	107.25	2.58	9.88	-8.82	-4.53	-5.01	1.44	-22.1	**9.6**	**2.58**			
UTILITIES	0.53	-0.0005	0.0023	0.085	0.023	0.102	-0.213	1.83	**0.53**	-0.007	0.46	0.45	711
t-values	50.25	-0.23	5.96	17.6	1.27	5.7	-11.19	17.89	**-44**	**-0.23**			
HOUSEOPR	1.21	0.008	0.016	-0.027	0.231	0.439	0.044	-8.14	**1.21**	**0.108**	**0.314**	0.313	295
t-values	38.28	1.31	14.3	-2.03	4.45	8.68	0.85	-25.38	**6.79**	**1.31**			
FURNISH	1.3	-0.018	-0.0018	-0.032	0.081	0.064	0.037	-7.62	**1.3**	**-0.242**	**0.266**	0.265	240
t-values	35.55	-2.45	-1.33	-2.08	1.32	1.07	0.61	-21.32	**8.3**	**-2.45**			
CLOTHING	0.963	0.013	-0.014	0.102	-0.169	-0.132	-0.138	-3.28	**0.963**	**0.175**	**0.407**	0.406	544
t-values	41.07	2.77	-16.28	9.66	-4.12	-3.34	-3.33	-14.46	**-1.56**	**2.77**			
PERSCARE	0.744	0.0223	0.007	0.031	-0.1	-0.014	-0.089	-3.46	**0.744**	**0.300**	**0.255**	0.254	264
t-values	32.84	4.91	8.83	3.01	-2.56	-0.38	-2.26	-15.7	**-11.27**	**4.91**			
MEDICAL	0.782	0.012	0.032	0.018	0.215	0.283	0.016	-3.09	**0.782**	**0.1613**	**0.284**	0.283	310
t-values	29.79	2.3	33.36	1.58	4.76	6.49	0.36	-11.88	**-8.28**	**2.3**			
RECREATE	1.14	0.037	-0.008	-0.039	0.006	-0.149	-0.041	-4.79	**1.14**	**0.4972**	**0.506**	0.505	842
t-values	57.5	9.15	-11.04	-4.39	0.18	-4.47	-1.17	-24.9	**7.1**	**9.15**			
EDUC	0.979	0.0713	-0.023	0.074	-0.349	-0.239	-0.401	-4.33	**0.979**	**0.9581**	**0.153**	0.15	52
t-values	12.56	4.78	-7.5	2.3	-2.8	-1.91	-3.22	-5.57	**-0.27**	**4.78**			
TRANSP2	1.43	-0.032	-0.009	0.007	0.168	0.121	0.047	-6.06	**1.43**	**-0.430**	**0.53**	0.52	919
t-values	66.9	-7.4	-12.39	0.73	4.56	3.42	1.27	-29.21	**20**	**-7.4**			

Diagram 15. ELASTICITIES IN DOUBLE LOG FORM

	$\eta>1$	$\eta\approx1$	$\eta<1$
$\varepsilon>0$	HOUSING2 RECREATE	CLOTHING EDUC FOODOUT	PERSCARE MEDICAL
$\varepsilon \approx 0$	HOUSEOPR		UTILITIES FOODHOME ALCOHOL2
$\varepsilon<0$	FURNISH TRANSP2		TOBACCO

Table 33. SHARES & WEIGHTED SUM ELASTICITIES, DOUBLE LOG FORM

DOUBLE LOG	RATIO	INC ELAS	SUM INC	EDU ELS	SUM EDU
FOODHOME	0.0763	0.335	0.02556	-0.027	-0.00205
FOODOUT	0.0269	1.016	0.02733	0.336	0.00904
TOBACCO	0.0059	0.231	0.00136	-0.361	-0.00213
ALCOHOL2	0.0062	0.76	0.00471	-0.140	-0.00087
HOUSING2	0.4006	1.1	0.44066	0.067	0.02692
UTILITIES	0.0555	0.53	0.02942	-0.007	-0.00037
HOUSEOPR	0.01315	1.21	0.01591	0.108	0.00141
FURNISH	0.0171	1.3	0.02223	-0.242	-0.00414
CLOTHING	0.0246	0.963	0.02369	0.175	0.00430
PERSCARE	0.005	0.744	0.00372	0.300	0.00150
MEDICAL	0.0491	0.782	0.03840	0.1613	0.00792
RECREATE	0.0489	1.14	0.05575	0.4972	0.02431
EDUC	0.0163	0.979	0.01596	0.9581	0.01562
TRANSP2	0.1557	1.43	0.22265	-0.430	-0.06695
SUM RATIOS	0.90125	WGHT INC	0.92734	WGHT EDU	0.01451
PERSINS	0.0652	1.066	0.0695032	0.269	0.0175388
MISCELCON	0.0139	0.9	0.01251	-0.013	-0.0001807
CHARITY	0.0204	0.953	0.0194412	0.645	0.013158
SUM RATIOS	1.00075	WGHT INC	1.02880	WGHT EDU	0.04502

Table 34. REGRESSION RESULTS, INTERACTION FORM

ln Item	ln C	ln E	ln C* ln E	ln C* ln A	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test
FOODHOME	-0.0049	-0.762	0.069	0.003	**0.332**	**-0.028**	0.51	0.5	674
t-values	-0.07	-3.28	3.07	6.56	**-73**	**-1.18**			
FOODOUT	0.522	-0.635	0.083	0.005	**1.029**	**0.248**	0.399	0.398	404
t-values	3.03	-1.05	1.45	4.85	**1.64**	**5**			
TOBACCO	1.452	4.897	-0.488	1.56E-06	**0.203**	**-0.300**	0.031	0.026	6.5
t-values	3.98	3.93	-4.05	0	**-18**	**-2.7**			
ALCOHOL2	-0.0126	-2.35	0.211	0.004	**0.788**	**-0.103**	0.116	0.114	54
t-values	-0.04	-1.94	1.85	1.9	**-5.34**	**-0.980**			
HOUSING2	1.145	-0.57	0.06	-0.003	**1.105**	**0.078**	0.742	0.741	1865
t-values	15.01	-2.2	2.42	-7.14	**10**	**3.100**			
UTILITIES	0.7	1.236	-0.117	0.002	**0.523**	**-0.016**	0.464	0.464	562
t-values	8.98	4.67	-4.59	4.44	**-46**	**-0.620**			
HOUSEOPR	1.403	-0.35	0.041	-0.005	**1.225**	**0.090**	0.316	0.315	232
t-values	5.3	-0.38	0.47	-3.14	**7**	**1.270**			
FURNISH	0.996	-1.48	0.125	-0.0005	**1.290**	**-0.149**	0.265	0.264	185
t-values	3.63	-1.56	1.38	-0.25	**8**	**-1.800**			
CLOTHING	0.197	-1.624	0.167	0.006	**0.970**	**0.153**	0.411	0.410	428
t-values	1.12	-2.66	2.84	5.36	**-1.06**	**2.740**			
PERSCARE	0.0963	-2.161	0.231	0.001	**0.741**	**0.308**	0.258	0.256	207
t-values	0.55	-3.57	3.99	0.84	**-11.4**	**5.760**			
MEDICAL	1.705	2.62	-0.227	-0.007	**0.777**	**0.198**	0.290	0.280	247
t-values	8.58	3.9	-3.52	-4.81	**-8.7**	**3.24**			
RECREATE	0.96	-0.083	0.046	0.001	**1.140**	**0.409**	0.505	0.504	649
t-values	6.51	-0.17	0.95	1.18	**7.3**	**8.6**			
EDUC	0.194	0.4	0.036	0.015	**1.112**	**0.784**	0.156	0.152	42
t-values	0.25	0.13	0.13	3.28	**1.24**	**3.75**			
TRANSP2	2.781	6.005	-0.602	0.0036	**1.426**	**-0.403**	0.538	0.537	736
t-values	16.54	10.19	-10.67	3.08	**20**	**-8.11**			

Diagram 16. ELASTICITIES IN INTERACTION FORM

	$\eta>1$	$\eta\approx1$	$\eta<1$
$\varepsilon>0$	HOUSING2 RECREATE FOODOUT	CLOTHING EDUC	PERSCARE MEDICAL
$\varepsilon\approx0$	HOUSEOPR FURNISH		UTILITIES FOODHOME ALCOHOL2
$\varepsilon<0$	TRANSP2		TOBACCO

Table 35. SHARES & WEIGHTED ELASTICITIES, INTERACTION FORM

INTERACTION	RATIO	INC ELAS	EDU ELS	SUM INC	SUM EDU
FOODHOME	0.0763	0.332	-0.028	0.02531	-0.00212
FOODOUT	0.0269	1.029	0.248	0.02767	0.00667
TOBACCO	0.0059	0.203	-0.300	0.00120	-0.00177
ALCOHOL2	0.0062	0.788	-0.103	0.00489	-0.00064
HOUSING2	0.4006	1.105	0.078	0.44249	0.03105
UTILITIES	0.0555	0.523	-0.016	0.02901	-0.00091
HOUSEOPR	0.01315	1.225	0.090	0.01611	0.00118
FURNISH	0.0171	1.290	-0.149	0.02206	-0.00254
CLOTHING	0.0246	0.970	0.153	0.02386	0.00378
PERSCARE	0.005	0.741	0.308	0.00371	0.00154
MEDICAL	0.0491	0.777	0.198	0.03816	0.00973
RECREATE	0.0489	1.140	0.409	0.05576	0.02000
EDUC	0.0163	1.112	0.784	0.01813	0.01279
TRANSP2	0.1557	1.426	-0.403	0.22209	-0.06276
SUM RATIOS	0.90125	WGHT INC	WGHT EDU	0.93044	0.01599
PERSINS	0.0652	1.078	0.192	0.0702856	0.0125184
MISCELCON	0.0139	0.914	-0.015	0.0127046	-0.000209
CHARITY	0.0204	0.959	0.477	0.0195636	0.0097308
SUM RATIOS	1.00075	WGHT INC	WGHT EDU	1.03299	0.03803

C1. DETAILED ITEMS, GROUPED DATA

Table 36. SHARES & WEIGHTED SUM ELASTICITIES, CONSTANT ELASTICITY

CONST.ELAS	ITEM	RATIO	INC ELAS	EDU ELS	WGHT INC	WGHT EDU
FOOD HOME	FOOD HOME	0.081	0.351	-0.077	0.02843	-0.00624
FOOD OUT	FOOD OUT	0.0258	1.145	0.055	0.02954	0.00142
TOBACCO	TOBACCO	0.0059	0.252	-0.333	0.00149	-0.00196
ALCOHOL	ALCOHOL IN	0.0036	0.448	-0.238	0.00161	-0.00086
NITECLUB	ALCOHOL OUT	0.0026	1.49	0.008	0.00387	0.00002
RENTHOME	RENT	0.0364	0.197	0.007	0.00717	0.00025
OWNOCCUP	RENTAL EQUIVALENT OF OWNED HOME	0.1934	0.843	0.233	0.16304	0.04506
OHINT	OWNED HOME MORTGAGE INTEREST	0.0673	1.41	0.26	0.09489	0.01750
OHTAX	OWNED HOME PROPERTY TAX	0.0301	1.03	0.202	0.03100	0.00608
OHMAINT	OWNED HOME REPAIRS	0.0168	1.03	0.519	0.01730	0.00872
HOUSADD	OTHER HOME ADDITIONS & ALTERATION	0.0143	1.79	0.614	0.02560	0.00878
RENTOTHR	LODGING OUT OF TOWN	0.0061	1.51	0.91	0.00921	0.00555
UTILITIES2	UTILITIES	0.0377	0.367	0.157	0.01384	0.00592
TELEPHON	TELEPHONE	0.0192	0.481	0.015	0.00924	0.00029
SERVANTS	HOUSEHOLD SERVICES	0.0129	1.21	0.414	0.01561	0.00534
HOUSUPPL	HOUSEHOLD SUPPLIES	0	0.000	0.000	0.00000	0.00000
FURNISH	HOUSEHOLD FURNITURE & DURABLE EQP	0.0165	1.18	-0.11	0.01947	-0.00182
CLOTHES	CLOTHING & SHOES	0.0204	0.993	0.089	0.02026	0.00182
TAILORS	CLOTHING SERVICES	0.0023	0.806	0.265	0.00185	0.00061
JEWELRY	JEWELRY & WATCHES	0.0025	1.51	0.174	0.00378	0.00044
HLTHBEAU	PERSONAL CARE SERVICES	0.0051	0.76	0.347	0.00388	0.00177
TOILETRY	PERSONAL CARE SUPPLIES	0	0.000	0.000	0.00000	0.00000
HELTHINS	MEDICAL PREMIA	0.0252	0.429	0.583	0.01081	0.01469
HOSPITAL	MEDICAL HOSPITAL	0.0019	0.711	0.357	0.00135	0.00068
NURSHOME	MEDICAL OUTSIDE HOSPITAL	0.0002	0.508	-2.26	0.00010	-0.00045
DOCTORS	MEDICAL, DENTAL, EYE ETC.	0.011	0.904	0.667	0.00994	0.00734
ORTHOPD	MEDICAL APPLIANCES	0.0016	0.692	0.89	0.00111	0.00142
DRUGS	MEDICAL DRUGS	0.0083	0.198	0.44	0.00164	0.00365
RECSPORT	TV, RADIO, PARTICIPATION SPORTS	0.0126	1.4	0.288	0.01764	0.00363
OTHREC	SPECTATOR ADMISSION, CLUB,PET,TOYS	0.0247	0.99	0.5	0.02445	0.01235
READING	READING	0.0077	0.989	0.5	0.00762	0.00385
HIGHEDU	HIGHER EDUCATION EXPENSES	0.0071	2.31	0.57	0.01640	0.00405

Table 36. Continued

CONST.ELAS	ITEM	RATIO	INC ELAS	EDU ELS	WGHT INC	WGHT EDU
LOWEDU	NURSERY,ELEMENTARY & SECONDARY EX	0.0053	1.69	0.239	0.00896	0.00127
OTHEDU	OTHER EDUCATION SERVICES	0.0013	2.14	0.425	0.00278	0.00055
AUTOS	AUTOMOBILE PURCHASE	0.0739	1.04	-0.369	0.07686	-0.02727
AUTOOPR	AUTOMOBILE OPERATIONS	0.0721	0.81	-0.052	0.05840	-0.00375
TRAVEL	PUBLIC TRANSPORTATION	0.0079	0.92	0.176	0.00727	0.00139
MISCELCON	MISCELLANEOUS PERS.CONS. EXPENDIT	0.0147	0.836	0.109	0.01229	0.00160
PERSINS	PERSONAL INSURANCE(PREMIA,LIFE INS)	0.0616	2.58	-1.05	0.15893	-0.06468
CHARITY	GIFTS & CONTRIBUTIONS	0.0192	1.27	0.558	0.02438	0.01071
	SUM RATIOS	**0.9562**			**0.94201**	**0.06972**
OHPRINC	OWNED HOUSE MORTGAGE PRINCIPAL	0.0306	1.364	0.337	0.0417384	0.0103122
OHLUMP	OWNED HOUSE MORTGAGE LUMP PMTS	0.0052	2.22	0.337	0.011544	0.0017524
OHTRANS	OWNED HOUSE TRANSACTION COSTS	0.0026	1.36	-0.447	0.003536	-0.001162
PPROPTAX	PERSONAL PROPERTY TAXES	0.0005	2.35	-0.988	0.001175	-0.000494
OTHTAX	OTHER TAX NOT INCLUDED IN PROP TAX	0.003	1.6	-0.0935	0.0048	-0.000281
	SUM RATIOS	**0.9981**	**WGHT INC**	**WGHT EDU**	**1.00480**	**0.07985**

Table 37. REGRESSION RESULTS, LINEAR FORM

Item	C	E	A	F	M	S	W	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
FOODHOME	0.025	-22.33	-10.27	727	-352	-166	19.7	**0.332**	**-0.074**	0.92	0.91	244
t-values	13.57	-1.45	-1.44	8.92	-4.58	-2.24	0.25	**-27.14**	**-1.44**			
FOODOUT	0.0303	17.7	-3.46	-5.85	106	63.12	-105	**1.120**	**0.166**	0.93	0.92	297
t-values	22.3	1.58	-0.67	-0.1	1.9	1.17	-1.87	**2.32**	**1.57**			
TOBACCO	-0.0002	-27.49	-10.8	1.39	18.1	-65.70	-81	**-0.041**	**-1.180**	0.24	0.2	7
t-values	-0.28	-3.76	-3.22	0.04	0.5	-1.87	-2.2	**-6.98**	**-3.72**			
ALCOHOL IN	0.004	-6.78	-2.03	-30.37	-19.68	-14.81	21.0	**1.2**	**-0.508**	0.740	0.73	64
t-values	12.12	-2.43	-1.58	-2.06	-1.42	-1.11	1.5	**1.960**	**-2.42**			
ALCOHOL OUT	0.004	-3.32	-4.18	-61.7	6.76	-29.1	7.6	**1.394**	**-0.301**	**0.770**	0.76	72
t-values	12.2	-1.25	-3.41	-4.4	0.51	-2.28	0.57	**3.26**	**-1.25**			
RENT	-0.024	23.7	-27.3	-61.8	-949	-1105	391	**-0.73**	**0.18**	**0.6**	0.58	32
t-values	-6.42	0.76	-1.89	-0.37	-6.08	-7.34	2.47	**-14.88**	**0.75**			
OWN HOME RENTAL EQUIV	0.167	181	48.3	-272	-1029	-648	269	**0.886**	**0.244**	**0.936**	0.933	314
t-values	23.13	3.03	1.75	-0.86	-3.45	-2.26	0.89	**-2.89**	**3.02**			
OWN HOME MTGE INT	0.098	10.99	-22.5	-222	273	661	987	**1.52**	**0.043**	**0.900**	0.89	198
t-values	18.62	0.25	-1.11	-0.96	1.25	3.15	4.46	**5.97**	**0.25**			
OWN HOME PROP TAX	0.031	24.53	18.59	-26.48	-413	-683	-916	**1.14**	**0.225**	**0.830**	0.820	110
t-values	13.67	1.29	2.11	-0.26	-4.35	-7.47	-9.5	**1.62**	**1.28**			
OWN HOME REPAIRS	0.018	27.04	1.91	-72.19	30.4	-11.12	5.46	**1.02**	**0.39**	**0.590**	0.570	31
t-values	7.23	1.31	0.2	-0.66	0.3	-0.11	0.05	**0.16**	**1.30**			
OWN HOME OTHER ADDITIONS	0.032	-37.19	6.26	-71.23	67.56	-141	84.8	**2.05**	**-0.60**	**0.470**	**0.450**	19
t-values	6.69	-0.92	0.34	-0.34	0.34	-0.73	0.42	**3.05**	**-0.92**			
LODGING OUT OF TOWN	0.013	5.15	5.77	-70.7	44.8	59.1	3.41	**2.13**	**0.203**	**0.810**	**0.800**	93
t-values	14.64	0.66	1.61	-1.73	1.16	1.58	0.09	**6.87**	**0.66**			
UTILITIES2	0.012	16.86	5.43	225	-21.4	28.55	-437	**0.334**	**0.117**	**0.866**	**0.860**	139
t-values	11.74	1.96	1.36	4.95	-0.5	0.69	-10.02	**-23.30**	**1.95**			

Table 37. Continued

Item	C	E	A	F	M	S	W	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
TELEPHONE	0.008	0.926	-6.29	58.2	9.21	114	-78.7	**0.465**	**0.012**	**0.889**	**0.883**	172
t-values	14.64	0.19	-2.73	2.21	0.37	4.78	-3.12	**-16.7**	**0.185**			
HOUSEHOLD SERVICES	0.017	26.23	16.3	-50.8	116	264	110	**1.315**	**0.509**	**0.820**	**0.810**	98
t-values	14.25	2.62	3.53	-0.96	2.35	5.5	2.17	**3.24**	**2.62**			
FURNISH	0.022	-12.6	-3.69	-16.04	71.6	-15.8	22.2	1.33	-0.187	0.857	0.851	129
t-values	15.69	-1.05	-0.66	-0.25	1.19	-0.27	0.36	3.74	-1.04			
CLOTHING & SHOES	0.021	-7	-4.69	58.73	-138	-135.00	-205.00	**1.067**	**-0.087**	**0.906**	0.902	208
t-values	18.53	-0.72	-1.05	1.15	-2.86	-2.91	-4.19	**1.13**	**-0.72**			
CLOTHING SERVICES	0.003	-0.685	2.42	-9.77	-45.11	-9.33	-23.21	**1.433**	**-0.080**	**0.660**	0.65	43
t-values	10.28	-0.27	2.1	-0.74	-3.62	-0.78	-1.83	**2.92**	**-0.27**			
JEWELRY & WATCHES	0.003	-3.83	-0.498	-12.67	-44.1	-48.46	-42.84	**1.8**	**-0.457**	**0.600**	0.58	33
t-values	8.34	-1	-0.28	-0.63	-2.31	-2.64	-2.21	**3.4**	**-1**			
PERS CARE SERVICES	0.005	2	1.88	-0.88	-5.9	2.34	-11.8	**0.96**	**0.099**	**0.9**	0.89	194
t-values	19.55	0.96	1.97	-0.08	-0.57	0.24	-1.13	**-0.76**	**0.96**			
MEDICAL PREMIA	0.004	57.35	19.8	187	38.2	87.3	-79.6	**0.188**	**0.574**	**0.43**	0.41	17
t-values	2.88	4.18	3.13	2.58	0.56	1.32	-1.15	**-12.4**	**4.17**			
MEDICAL HOSPITAL	0.0006	-4.9	-0.73	-12.3	50	60	40.3	**0.388**	**-0.744**	**0.048**	0.0044	1.1
t-values	1.05	-0.96	-0.31	-0.46	1.96	2.44	1.56	**-1.640**	**-0.95**			0.36
MEDICAL OUTSIDE HOSPITAL	0.00001	1.49	-0.14	6.14	-17.8	-27.3	-14.7	**0.075**	**1.524**	**0.03**	-0.0074	0.84
t-values	0.05	0.49	-0.1	0.38	-1.16	-1.84	-0.94	**-0.61**	**0.470**			0.56
MEDICAL, DENTAL, EYE	0.007	41.2	9.45	46.6	71.9	254	210	**0.59**	**0.863**	**0.38**	0.35	14
t-values	3.48	2.42	1.2	0.52	0.85	3.1	2.43	**-2.380**	**2.4**			
MEDICAL APPLIANCES	0.0006	8.25	2.09	22.86	11.58	-10.06	13.60	**0.375**	**1.236**	0.38	0.35	13
t-values	2.2	3.45	1.9	1.81	0.97	-0.88	1.12	**-3.65**	**3.4**			
MEDICAL DRUGS	-0.0001	14.65	15.24	68.5	101	184	-8.09	**-0.0168**	**0.455**	**0.31**	0.28	10
t-values	-0.16	2.03	4.56	1.79	2.8	5.3	-0.22	**-9.5**	**2.02**			

Table 37. Continued

Item	C	E	A	F	M	S	W	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
TV, RADIO, SPORTS	0.018	-4.96	-14.09	-85.19	232	63.86	210	**1.349**	**-0.0918**	**0.67**	0.65	44
t-values	8.39	-0.27	-1.67	-0.88	2.55	0.73	2.28	**2.06**	**-0.27**			
CLUB, ADMISSION SPECT FEES, PETS,TOYS	0.031	27.79	6.04	-65.4	-42.6	-88.1	-103	**1.217**	**0.275**	**0.93**	0.93	279
t-values	22.39	2.41	1.13	-1.07	-0.74	-1.59	-1.78	**3.82**	**2.4**			
READING	0.008	12.6	-1.65	-22.14	49.29	-40.5	-13.4	**1.011**	**0.405**	**0.910**	0.9	227
t-values	17.96	3.42	-0.97	-1.14	2.68	-2.29	-0.72	**0.190**	**3.4**			
HIGHER EDU EXPENSES	0.019	10.2	8	-121	-134	-168	-190	**2.52**	**0.341**	**0.620**	0.6	36
t-values	8.84	0.57	0.96	-1.28	-1.5	-1.95	-2.09	**4.51**	**0.56**			
LOWER EDU EXPENSES	0.015	14.4	4.25	27.3	-93.4	-93	-251	**2.190**	**0.535**	**0.72**	0.71	57
t-values	9.7	1.13	0.72	0.4	-1.46	-1.51	-3.87	**4.63**	**1.12**			
OTHER EDU SERVICES	0.003	5.71	3.1	-25.3	50.2	40.8	61.1	**2.155**	**0.932**	**0.57**	0.56	30
t-values	7.74	1.59	1.87	-1.34	2.81	2.37	3.36	**3.65**	**1.58**			
AUTOMOBIL PURCHASE	0.072	-156	-42.9	275	697	465	56.8	**0.959**	**-0.532**	**0.64**	0.62	39
t-values	8.3	-2.19	-1.3	0.73	1.95	1.35	0.16	**-0.34**	**-2.18**			
AUTOMOBIL OPERATION	0.056	-70.5	-58.9	262	290	224	23.1	**0.773**	**-0.245**	**0.908**	0.903	212
t-values	17.07	-2.58	-4.67	1.82	2.13	1.71	0.17	**-4.9**	**-2.58**			
PUBLIC TRANSPORT	0.01	27.3	11.9	33.7	-103	-132	-7.18	**1.371**	**0.911**	**0.74**	0.73	64
t-values	9.48	3	2.83	0.7	-2.27	-3.03	-0.16	**2.43**	**2.97**			
MISCELLANS CONS EXP	0.008	6.21	-3.03	-15.3	7.6	26.49	106	**0.5998**	**0.1147**	**0.41**	0.38	15
t-values	4.68	0.43	-0.45	-0.2	0.1	0.38	1.44	**-3.08**	**0.425**			
PERSONAL INSURANCE	0.139	-248	-17.6	-355	152	459	-674	2.15	**-0.97**	**0.88**	0.87	161
t-values	20.05	-4.3	-0.66	-1.17	0.53	1.66	-2.31	**9.47**	**-4.2**			
GIFTS & CONTRIBUTE	0.027	56.9	41.4	-50.3	488	484	482	1.343	**0.71**	**0.66**	0.65	43
t-values	9.3	2.34	3.69	-0.39	4.03	4.14	3.91	**2.25**	**2.33**			

Diagram 17. ELASTICITIES IN LINEAR FORM

	$\eta>1$	$\eta\approx1$	$\eta<1$
$\varepsilon>0$	GIFTS & CONTRIBUTIONS PUBLIC TRANSPORTATION HOUSEHOLD SERVICES CLUB,ADMISSION,SPECT FEES,PETS,TOYS	READING	OWN HOME RENTAL EQUIV MEDICAL PREMIA MEDICAL,DENTAL,EYE MEDICAL APPLIANCES MEDICAL DRUGS
$\varepsilon\approx0$	FOODOUT OWN HOME OTH ADD LODGING OUT OF TOWN FURNISH CLOTHING SERVICES JEWELRY & WATCHES TV,RADIO,SPORTS OWN HOME MTGE INT ALCOHOL OUT HIGHER EDU EXPENSES LOWER EDU EXPENSES OTHER EDU EXPENSES	OWN HOME PROP TAX OWN HOME REPAIRS CLOTHING & SHOES PERSONAL CARE SERVICES MEDICAL OUTSIDE HOSPITAL	FOODHOME RENT UTILITIES2 TELEPHONE MEDICAL HOSPITAL MISCELLANS CONS EXPENDITURES
$\varepsilon<0$	ALCOHOL IN PERSONAL INSURANCE	AUTOMOBILE PURCHASE	TOBACCO AUTOMOBILE OPERATION

Table 38. SHARES & WEIGHTED SUM ELASTICITIES, LINEAR FORM

LINEAR	ITEM	RATIO	INC ELAS	EDU ELS	WGHT INC	WGHT EDU
FOOD HOME	FOOD HOME	0.081	0.332	-0.074	0.02689	-0.00599
FOOD OUT	FOOD OUT	0.0258	1.120	0.166	0.02890	0.00428
TOBACCO	TOBACCO	0.0059	-0.041	-1.180	-0.00024	-0.00696
ALCOHOL	ALCOHOL IN	0.0036	1.2	-0.508	0.00432	-0.00183
NITECLUB	ALCOHOL OUT	0.0026	1.394	-0.301	0.00362	-0.00078
RENTHOME	RENT	0.0364	-0.73	0.18	-0.02657	0.00655
OWNOCCUP	RENTAL EQUIVALENT OF OWNED HOME	0.1934	0.89	0.244	0.17135	0.04719
OHINT	OWNED HOME MORTGAGE INTEREST	0.0673	1.52	0.043	0.10230	0.00289
OHTAX	OWNED HOME PROPERTY TAX	0.0301	1.14	0.225	0.03431	0.00677
OHMAINT	OWNED HOME REPAIRS	0.0168	1.02	0.39	0.01719	0.00655
HOUSADD	OTHER HOME ADDITIONS & ALTERATION	0.0143	2.05	-0.60	0.02932	-0.00851
RENTOTHR	LODGING OUT OF TOWN	0.0061	2.13	0.203	0.01299	0.00124
UTILITIES2	UTILITIES	0.0377	0.334	0.117	0.01259	0.00441
TELEPHON	TELEPHONE	0.0192	0.465	0.012	0.00893	0.00023
SERVANTS	HOUSEHOLD SERVICES	0.0129	1.315	0.509	0.01696	0.00657
HOUSUPPL	HOUSEHOLD SUPPLIES	0			0.00000	0.00000
FURNISH	HOUSEHOLD FURNITURE & DURABLE EQP	0.0165	1.33	-0.187	0.02195	-0.00309
CLOTHES	CLOTHING & SHOES	0.0204	1.067	-0.087	0.02177	-0.00177
TAILORS	CLOTHING SERVICES	0.0023	1.433	-0.080	0.00330	-0.00018
JEWELRY	JEWELRY & WATCHES	0.0025	1.8	-0.457	0.00450	-0.00114
HLTHBEAU	PERSONAL CARE SERVICES	0.0051	0.96	0.099	0.00490	0.00050
TOILETRY	PERSONAL CARE SUPPLIES	0			0.00000	0.00000
HELTHINS	MEDICAL PREMIA	0.0252	0.188	0.574	0.00474	0.01446
HOSPITAL	MEDICAL HOSPITAL	0.0019	0.388	-0.744	0.00074	-0.00141
NURSHOME	MEDICAL OUTSIDE HOSPITAL	0.0002	0.075	1.524	0.00002	0.00030
DOCTORS	MEDICAL, DENTAL, EYE ETC.	0.011	0.59	0.863	0.00649	0.00949
ORTHOPD	MEDICAL APPLIANCES	0.0016	0.375	1.236	0.00060	0.00198
DRUGS	MEDICAL DRUGS	0.0083	-0.0168	0.455	-0.00014	0.00378
RECSPORT	TV, RADIO, PARTICIPATION SPORTS	0.0126	1.349	-0.0918	0.01700	-0.00116
OTHREC	SPECTATOR ADMISSION, CLUB,PET,TOYS	0.0247	1.217	0.275	0.03006	0.00679
READING	READING	0.0077	1.011	0.405	0.00778	0.00312
HIGHEDU	HIGHER EDUCATION EXPENSES	0.0071	2.52	0.341	0.01789	0.00242
LOWEDU	NURSERY,ELEMENTARY & SECONDARY EX	0.0053	2.190	0.535	0.01161	0.00284
OTHEDU	OTHER EDUCATION SERVICES	0.0013	2.155	0.932	0.00280	0.00121
AUTOS	AUTOMOBILE PURCHASE	0.0739	0.959	-0.532	0.07087	-0.03931
AUTOOPR	AUTOMOBILE OPERATIONS	0.0721	0.773	-0.245	0.05573	-0.01766

Table 38. Continued

LINEAR	ITEM	RATIO	INC ELAS	EDU ELS	WGHT INC	WGHT EDU
TRAVEL	PUBLIC TRANSPORTATION	0.0079	1.371	0.911	0.01083	0.00720
MISCELCON	MISCELLANEOUS PERS.CONS. EXPENDIT	0.0147	0.5998	0.1147	0.00882	0.00169
PERSINS	PERSONAL INSURANCE(PREMIA,LIFE INS)	0.0616	2.15	-0.97	0.13244	-0.05975
CHARITY	GIFTS & CONTRIBUTIONS	0.0192	1.343	0.71	0.02579	0.01363
	SUM RATIOS	**0.9562**			**0.90332**	**0.00654**
OHPRINC	OWNED HOUSE MORTGAGE PRINCIPAL	0.0306	1.611	0.057	0.0492966	0.0017442
OHLUMP	OWNED HOUSE MORTGAGE LUMP PMTS	0.0052	2.7	-0.609	0.01404	-0.0031668
OHTRANS	OWNED HOUSE TRANSACTION COSTS	0.0026	1.056	0.197	0.0027456	0.0005122
PPROPTAX	PERSONAL PROPERTY TAXES	0.0005	1.498	-0.734	0.000749	-0.000367
OTHTAX	OTHER TAX NOT INCLUDED IN PROP TAX	0.003	1.69	-0.476	0.00507	-0.001428
	SUM RATIOS	**0.9981**			**0.97522**	**0.00383**

Table 39. REGRESSION RESULTS, SEMILOG FORM

Item	ln C	E	A	F	M	S	W	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
FOODHOME	1301	-8.5	8.48	768	-372	-172	33.6	0.323	-0.028	0.892	0.887	179
t-values	10.08	-0.47	1.04	7.79	-4.19	-2.02	0.37	-21.03	-0.47			
FOODOUT	1445	44.7	18.54	102.8	76.48	45.8	-94.5	1.015	0.421	0.851	0.844	123
t-values	11.96	2.62	2.43	1.11	0.92	0.57	-1.12	0.17	2.61			
TOBACCO	164.55	-45.18	-10.4	-96	29.4	-50.00	-72.8	0.526	-1.94	0.29	0.257	9
t-values	3.21	-6.23	-3.22	-2.46	0.84	-1.47	-2.03	-2.86	-6.08			
ALCOHOL IN	201	-3.69	0.957	-18.8	-23.3	-16.6	22.80	**1.12**	**-0.276**	**0.67**	0.650	43
t-values	8.65	-1.12	0.65	-1.06	-1.46	-1.08	1.40	**0.91**	**-1.12**			
ALCOHOL OUT	184	0.472	-1.34	-45.9	2.73	-31.6	8.9	**1.24**	**0.042**	**0.68**	**0.66**	46
t-values	8.14	0.15	-0.94	-2.66	0.18	-2.1	0.57	**1.53**	**0.15**			
RENT	-1438	29.28	-46.01	2.34	-942	-1115	368	**-0.825**	**0.225**	**0.59**	**0.57**	32
t-values	-6.31	0.91	-3.2	0.01	-6.02	-7.37	2.31	**-13.7**	**0.9**			
OWN HOME RENTAL EQUIV	8371	294	171	125	-1169	-711	350	**0.839**	**0.396**	**0.866**	**0.860**	140
t-values	13.35	3.32	4.33	0.26	-2.72	-1.71	0.8	**-2.5**	**3.31**			
OWN HOME MTGE INT	4620	107	48.8	176	171	598	1020	**1.354**	**0.421**	**0.81**	**0.80**	94
t-values	10.59	1.74	1.77	0.53	0.57	2.07	3.35	**2.65**	**1.73**			
OWN HOME PROP TAX	1324	70.6	40.8	186	-455	-717	-913	**0.909**	**0.65**	**0.73**	**0.720**	59
t-values	7.5	2.83	3.67	1.38	-3.75	-6.12	-7.4	**-0.73**	**2.8**			
OWN HOME REPAIRS	958	33.7	15.3	-59.9	18.7	-12.9	16.9	**1.03**	**0.486**	**0.56**	**0.540**	28
t-values	6.17	1.53	1.57	-0.51	0.18	-0.13	0.16	**0.17**	**1.53**			
OWN HOME OTHER ADDITIONS	1383	9.08	29.3	140	24.7	-175	88.70	**1.65**	**0.145**	0.39	0.37	14
t-values	4.42	0.21	1.49	0.59	0.12	-0.84	0.41	**1.64**	**0.2**			
LODGING OUT OF TOWN	509	32.05	15.2	59.5	22.1	38.27	1.44	**1.5**	**1.266**	**0.64**	**0.630**	**40**
t-values	6.6	2.93	3.13	1.01	0.42	0.75	0.03	**2.09**	**2.89**			
UTILITIES2	749	11.5	14.9	179	-23.1	36.03	-425	**0.387**	**0.0802**	**0.87**	**0.860**	**145**
t-values	12.21	1.33	3.85	3.82	-0.55	0.89	-9.91	**-19.2**	**1.33**			
TELEPHONE	503	0.655	0.414	44.6	5.73	116	-71.4	**0.503**	**0.008**	**0.87**	**0.860**	**149**
t-values	13.11	0.12	0.17	1.52	0.22	4.57	-2.66	**-12.8**	**0.12**			
HOUSEHOLD SERVICES	792	44.7	28.7	28.03	98.03	251	114	**1.146**	**0.868**	**0.72**	**0.700**	**56**
t-values	8.76	3.49	5.03	0.41	1.58	4.19	1.82	**1.08**	**3.47**			
FURNISH	1140	3.29	13.12	40.9	52.06	-24.8	33.16	1.261	0.048	0.785	0.775	78
t-values	10.61	0.22	1.93	0.5	0.7	-0.35	0.44	2.11	0.216			

Table 39. Continued

Item	ln C	E	A	F	M	S	W	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
CLOTHING & SHOES	1008	15.2	10.9	152	-161	-150	-198	**0.94**	**0.191**	**0.82**	**0.810**	98
t-values	10.38	1.11	1.79	2.05	-2.41	-2.33	-2.93	**-0.64**	**1.11**			
CLOTHING SERVICES	108	6.1	4.54	23.64	-50.6	-14.6	-24.008	**0.944**	**0.715**	**0.51**	**0.480**	23
t-values	4.92	1.96	3.28	1.41	-3.36	-1.01	-1.56	**-0.28**	**1.95**			
JEWELRY & WATCHES	167	1.27	2.24	10.37	-48.9	-52.1	-42.2	**1.489**	**0.152**	**0.52**	**0.490**	23
t-values	5.47	0.29	1.16	0.44	-2.32	-2.57	-1.97	**1.7**	**0.29**			
PERS CARE SERVICES	231	6.63	5.44	18.14	-10.8	-0.684	-10.1	**0.86**	**0.33**	**0.8**	**0.79**	88
t-values	11	2.22	4.09	1.13	-0.75	-0.05	-0.69	**-1.74**	**2.22**			
MEDICAL PREMIA	590	25.75	24.6	5.28	56.2	116	-60	**0.44**	**0.258**	**0.53**	**0.51**	25
t-values	6.55	2.02	4.32	0.08	0.91	1.95	-0.96	**-8.27**	**2.01**			
MEDICAL HOSPITAL	75.7	-8.74	-0.108	-34.5	52.2	63.5	42.7	**0.857**	**-1.329**	**0.068**	**0.02**	1.57
t-values	2.06	-1.69	-0.05	-1.23	2.07	2.61	1.67	**-0.33**	**-1.66**			0.15
MEDICAL OUTSIDE HOSPITAL	4.26	1.18	-0.115	4.36	-17.6	-27.03	-14.5	**0.322**	**1.2**	**0.037**	**-0.007**	0.84
t-values	0.19	0.37	-0.08	0.26	-1.15	-1.8	-0.93	**-0.39**	**0.37**			0.55
MEDICAL, DENTAL, EYE	449	37.1	15.05	13.8	71.6	259	217	**0.7**	**0.776**	**0.39**	**0.36**	14
t-values	3.64	2.13	1.93	0.15	0.84	3.17	2.53	**-1.53**	**2.11**			
MEDICAL APPLIANCES	47.6	7.12	2.6	15.7	12.04	-8.9	14.60	**0.531**	**1.066**	**0.39**	0.36	14
t-values	2.77	2.93	2.42	1.2	1.02	-0.78	1.22	**-2.42**	**2.9**			
MEDICAL DRUGS	106	3.34	15.5	5.96	108	194	-2.65	**0.246**	**0.104**	**0.33**	**0.3**	11
t-values	2.05	0.46	4.76	0.15	3.04	5.66	-0.07	**-6.28**	**0.45**			
TV, RADIO, SPORTS	1017	-1.37	-0.141	-90.6	222	64.8	223	**1.403**	**-0.025**	**0.64**	**0.62**	39
t-values	7.4	-0.07	-0.02	-0.86	2.35	0.71	2.33	**2.03**	**-0.07**			
CLUB, ADMISSION SPECT FEES, PETS,TOYS	1376	67.4	28.3	111	-80.6	-116	-97.9	**1.015**	**0.667**	**0.819**	**0.81**	97
t-values	10.31	3.57	3.37	1.09	-0.88	-1.31	-1.05	**0.15**	**3.55**			

Table 39. Continued

Item	ln C	E	A	F	M	S	W	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
READING	412	16.9	4.28	-9.3	43.2	-42.5	-8.98	**0.985**	**0.543**	**0.86**	**0.85**	137
t-values	12.3	3.57	2.02	-0.36	1.88	-1.91	-0.38	**-0.17**	**3.56**			
HIGHER EDU EXPENSES	577	61.07	20.7	134	-174	-209	-199	**1.439**	**2.041**	**0.48**	**0.450**	20
t-values	3.76	2.81	2.14	1.15	-1.65	-2.06	-1.86	**1.09**	**2.7**			
LOWER EDU EXPENSES	488	50.7	14.3	208	-122	-121	-256	**1.35**	**1.88**	**0.6**	**0.58**	33
t-values	4.37	3.21	2.04	2.44	-1.6	-1.64	-3.29	**1.08**	**3.13**			
OTHER EDU SERVICES	133	11.3	5.45	1.51	45.2	36.5	61.1	**1.62**	**1.85**	**0.48**	**0.46**	20
t-values	4.64	2.8	3	0.07	2.29	1.91	3.04	**1.68**	**2.73**			
AUTOMOBIL PURCHASE	4356	-183	12.6	28.6	684	506	128	**1.101**	**-0.623**	**0.64**	**0.63**	39
t-values	8.42	-2.51	0.39	0.07	1.93	1.47	0.36	**0.75**	**-2.5**			
AUTOMOBIL OPERATION	3519	-101	-15	11.9	287	264	84.4	**0.914**	**-0.354**	**0.92**	**0.91**	257
t-values	19.4	-3.96	-1.31	0.09	2.3	2.2	0.67	**-1.77**	**-3.96**			
PUBLIC TRANSPORT	388	47.8	19.17	133	-120	-148	-8.69	**0.963**	**1.59**	**0.65**	**0.63**	41
t-values	5.01	4.36	3.92	2.25	-2.26	-2.89	-0.16	**-0.18**	**4.28**			
MISCELLANS CONS EXP	620	-8.79	3.78	-109	13.6	41.7	120	**0.854**	**-0.162**	**0.46**	**0.43**	18
t-values	6.13	-0.61	0.59	-1.42	0.2	0.62	1.7	**-1.02**	**-0.613**			
PERSONAL INSURANCE	7389	-193	86.5	-244	60	442	-586	**2.16**	**-0.76**	**0.81**	**0.8**	93
t-values	14	-2.59	2.6	-0.61	0.17	1.26	-1.59	**6.79**	**-2.59**			
GIFTS & CONTRIBUTE	1396	72.7	61.6	-0.204	467	476	497	**1.298**	**0.907**	**0.61**	**0.59**	35
t-values	7.35	2.7	5.14	0	3.58	3.78	3.74	**1.62**	**2.7**			

Diagram 18. ELASTICITIES IN SEMILOG FORM

	η>1	*η≈1*	*η<1*
ε>0	LODGING OUT OF TOWN OTHER EDU EXPENSES	FOODOUT OWN HOME PROP TAX HOUSEHOLD SERVICES CLUB,ADMISSION,SPECT FEES,PETS,TOYS READING GIFTS & CONTRIBUTIONS PUBLIC TRANSPORTATION HIGHER EDU EXPENSES LOWER EDU EXPENSES MEDICAL,DENTAL,EYE	OWN HOME RENTAL EQUIV PERSONAL CARE SERVICES MEDICAL PREMIA MEDICAL APPLIANCES
ε ≈0	OWN HOME MTGE INT FURNISH TV,RADIO,SPORTS JEWELRY & WATCHES	ALCOHOL IN ALCOHOL OUT OWN HOME REPAIRS OWN HOME OTH ADD CLOTHING & SHOES CLOTHING SERVICES MEDICAL HOSPITAL MEDICAL OUTSIDE HOSPITAL MISCELLANS CONS EXPENDITURES	RENT MEDICAL DRUGS TELEPHONE UTILITIES2 FOODHOME
ε<0	PERSONAL INSURANCE	AUTOMOBILE PURCHASE	TOBACCO AUTOMOBILE OPERATION

Table 40. SHARES & WEIGHTED SUM ELASTICITIES, SEMILOG FORM

SEMILOG	ITEM	RATIO	INC ELAS	EDU ELS	WGHT INC	WGHT EDU
FOOD HOME	FOOD HOME	0.081	0.323	-0.0280	0.02616	-0.00227
FOOD OUT	FOOD OUT	0.0258	1.015	0.421	0.02619	**0.01086**
TOBACCO	TOBACCO	0.0059	0.526	-1.940	0.00310	-0.01145
ALCOHOL	ALCOHOL IN	0.0036	1.120	-0.276	0.00403	-0.00099
NITECLUB	ALCOHOL OUT	0.0026	1.240	0.042	0.00322	0.00011
RENTHOME	RENT	0.0364	-0.825	0.225	-0.03003	0.00819
OWNOCCUP	RENTAL EQUIVALENT OF OWNED HOME	0.1934	0.839	0.396	0.16226	0.07659
OHINT	OWNED HOME MORTGAGE INTEREST	0.0673	1.354	0.421	0.09112	0.02833
OHTAX	OWNED HOME PROPERTY TAX	0.0301	0.909	0.65	0.02736	0.01957
OHMAINT	OWNED HOME REPAIRS	0.0168	1.03	0.486	0.01730	0.00816
HOUSADD	OTHER HOME ADDITIONS & ALTERATION	0.0143	1.65	0.145	0.02360	0.00207
RENTOTHR	LODGING OUT OF TOWN	0.0061	1.5	1.266	0.00915	0.00772
UTILITIES2	UTILITIES	0.0377	0.387	0.0802	0.01459	0.00302
TELEPHON	TELEPHONE	0.0192	0.503	0.008	0.00966	0.00015
SERVANTS	HOUSEHOLD SERVICES	0.0129	1.146	0.868	0.01478	0.01120
HOUSUPPL	HOUSEHOLD SUPPLIES	0			0.00000	0.00000
FURNISH	HOUSEHOLD FURNITURE & DURABLE EQP	0.0165	1.261	0.048	0.02081	0.00079
CLOTHES	CLOTHING & SHOES	0.0204	0.94	0.191	0.01918	0.00390
TAILORS	CLOTHING SERVICES	0.0023	0.944	0.715	0.00217	0.00164
JEWELRY	JEWELRY & WATCHES	0.0025	1.489	0.152	0.00372	0.00038
HLTHBEAU	PERSONAL CARE SERVICES	0.0051	0.86	0.33	0.00439	0.00168
TOILETRY	PERSONAL CARE SUPPLIES	0			0.00000	0.00000
HELTHINS	MEDICAL PREMIA	0.0252	0.44	0.258	0.01109	0.00650
HOSPITAL	MEDICAL HOSPITAL	0.0019	0.857	-1.329	0.00163	-0.00253
NURSHOME	MEDICAL OUTSIDE HOSPITAL	0.0002	0.322	1.2	0.00006	0.00024
DOCTORS	MEDICAL, DENTAL, EYE ETC.	0.011	0.7	0.776	0.00770	0.00854
ORTHOPD	MEDICAL APPLIANCES	0.0016	0.531	1.066	0.00085	0.00171
DRUGS	MEDICAL DRUGS	0.0083	0.246	0.104	0.00204	0.00086
RECSPORT	TV, RADIO, PARTICIPATION SPORTS	0.0126	1.403	-0.025	0.01768	-0.00032
OTHREC	SPECTATOR ADMISSION, CLUB,PET,TOYS	0.0247	1.015	0.667	0.02507	0.01647
READING	READING	0.0077	0.985	0.543	0.00758	0.00418
HIGHEDU	HIGHER EDUCATION EXPENSES	0.0071	1.439	2.041	0.01022	0.01449
LOWEDU	NURSERY,ELEMENTARY & SECONDARY EX	0.0053	1.35	1.88	0.00716	0.00996
OTHEDU	OTHER EDUCATION SERVICES	0.0013	1.62	1.85	0.00211	0.00241
AUTOS	AUTOMOBILE PURCHASE	0.0739	1.101	-0.623	0.08136	-0.04604
AUTOOPR	AUTOMOBILE OPERATIONS	0.0721	0.914	-0.354	0.06590	-0.02552
TRAVEL	PUBLIC TRANSPORTATION	0.0079	0.963	1.59	0.00761	0.01256
MISCELCON	MISCELLANEOUS PERS.CONS. EXPENDIT	0.0147	0.854	-0.162	0.01255	-0.00238
PERSINS	PERSONAL INSURANCE(PREMIA,LIFE INS)	0.0616	2.16	-0.76	0.13306	-0.04682
CHARITY	GIFTS & CONTRIBUTIONS	0.0192	1.298	0.907	0.02492	0.01741
	SUM RATIOS	**0.9562**			**0.87135**	**0.14141**
OHPRINC	OWNED HOUSE MORTGAGE PRINCIPAL	0.0306	1.314	0.617	0.0402084	0.0188802
OHLUMP	OWNED HOUSE MORTGAGE LUMP PMTS	0.0052	1.787	0.893	0.0092924	0.0046436
OHTRANS	OWNED HOUSE TRANSACTION COSTS	0.0026	1.574	-0.3837	0.0040924	-0.00099762

Table 40. Continued

SEMILOG	ITEM	RATIO	INC ELAS	EDU ELS	WGHT INC	WGHT EDU
PPROPTAX	PERSONAL PROPERTY TAXES	0.0005	1.651	-0.784	0.0008255	-0.000392
OTHTAX	OTHER TAX NOT INCLUDED IN PROP TAX	0.003	1.614	-0.203	0.004842	-0.000609
	SUM RATIOS	**0.9981**			**0.93062**	**0.16293**

Table 41. REGRESSION RESULTS, DOUBLE LOG FORM

ln Item	ln C	E	A	F	M	S	W	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
FOODHOME	0.356	-0.007	-0.002	0.191	-0.081	-0.008	0.021	**0.356**	**-0.096**	0.926	0.923	270
t-values	12.31	-1.75	-1.13	8.68	-4.11	-0.46	1.07	**-22.2**	**-1.75**			
FOODOUT	1.119	0.009	-0.014	-0.047	0.128	0.072	0.036	**1.119**	**0.13**	**0.929**	0.926	282
t-values	17.14	1.05	-3.55	-0.96	2.86	1.67	0.8	**1.83**	**1.04**			
TOBACCO	0.569	-0.088	-0.018	-0.416	0.053	-0.098	-0.128	**0.569**	**-1.18**	**0.1422**	0.1	3.39
t-values	3.67	-4.03	-1.97	-3.41	0.52	-0.99	-1.23	**-2.77**	**-4.03**			
ALCOHOL IN	0.427	-0.014	-0.008	-0.022	-0.096	0.057	0.098	**0.427**	**-0.196**	0.38	0.35	13
t-values	3.79	-0.92	-1.16	-0.26	-1.26	0.78	1.26	**-5.07**	**-0.91**			
ALCOHOL OUT	1.459	0.007	-0.045	-0.572	0.157	-0.204	0.108	**1.459**	**0.094**	0.7	0.69	49
t-values	7.04	0.24	-3.51	-3.51	1.16	-1.56	0.78	**2.21**	**0.24**			
RENT	0.148	0.009	-0.01	0.04	-0.464	-0.348	-0.022	**0.148**	**0.1304**	0.33	0.3	10
t-values	0.93	0.43	-1.15	0.32	-4.63	-3.6	-0.22	**-5.3**	**0.43**			
OWN HOME RENTAL EQUIV	0.796	0.027	0.007	-0.022	-0.109	-0.073	0.014	**0.796**	**0.373**	0.91	0.9	223
t-values	16.05	3.96	2.41	-0.58	-3.2	-2.24	0.42	**-4.08**	**3.96**			
OWN HOME MTGE INT	1.338	0.035	-0.035	0.017	0.152	0.307	0.332	**1.338**	**0.482**	0.85	0.84	121
t-values	9.21	1.74	-3.81	0.16	1.53	3.19	3.28	**2.32**	**1.74**			
OWN HOME PROP TAX	0.942	0.034	0.013	-0.031	-0.223	-0.419	-0.581	**0.942**	**0.459**	0.81	0.8	94
t-values	10.15	2.61	2.33	-0.44	-3.51	-6.81	-8.97	**-0.62**	**2.6**			
OWN HOME REPAIRS	1.042	0.04	0.005	0.009	0.245	0.202	0.224	**1.042**	**0.537**	0.57	0.55	28
t-values	5.23	1.43	0.47	0.06	1.84	1.58	1.66	**0.21**	**1.42**			
OWN HOME OTHER ADDITIONS	1.95	0.015	-0.0001	-0.044	0.06	-0.237	0.015	**1.95**	**0.213**	0.52	0.49	21
t-values	4.74	0.27	0	-0.13	0.22	-0.9	0.06	**2.3**	**0.265**			
LODGING OUT OF TOWN	1.347	0.103	-0.028	-0.103	0.001	0.158	-0.012	**1.347**	**1.394**	0.76	0.75	65
t-values	6.23	3.38	-2.07	-0.59	0.01	1.14	-0.09	**1.6**	**3.37**			
UTILITIES2	0.396	0.006	0.006	0.082	0.0109	0.036	-0.227	**0.396**	**0.087**	0.85	0.84	125
t-values	11.11	1.3	2.8	3.03	0.45	1.53	-9.12	**-16.9**	**1.29**			
TELEPHONE	0.484	0.0005	-0.004	0.031	0.008	0.121	-0.062	**0.484**	**0.007**	0.88	0.87	164
t-values	12.87	0.1	-1.93	1.1	0.34	4.85	-2.39	**-13.6**	**0.103**			

Table 41. Continued

ln Item	ln C	E	A	F	M	S	W	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
HOUSEHOLD SERVICES	1.09	0.056	0.02	-0.082	0.194	0.383	0.195	**1.09**	**0.754**	0.84	0.83	111
t-values	11.55	4.22	3.59	-1.11	3.09	6.31	3.06	**0.964**	**4.22**			
FURNISH	1.133	0.001	0.006	0.095	0.072	0.087	0.049	**1.133**	**0.013**	**0.831**	0.823	105
t-values	11.47	0.07	1.01	1.27	1.07	1.33	0.72	**1.35**	**0.072**			
CLOTHING & SHOES	0.983	0.009	-0.013	0.152	-0.112	-0.1	-0.15	**0.983**	**0.124**	0.92	0.91	248
t-values	14.03	0.93	-2.95	2.85	-2.34	-2.05	-3	**-0.24**	**0.93**			
CLOTHING SERVICES	0.585	0.064	0.027	0.29	-0.413	-0.139	-0.079	**0.585**	**0.8619**	0.55	0.53	26
t-values	3.66	2.85	2.79	2.28	-3.91	-1.37	-0.74	**-2.59**	**2.85**			
JEWELRY & WATCHES	1.48	0.02	-0.009	0.117	-0.234	-0.293	-0.245	**1.48**	**0.274**	0.67	0.65	42
t-values	6	0.59	-0.6	0.6	-1.43	-1.86	-1.48	**1.94**	**0.58**			
PERS CARE SERVICES	0.738	0.032	0.011	0.078	-0.047	-0.012	-0.05	**0.738**	**0.429**	0.84	0.83	118
t-values	11.13	3.41	2.77	1.55	-1.05	-0.29	-1.03	**-3.94**	**3.41**			
MEDICAL PREMIA	0.479	0.035	0.025	0.016	0.07	0.108	-0.063	**0.479**	**0.481**	0.48	0.45	20
t-values	5.22	2.76	4.35	0.23	1.13	1.79	-0.98	**-5.6**	**2.76**			
MEDICAL HOSPITAL	0.935	-0.02	0.024	-0.037	0.684	0.849	0.484	**0.935**	**-0.281**	0.15	0.11	3.44
t-values	2.3	-0.34	0.91	-0.11	2.58	3.31	1.79	**-0.15**	**-0.34**			
MEDICAL OUTSIDE HOSPITAL	0.0095	-0.076	-0.125	-0.349	-2.46	-3.77	-1.78	**0.0095**	**-1.068**	0.45	0.31	3.41
t-values	0.01	-0.39	-1.6	-0.33	-2.19	-3.44	-1.61	**-0.71**	**-0.38**			
MEDICAL, DENTAL, EYE	0.939	0.045	0.008	-0.079	0.218	0.424	0.390	**0.939**	**0.612**	**0.59**	**0.57**	31
t-values	5.74	1.97	0.79	-0.63	1.94	3.91	3.41	**-0.369**	**1.97**			
MEDICAL APPLIANCES	0.658	0.075	0.012	0.192	0.155	-0.133	0.240	**0.658**	**1.023**	0.52	0.5	21
t-values	3.07	2.47	0.95	1.11	1.1	-0.98	1.67	**-1.59**	**2.47**			
MEDICAL DRUGS	0.333	0.007	0.035	-0.035	0.282	0.489	-0.03	**0.333**	**0.1035**	0.3	0.27	9
t-values	2.4	0.39	4.01	-0.33	2.97	5.33	-0.27	**-4.8**	**0.393**			
TV, RADIO, SPORTS	1.405	0.0218	-0.046	-0.266	0.307	0.236	0.48	**1.405**	**0.293**	0.79	0.78	81
t-values	8.05	0.89	-4.25	-2	2.56	2.04	3.94	**2.3**	**0.885**			

Table 41. Continued

ln Item	ln C	E	A	F	M	S	W	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
CLUB, ADMISSION SPECT FEES, PETS,TOYS	0.927	0.052	0.001	-0.003	-0.028	-0.094	-0.05	**0.927**	**0.702**	0.928	0.924	276
t-values	15.44	6.16	0.34	-0.08	-0.69	-2.37	-1.28	**-1.2**	**6.15**			
READING	0.886	0.06	-0.004	-0.001	0.07	-0.108	-0.015	**0.886**	**0.811**	0.86	0.86	141
t-values	9.96	4.8	-0.86	-0.02	1.15	-1.84	-0.25	**-1.27**	**4.8**			
HIGHER EDU EXPENSES	1.853	0.134	-0.064	-0.515	-0.013	-0.509	-0.183	**1.853**	**1.86**	0.6	0.57	24
t-values	3.56	1.76	-1.89	-1.16	-0.04	-1.61	-0.56	**1.63**	**1.76**			
LOWER EDU EXPENSES	1.453	0.065	-0.058	0.575	-0.095	0.063	-0.726	**1.453**	**0.9**	0.67	0.64	32
t-values	3.14	1	-2	1.54	-0.35	0.24	-2.6	**0.98**	**0.99**			
OTHER EDU SERVICES	1.668	0.1275	-0.007	0.048	0.988	0.87	1.21	**1.668**	**1.735**	0.62	0.6	30
t-values	4.2	2.24	-0.29	0.15	3.79	3.46	4.58	**1.68**	**2.23**			
AUTOMOBIL PURCHASE	1.203	-0.062	-0.019	-0.059	0.156	0.193	0.024	**1.203**	**-0.832**	0.58	0.56	28
t-values	6.36	-2.29	-1.61	-0.4	1.22	1.56	0.19	**1.07**	**-2.28**			
AUTOMOBIL OPERATION	0.893	-0.02	-0.018	-0.009	0.101	0.112	0.057	**0.893**	**-0.278**	0.919	0.915	243
t-values	16.2	-2.66	-5.35	-0.22	2.67	3.08	1.5	**-1.92**	**-2.65**			
PUBLIC TRANSPORT	0.779	0.042	0.007	0.212	-0.204	-0.136	-0.19	**0.779**	**0.572**	0.62	0.61	35
t-values	5.01	1.94	0.71	1.78	-1.92	-1.33	-1.76	**-1.42**	**1.93**			
MISCELLANS CONS EXP	0.896	-0.003	-0.009	-0.257	0.041	0.042	0.155	**0.896**	**-0.046**	0.54	0.52	26
t-values	6.41	-0.17	-1.11	-2.4	0.44	0.46	1.59	**-0.73**	**-0.17**			
PERSONAL INSURANCE	2.77	-0.12	-0.007	-0.336	0.057	0.223	-0.153	**2.77**	**-1.624**	0.77	0.76	74
t-values	12.57	-3.86	-0.53	-1.99	0.38	1.53	-0.99	**8.03**	**-3.85**			
GIFTS & CONTRIBUTE	1.177	0.063	0.033	-0.039	0.451	0.459	0.368	**1.177**	**0.857**	0.74	0.73	63
t-values	9.07	3.47	4.01	-0.39	5.06	5.34	4.06	**1.36**	**3.47**			

Diagram 19. ELASTICITIES IN DOUBLE LOG FORM

	$\eta>1$	$\eta\approx1$	$\eta<1$
$\varepsilon>0$	OTHER EDU EXPENSES	OWN HOME PROP TAX LODGING OUT OF TOWN HOUSEHOLD SERVICES MEDICAL APPLIANCES CLUB,ADMISSION,SPECT FEES,PETS,TOYS READING GIFTS & CONTRIBUTIONS	OWN HOME RENTAL EQUIV CLOTHING SERVICES PERSONAL CARE SERVICES MEDICAL PREMIA
$\varepsilon\approx0$	FOODOUT ALCOHOL OUT OWN HOME MTGE INT OWN HOME OTH ADD JEWELRY & WATCHES TV,RADIO,SPORTS	OWN HOME REPAIRS FURNISH CLOTHING & SHOES MEDICAL HOSPITAL MEDICAL OUTSIDE HOSPITAL MEDICAL,DENTAL,EYE HIGHER EDU EXPENSES LOWER EDU EXPENSES PUBLIC TRANSPORTATION MISCELLANS CONS EXPENDITURES	FOODHOME ALCOHOL IN RENT UTILITIES2 TELEPHONE MEDICAL DRUGS
$\varepsilon<0$	PERSONAL INSURANCE	AUTOMOBILE PURCHASE	TOBACCO AUTOMOBILE OPERATION

Table 42. SHARES & WEIGHTED SUM ELASTICITIES, DOUBLE LOG FORM

DOUBLE LOG	ITEM	RATIO	INC ELAS	EDU ELS	WGHT INC	WGHT EDU
FOOD HOME	FOOD HOME	0.081	0.356	-0.096	0.02884	-0.00778
FOOD OUT	FOOD OUT	0.0258	1.119	0.13	0.02887	0.00335
TOBACCO	TOBACCO	0.0059	0.569	-1.18	0.00336	-0.00696
ALCOHOL	ALCOHOL IN	0.0036	0.427	-0.196	0.00154	-0.00071
NITECLUB	ALCOHOL OUT	0.0026	1.459	0.094	0.00379	0.00024
RENTHOME	RENT	0.0364	0.148	0.1304	0.00539	0.00475
OWNOCCUP	RENTAL EQUIVALENT OF OWNED HOME	0.1934	0.796	0.373	0.15395	0.07214
OHINT	OWNED HOME MORTGAGE INTEREST	0.0673	1.338	0.482	0.09005	0.03244
OHTAX	OWNED HOME PROPERTY TAX	0.0301	0.942	0.459	0.02835	0.01382
OHMAINT	OWNED HOME REPAIRS	0.0168	1.042	0.537	0.01751	0.00902
HOUSADD	OTHER HOME ADDITIONS & ALTERATION	0.0143	1.95	0.213	0.02789	0.00305
RENTOTHR	LODGING OUT OF TOWN	0.0061	1.347	1.394	0.00822	0.00850
UTILITIES2	UTILITIES	0.0377	0.396	0.087	0.01493	0.00328
TELEPHON	TELEPHONE	0.0192	0.484	0.007	0.00929	0.00013
SERVANTS	HOUSEHOLD SERVICES	0.0129	1.09	0.754	0.01406	0.00973
HOUSUPPL	HOUSEHOLD SUPPLIES	0			0.00000	0.00000
FURNISH	HOUSEHOLD FURNITURE & DURABLE EQP	0.0165	1.133	0.013	0.01869	0.00021
CLOTHES	CLOTHING & SHOES	0.0204	0.983	0.124	0.02005	0.00253
TAILORS	CLOTHING SERVICES	0.0023	0.585	0.8619	0.00135	0.00198
JEWELRY	JEWELRY & WATCHES	0.0025	1.48	0.274	0.00370	0.00069
HLTHBEAU	PERSONAL CARE SERVICES	0.0051	0.738	0.429	0.00376	0.00219
TOILETRY	PERSONAL CARE SUPPLIES	0			0.00000	0.00000
HELTHINS	MEDICAL PREMIA	0.0252	0.479	0.481	0.01207	0.01212
HOSPITAL	MEDICAL HOSPITAL	0.0019	0.935	-0.281	0.00178	-0.00053
NURSHOME	MEDICAL OUTSIDE HOSPITAL	0.0002	0.0095	-1.068	0.00000	-0.00021
DOCTORS	MEDICAL, DENTAL, EYE ETC.	0.011	0.939	0.612	0.01033	0.00673
ORTHOPD	MEDICAL APPLIANCES	0.0016	0.658	1.023	0.00105	0.00164
DRUGS	MEDICAL DRUGS	0.0083	0.333	0.1035	0.00276	0.00086
RECSPORT	TV, RADIO, PARTICIPATION SPORTS	0.0126	1.405	0.293	0.01770	0.00369
OTHREC	SPECTATOR ADMISSION, CLUB,PET,TOYS	0.0247	0.927	0.702	0.02290	0.01734
READING	READING	0.0077	0.886	0.811	0.00682	0.00624
HIGHEDU	HIGHER EDUCATION EXPENSES	0.0071	1.853	1.86	0.01316	0.01321
LOWEDU	NURSERY,ELEMENTARY & SECONDARY EX	0.0053	1.453	0.9	0.00770	0.00477
OTHEDU	OTHER EDUCATION SERVICES	0.0013	1.668	1.735	0.00217	0.00226
AUTOS	AUTOMOBILE PURCHASE	0.0739	1.203	-0.832	0.08890	-0.06148
AUTOOPR	AUTOMOBILE OPERATIONS	0.0721	0.893	-0.278	0.06439	-0.02004
TRAVEL	PUBLIC TRANSPORTATION	0.0079	0.779	0.572	0.00615	0.00452

Table 42. Continued

DOUBLE LOG	ITEM	RATIO	INC ELAS	EDU ELS	WGHT INC	WGHT EDU
MISCELCON	MISCELLANEOUS PERS.CONS. EXPENDIT	0.0147	0.896	-0.046	0.01317	-0.00068
PERSINS	PERSONAL INSURANCE(PREMIA,LIFE INS)	0.0616	2.77	-1.624	0.17063	-0.10004
CHARITY	GIFTS & CONTRIBUTIONS	0.0192	1.177	0.857	0.02260	0.01645
	SUM RATIOS	**0.9562**			**0.94786**	**0.05944**
OHPRINC	OWNED HOUSE MORTGAGE PRINCIPAL	0.0306	1.345	0.412	0.041157	0.0126072
OHLUMP	OWNED HOUSE MORTGAGE LUMP PMTS	0.0052	1.661	1.822	0.0086372	0.0094744
OHTRANS	OWNED HOUSE TRANSACTION COSTS	0.0026	1.368	-0.4809	0.0035568	-.00125034
PPROPTAX	PERSONAL PROPERTY TAXES	0.0005	2.58	-1.5959	0.00129	-.00079795
OTHTAX	OTHER TAX NOT INCLUDED IN PROP TAX	0.003	1.652	-0.2188	0.004956	-0.0006564
	SUM RATIOS	**0.9981**			**1.00746**	**0.07882**

Diagram 20. ELASTICITIES IN INTERACTION FORM

	η>1	***η≈1***	***η<1***
ε>0	GIFTS & CONTRIBUTIONS	OWN HOME PROP TAX LODGING OUT OF TOWN HOUSEHOLD SERVICES MEDICAL APPLIANCES CLUB,ADMISSION,SPECT PETS,TOYS READING	OWN HOME RENTAL EQUIV UTILITIES2 CLOTHING SERVICES PERSONAL CARE SERVICES MEDICAL PREMIA
ε ≈0	FOODOUT ALCOHOL OUT OWN HOME MTGE INT OWN HOME OTH ADD JEWELRY & WATCHES TV,RADIO,SPORTS HIGHER EDU EXPENSES	OWN HOME REPAIRS FURNISH CLOTHING & SHOES MEDICAL HOSPITAL MEDICAL OUTSIDE HOSPITAL MEDICAL,DENTAL,EYE LOWER EDU EXPENSES OTHER EDU EXPENSES AUTOMOBILE PURCHASE PUBLIC TRANSPORTATION MISCELLANS CONS EXPENDITURES	FOODHOME ALCOHOL IN RENT TELEPHONE MEDICAL DRUGS
ε<0	PERSONAL INSURANCE	AUTOMOBILE OPERATION	TOBACCO

Table 43. REGRESSION RESULTS, INTERACTION FORM

ln Item	ln C	ln E	ln C* ln E	ln C* ln A	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test P>F
FOODHOME	0.142	-0.514	0.041	0.001	**0.347**	**-0.072**	0.927	0.922	209
t-values	0.6	-0.97	0.82	0.76	**-21.9**	**-1.61**			
FOODOUT	0.272	-2.07	0.204	0.006	**1.11**	**0.096**	0.93	0.92	220
t-values	0.51	-1.74	1.79	1.12	**1.71**	**0.95**			
TOBACCO	4.33	12.35	-1.23	-0.013	**0.611**	**-0.788**	0.205	0.154	4.0
t-values	3.45	4.38	-4.56	-1.04	**-2.48**	**-3.3**			
ALCOHOL IN	-0.559	-2.86	0.253	0.006	**0.401**	**-0.179**	**0.39**	0.36	11
t-values	-0.61	-1.4	1.29	0.66	**-5.19**	**-1.03**			
ALCOHOL OUT	1.09	1.26	-0.131	0.016	**1.62**	**-0.138**	**0.71**	0.69	39
t-values	0.67	0.34	-0.37	0.88	**2.92**	**-0.43**			
RENT	-0.9	-1.28	0.117	0.016	**0.249**	**-0.036**	**0.34**	0.29	8
t-values	-0.7	-0.44	0.42	1.21	**-4.4**	**-0.14**			
OWN HOME RENTAL EQUIV	0.661	-0.906	0.11	-0.002	**0.794**	**0.287**	**0.91**	0.9	170
t-values	1.61	-0.99	1.28	-0.58	**-4**	**3.68**			
OWN HOME MTGE INT	2.12	1.64	-0.131	-0.007	**1.419**	**0.248**	**0.85**	0.84	92
t-values	1.77	0.61	-0.51	-0.55	**2.8**	**1.09**			
OWN HOME PROP TAX	-0.057	-3.01	0.311	0.005	**0.959**	**0.289**	**0.81**	0.8	72
t-values	-0.07	-1.76	1.89	0.6	**-0.42**	**1.98**			
OWN HOME REPAIRS	-0.697	-2.49	0.282	0.02	**1.053**	**0.514**	**0.57**	0.55	22
t-values	-0.44	-0.7	0.83	1.16	**0.26**	**1.68**			
OWN HOME OTHER ADDITIONS	4.65	5.66	-0.475	-0.032	**1.78**	**0.618**	**0.52**	0.49	16
t-values	1.21	0.63	-0.55	-0.85	**1.77**	**0.88**			
LODGING OUT OF TOWN	-1.09	-6.7	0.733	0.012	**1.351**	**1.063**	**0.76**	0.75	50
t-values	-0.6	-1.59	1.82	0.64	**1.57**	**3.15**			
UTILITIES2	0.729	1.24	-0.105	-0.001	**0.392**	**0.1269**	**0.86**	0.85	104
t-values	2.56	1.96	-1.73	-0.5	**-17.1**	**2.35**			
TELEPHONE	0.763	0.642	-0.059	-0.002	**0.487**	**0.0065**	**0.88**	0.87	127
t-values	2.46	0.93	-0.9	-0.73	**-13**	**0.11**			

Table 43. Continued

ln Item	ln C	ln E	ln C* ln E	ln C* ln A	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test P>F
HOUSEHOLD SERVICES	-1.2	-4.93	0.511	0.021	**1.158**	**0.492**	**0.84**	0.83	87
t-values	-1.59	-2.88	3.11	2.58	**1.63**	**3.34**			
FURNISH	1.07	-2.83	0.271	-0.013	**1.029**	**0.054**	0.845	0.836	90
t-values	1.35	-1.6	1.6	-1.54	**0.29**	**0.361**			
CLOTHING & SHOES	0.675	-1.31	0.137	-0.001	**0.944**	**0.145**	**0.92**	0.91	193
t-values	1.17	-1.02	1.12	-0.19	**-0.77**	**1.33**			
CLOTHING SERVICES	-2.21	-9.72	0.969	0.007	**0.539**	**0.573**	**0.58**	0.55	23
t-values	-1.8	-3.54	3.69	0.57	**-2.9**	**2.41**			
JEWELRY & WATCHES	2.48	4.05	-0.379	0.001	**1.641**	**0.029**	**0.67**	0.65	32
t-values	1.25	0.91	-0.89	0.06	**2.54**	**0.07**			
PERS CARE SERVICES	1.06	0.221	0.015	-0.007	**0.719**	**0.39**	**0.85**	0.84	93
t-values	1.96	0.18	0.14	-1.22	**-4.16**	**3.8**			
MEDICAL PREMIA	0.932	3.13	-0.25	0.003	**0.527**	**0.474**	**0.54**	0.51	19
t-values	1.31	1.96	-1.64	0.49	**-5.31**	**3.5**			
MEDICAL HOSPITAL	7.69	17.6	-1.65	-0.049	**1.049**	**-0.0199**	**0.18**	0.12	3.19
t-values	2.08	2.04	-2	-1.33	**0.11**	**-0.02**			0.0017
MEDICAL OUTSIDE HOSPITAL	3.29	8.09	-1.011	0.004	**1.07**	**-2.64**	**0.46**	0.29	2.66
t-values	0.3	0.3	-0.39	0.04	**0.04**	**-1.03**			0.023
MEDICAL, DENTAL, EYE	-0.378	1.48	-0.095	0.032	**1.101**	**0.4699**	**0.63**	0.6	28
t-values	-0.29	0.52	-0.35	2.29	**0.63**	**1.92**			
MEDICAL APPLIANCES	-3.79	-4.42	0.485	0.066	**0.869**	**0.738**	**0.57**	0.55	20
t-values	-2.11	-1.06	1.22	3.61	**-0.61**	**2.24**			
MEDICAL DRUGS	-0.688	2.92	-0.259	0.033	**0.457**	**0.167**	**0.41**	0.38	12
t-values	-0.66	1.24	-1.15	2.92	**-4.11**	**0.84**			
TV, RADIO, SPORTS	1.003	2.62	-0.238	0.021	**1.588**	**0.09**	**0.8**	0.78	65
t-values	0.71	0.83	-0.79	1.43	**3.34**	**0.34**			

Table 43. Continued

ln Item	ln C	ln E	ln C* ln E	ln C* ln A	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test P>F
CLUB, ADMISSION SPECT FEES, PETS,TOYS	0.628	-1.27	0.174	-0.0024	**0.922**	**0.577**	**0.92**	0.92	213
t-values	1.27	-1.15	1.65	-0.45	**-1.25**	**6.15**			
READING	0.133	-1.61	0.203	0.0062	**0.956**	**0.544**	**0.86**	0.85	103
t-values	0.18	-0.96	1.26	0.76	**-0.45**	**3.8**			
HIGHER EDU EXPENSES	1.926	-5.3	0.56	-0.023	**2.06**	**0.649**	**0.6**	0.56	18
t-values	0.38	-0.43	0.49	-0.45	**1.9**	**0.7**			
LOWER EDU EXPENSES	-1.37	-14.8	1.48	-0.022	**1.026**	**0.89**	**0.69**	0.66	26
t-values	-0.35	-1.66	1.75	-0.53	**0.05**	**1.14**			
OTHER EDU SERVICES	-7.3	-27.5	2.68	0.043	**1.503**	**1.034**	**0.64**	0.62	26
t-values	-2.23	-3.56	3.65	1.26	**1.22**	**1.63**			
AUTOMOBIL PURCHASE	2.38	4.2	-0.448	-0.002	**1.185**	**-0.5562**	**0.57**	0.55	21
t-values	1.43	1.13	-1.25	-0.13	**0.92**	**-1.78**			
AUTOMOBIL OPERATION	1.277	2.84	-0.285	0.006	**0.935**	**-0.1889**	**0.93**	0.92	214
t-values	2.98	2.97	-3.12	1.41	**-1.21**	**-2.33**			
PUBLIC TRANSPORT	0.202	-2.18	0.229	0.001	**0.856**	**0.253**	**0.62**	0.6	26
t-values	0.15	-0.75	0.82	0.13	**-0.88**	**1.02**			
MISCELLANS CONS EXP	0.477	1.36	-0.129	0.014	**0.953**	**-0.0123**	**0.56**	0.53	21
t-values	0.42	0.53	-0.53	1.2	**-0.32**	**-0.05**			
PERSONAL INSURANCE	1.28	-0.956	-0.022	0.028	**2.73**	**-1.199**	**0.77**	0.76	56
t-values	0.7	-0.23	-0.06	1.41	**7.59**	**-3.42**			
GIFTS & CONTRIBUTE	-0.677	-2.31	0.267	0.025	**1.32**	**0.527**	**0.75**	0.73	49
t-values	-0.63	-0.96	1.15	2.18	**2.39**	**2.58**			

Table 44. SHARES & WEIGHTED SUM ELASTICITIES, INTERACTION FORM

INTERACTION	ITEM	RATIO	INC ELAS	EDU ELS	WGHT INC	WGHT EDU
FOOD HOME	FOOD HOME	0.081	0.347	-0.072	0.02811	-0.00583
FOOD OUT	FOOD OUT	0.0258	1.11	0.096	0.02864	0.00248
TOBACCO	TOBACCO	0.0059	0.611	-0.788	0.00360	-0.00465
ALCOHOL	ALCOHOL IN	0.0036	0.401	-0.179	0.00144	-0.00064
NITECLUB	ALCOHOL OUT	0.0026	1.62	-0.138	0.00421	-0.00036
RENTHOME	RENT	0.0364	0.249	-0.036	0.00906	-0.00131
OWNOCCUP	RENTAL EQUIVALENT OF OWNED HOME	0.1934	0.794	0.287	0.15356	0.05551
OHINT	OWNED HOME MORTGAGE INTEREST	0.0673	1.419	0.248	0.09550	0.01669
OHTAX	OWNED HOME PROPERTY TAX	0.0301	0.959	0.289	0.02887	0.00870
OHMAINT	OWNED HOME REPAIRS	0.0168	1.053	0.514	0.01769	0.00864
HOUSADD	OTHER HOME ADDITIONS & ALTERATION	0.0143	1.78	0.618	0.02545	0.00884
RENTOTHR	LODGING OUT OF TOWN	0.0061	1.351	1.063	0.00824	0.00648
UTILITIES2	UTILITIES	0.0377	0.392	0.1269	0.01478	0.00478
TELEPHON	TELEPHONE	0.0192	0.487	0.0065	0.00935	0.00012
SERVANTS	HOUSEHOLD SERVICES	0.0129	1.158	0.492	0.01494	0.00635
HOUSUPPL	HOUSEHOLD SUPPLIES	0			0.00000	0.00000
FURNISH	HOUSEHOLD FURNITURE & DURABLE EQP	0.0165	1.029	0.054	0.01698	0.00089
CLOTHES	CLOTHING & SHOES	0.0204	0.944	0.145	0.01926	0.00296
TAILORS	CLOTHING SERVICES	0.0023	0.539	0.573	0.00124	0.00132
JEWELRY	JEWELRY & WATCHES	0.0025	1.641	0.029	0.00410	0.00007
HLTHBEAU	PERSONAL CARE SERVICES	0.0051	0.719	0.39	0.00367	0.00199
TOILETRY	PERSONAL CARE SUPPLIES	0			0.00000	0.00000
HELTHINS	MEDICAL PREMIA	0.0252	0.527	0.474	0.01328	0.01194
HOSPITAL	MEDICAL HOSPITAL	0.0019	1.049	-0.0199	0.00199	-0.00004
NURSHOME	MEDICAL OUTSIDE HOSPITAL	0.0002	1.07	-2.64	0.00021	-0.00053
DOCTORS	MEDICAL, DENTAL, EYE ETC.	0.011	1.101	0.4699	0.01211	0.00517
ORTHOPD	MEDICAL APPLIANCES	0.0016	0.869	0.738	0.00139	0.00118
DRUGS	MEDICAL DRUGS	0.0083	0.457	0.167	0.00379	0.00139
RECSPORT	TV, RADIO, PARTICIPATION SPORTS	0.0126	1.588	0.09	0.02001	0.00113
OTHREC	SPECTATOR ADMISSION, CLUB,PET,TOYS	0.0247	0.922	0.577	0.02277	0.01425
READING	READING	0.0077	0.956	0.544	0.00736	0.00419
HIGHEDU	HIGHER EDUCATION EXPENSES	0.0071	2.06	0.649	0.01463	0.00461
LOWEDU	NURSERY,ELEMENTARY & SECONDARY EX	0.0053	1.026	0.89	0.00544	0.00472
OTHEDU	OTHER EDUCATION SERVICES	0.0013	1.503	1.034	0.00195	0.00134
AUTOS	AUTOMOBILE PURCHASE	0.0739	1.185	-0.5562	0.08757	-0.04110
AUTOOPR	AUTOMOBILE OPERATIONS	0.0721	0.935	-0.1889	0.06741	-0.01362
TRAVEL	PUBLIC TRANSPORTATION	0.0079	0.856	0.253	0.00676	0.00200

Table 44. Continued

INTERACTION	ITEM	RATIO	INC ELAS	EDU ELS	WGHT INC	WGHT EDU
MISCELCON	MISCELLANEOUS PERS.CONS. EXPENDIT	0.0147	0.953	-0.0123	0.01401	-0.00018
PERSINS	PERSONAL INSURANCE(PREMIA,LIFE INS)	0.0616	2.73	-1.199	0.16817	-0.07386
CHARITY	GIFTS & CONTRIBUTIONS	0.0192	1.32	0.527	0.02534	0.01012
	SUM RATIOS	**0.9562**			**0.96290**	**0.04573**
OHPRINC	OWNED HOUSE MORTGAGE PRINCIPAL	0.0306	1.366	0.3547	0.0417996	0.01085382
OHLUMP	OWNED HOUSE MORTGAGE LUMP PMTS	0.0052	0.76	1.98	0.003952	0.010296
OHTRANS	OWNED HOUSE TRANSACTION COSTS	0.0026	1.29	-0.439	0.003354	-0.0011414
PPROPTAX	PERSONAL PROPERTY TAXES	0.0005	2.537	-1.126	0.0012685	-0.000563
OTHTAX	OTHER TAX NOT INCLUDED IN PROP TAX	0.003	1.59	-0.077	0.00477	-0.000231
	SUM RATIOS	**0.9981**			**1.01805**	**0.06495**

C2. DETAILED CATEGORIES, INDIVIDUAL DATA

Table 45. REGRESSION RESULTS, CONSTANT ELASTICITY

ln Item	ln C	ln E	A	F	M	S	W	Constant	R^2	Adj. R^2	F test Pr>F	t-test for inc ≠1
FOODHOME	0.337	-0.039	0.0009	0.1819	-0.079	-0.009	0.029	4.14	0.506	0.505	853	-73.50
t-values	37.36	-1.91	2.8	42.71	-4.84	-0.61	1.77	46.16				
FOODOUT	1.031	0.255	-0.009	-0.037	0.133	0.069	0.044	-4.39	0.396	0.395	513	1.43
t-values	47.63	5.13	-11.8	-3.82	3.52	1.9	1.16	-20.28				
TOBACCO	0.203	-0.117	0.0015	0.0055	0.064	-0.135	-0.19	4.58	0.022	0.018	5.86	-18.18
t-values	4.63	-1.14	0.83	0.28	0.8	-1.75	-2.25	10.17				
ALCOHOL IN	0.498	-0.123	-0.0075	-0.046	-0.123	0.025	0.061	0.678	0.074	0.072	34.5	-13.32
t-values	13.21	-1.4	-5.37	-2.8	-1.99	0.42	1.01	1.81				
ALCOHOL OUT	0.736	0.022	-0.02	-0.22	-0.02	-0.241	-0.109	-1.62	0.111	0.109	52	-5.17
t-values	14.42	0.17	-11.29	-9.84	-0.27	-3.02	-1.38	-3.12				
RENT	0.272	0.098	-0.0025	0.008	-0.351	-0.344	0.038	5.68	0.085	0.081	22	-17.21
t-values	6.43	1.22	-1.77	0.49	-4.73	-4.82	0.54	13.7				
OWN HOME RENTAL EQUIV	0.7	0.17	0.004	-0.02	-0.154	-0.14	0.73	1.15	0.54	0.53	752	-23.98
t-values	55.95	6.66	10.48	-3.74	-8.01	-7.53	3.69	8.89				
OWN HOME MTGE INT	1.02	0.056	-0.02	-0.022	0.015	0.11	0.305	-2.14	0.273	0.271	152	0.49
t-values	25.05	0.68	-12.63	-1.62	0.27	1.99	5.3	-4.96				
OWN HOME PROP TAX	0.914	0.133	0.005	-0.04	-0.331	-0.674	-0.581	-2.86	0.327	0.326	307	-3.29
t-values	34.97	2.42	5.38	-3.68	-8.29	-17.41	-14.04	-10.53				
OWN HOME REPAIRS	1.109	0.09	0.017	-0.133	0.022	0.108	-0.036	-6.69	0.136	0.134	72	1.91
t-values	19.39	0.73	9.04	-5.63	0.26	1.29	-0.41	-11.13				
OWN HOME OTHER ADDITIONS	1.17	-0.58	0.007	0.016	0.062	-0.208	-0.312	-5.25	0.103	0.099	24	1.67
t-values	11.5	-2.65	2.09	0.41	0.44	-1.47	-2.23	-4.91				

Table 45. Continued

ln Item	ln C	ln E	A	F	M	S	W	Constant	R^2	Adj. R^2	F test Pr>F	t-test for inc ≠1
LODGING OUT OF TOWN	0.952	0.536	0.007	-0.039	-0.07	-0.042	-0.25	-6.19	0.184	0.182	85	-0.98
t-values	19.49	4.68	4.11	-1.95	-0.97	-0.59	-3.43	-11.98				
UTILITIES2	0.47	-0.015	0.008	0.105	0.02	0.074	-0.26	1.8	0.379	0.378	493	-45.41
t-values	40.27	-0.56	18.59	19.61	0.94	3.73	-12.3	15.35				
TELEPHONE	0.48	0.023	-0.005	0.05	-0.0038	0.109	-0.113	1.66	0.316	0.315	382	-39.33
t-values	36.3	0.79	-10.9	8.02	-0.16	4.8	-4.73	12.66				
HOUSEHOLD SERVICES	1.22	0.068	0.016	-0.028	0.231	0.44	0.044	-8.27	0.315	0.313	296	7.01
t-values	38.87	0.97	14.29	-2.07	4.46	8.71	0.84	-25.56				
FURNISH	1.3	-0.1823	-0.0017	-0.316	0.08	0.063	0.039	-7.31	0.265	0.264	238	8.28
t-values	35.9	-2.28	-1.33	-2	1.32	1.06	0.63	-20.43				
CLOTHING & SHOES	0.976	0.141	-0.013	0.12	-0.132	-0.112	-0.148	-3.9	0.405	0.404	527	-1.02
t-values	41.63	2.63	-14.69	11.25	-3.19	-2.79	-3.54	-16.71				
CLOTHING SERVICES	0.39	-0.136	-0.01	0.015	-0.37	-0.194	-0.156	1.35	0.07	0.06	37	-16.02
t-values	10.24	-1.46	-7.2	0.84	-5.33	-2.94	-2.28	3.65				
JEWELRY & WATCHES	1.02	-0.118	-0.002	-0.091	-0.272	-0.125	-0.3	-5.63	0.161	0.158	58	0.36
t-values	18.41	-0.98	-1.13	-3.84	-3.01	-1.4	-3.34	-9.9				
PERS CARE SERVICES	0.751	0.247	0.007	0.03	-0.103	-0.014	-0.09	-3.87	0.256	0.25	264	-11.15
t-values	33.64	4.83	8.81	2.9	-2.64	-0.37	-2.27	-17.38				
MEDICAL PREMIA	0.451	0.171	0.019	0.062	0.042	0.066	-0.028	0.557	0.16	0.15	121	-22.67
t-values	18.62	3.12	21.39	5.46	1.02	1.65	-0.66	2.22				
MEDICAL HOSPITAL	0.272	-0.325	0.004	0.004	0.411	0.438	0.198	2.77	0.02	0.01	2.48	-6.88
t-values	2.57	-1.49	1.17	0.08	2.37	2.64	1.16	2.63			0.016	
MEDICAL OUTSIDE HOSPITAL	0.923	0.553	0.039	0.009	-0.107	-1.19	0.223	-7.19	0.37	0.26	3.23	-0.17
t-values	2.09	0.64	2.38	0.05	-0.13	-1.52	0.29	-1.53			0.0086	
MEDICAL, DENTAL, EYE	0.879	0.159	0.015	0.029	0.204	0.252	0.317	-5.23	0.157	0.156	117	-3.11
t-values	22.59	1.79	10.85	1.74	3.24	4.11	4.99	-13.09				

Table 45. Continued

ln Item	ln C	ln E	A	F	M	S	W	Constant	R^2	Adj. R^2	F test Pr>F	t-test for inc ≠1
MEDICAL APPLIANCES	0.372	0.376	0.01	0.007	0.095	-0.038	-0.027	-0.516	0.065	0.061	18	-12.56
t-values	7.44	3.1	5.57	0.35	1.26	-0.5	-0.35	-0.99				
MEDICAL DRUGS	0.46	-0.035	0.037	-0.011	0.227	0.464	0.033	-1.54	0.18	0.17	135	-14.18
t-values	12.08	-0.4	26.14	-0.63	3.63	7.61	0.52	-3.94				
TV, RADIO, SPORTS	1.15	0.022	-0.016	-0.011	0.214	0.153	0.278	-5.98	0.237	0.235	185	3.83
t-values	29.39	0.24	-11.25	-0.66	3.27	2.38	4.26	-15.13				
CLUB, ADMISSION SPECT FEES, PETS,TOYS	0.964	0.462	-0.003	-0.027	-0.087	-0.133	-0.13	-4.39	0.387	0.386	501	-1.70
t-values	45.62	9.51	-4.59	-2.83	-2.34	-3.73	-3.43	-20.85				
READING	0.93	0.7	0.0001	0.046	0.084	-0.117	-0.003	-6.35	0.314	0.313	339	-2.60
t-values	34.52	11.06	0.18	3.82	1.84	-2.62	-0.07	-23.42				
HIGHER EDU EXPENSES	0.78	0.358	-0.009	-0.101	-0.206	-0.357	-0.55	-1.38	0.098	0.089	11	-1.99
t-values	7.05	1.38	-1.89	-2.29	-1.21	-2.1	-3.31	-1.2				
LOWER EDU EXPENSES	0.827	0.537	-0.014	0.036	-0.5	-0.114	-0.38	-2.97	0.115	0.107	15	-1.49
t-values	7.13	1.65	-2.75	0.72	-2.94	-0.67	-2.21	-2.55				
OTHER EDU SERVICES	0.7	0.648	0.003	-0.006	-0.043	0.08	0.176	-4.85	0.12	0.11	23	-4.00
t-values	9.34	3.61	1.07	-0.2	-0.33	0.61	1.38	-6.23				
AUTOMOBIL PURCHASE	1.46	-0.536	-0.0007	-0.136	0.099	0.224	0.061	-5.24	0.323	0.32	101	8.07
t-values	25.6	-4.29	-0.37	-6.59	1.15	2.63	0.68	-8.92				
AUTOMOBIL OPERATION	0.885	0.004	-0.004	0.061	0.07	0.054	0.023	-1.47	0.401	0.4	527	-6.21
t-values	47.76	0.09	-6.88	7.48	2.18	1.75	0.73	-7.8				
PUBLIC TRANSPORT	0.834	0.249	0.002	-0.055	-0.187	-0.26	-0.207	-3.48	0.158	0.156	67	-3.51
t-values	17.64	2.3	1.19	-2.52	-2.18	-3.1	-2.58	-7.53				
MISCELLANS CONS EXP	0.897	0.008	-0.003	-0.051	-0.057	-0.035	0.024	-3.48	0.149	0.148	121	-2.90
t-values	25.23	0.1	-2.82	-3.33	-0.97	-0.61	0.4	-9.65				

Table 45. Continued

ln Item	ln C	ln En	A	F	M	S	W	Constant	R^2	Adj. R^2	F test Pr>F	t-test for inc ≠1
PERSONAL INSURANCE	1.081	0.184	-0.021	0.0009	0.003	0.02	-0.092	-3.24	0.387	0.386	429	2.99
t-values	39.89	3	-20.99	0.09	0.07	0.46	-1.95	-12.17				
GIFTS & CONTRIBUTE	0.99	0.4	0.028	0.009	0.363	0.334	0.105	-7.32	0.194	0.193	146	-0.23
t-values	22.96	4.29	18.3	0.47	5.1	4.82	1.45	-16.73				

Diagram 21. ELASTICITIES IN CONSTANT ELASTICITY FORM

	$\eta>1$	$\eta\approx1$	$\eta<1$
$\varepsilon>0$	PERSONAL INSURANCE	FOODOUT LODGING OUT OF TOWN CLOTHING & SHOES GIFTS & CONTRIBUTIONS	OWN HOME RENTAL EQUIV OWN HOME PROP TAX PERSONAL CARE SERVICES MEDICAL PREMIA MEDICAL APPLIANCES CLUB,ADMISSION,SPECT FEES,PETS,TOYS READING OTHER EDU EXPENSES PUBLIC TRANSPORTATION
$\varepsilon\approx0$	OWN HOME REPAIRS HOUSEHOLD SERVICES TV,RADIO,SPORTS	OWN HOME MTGE INT JEWELRY & WATCHES MEDICAL OUTSIDE HOSPITAL LOWER EDU EXPENSES	FOODHOME TOBACCO ALCOHOL IN ALCOHOL OUT RENT UTILITIES2 TELEPHONE CLOTHING SERVICES MEDICAL HOSPITAL MEDICAL DRUGS MEDICAL,DENTAL,EYE HIGHER EDU EXPENSES AUTOMOBILE OPERATION MISCELLANS CONS EXPENDITURES
$\varepsilon<0$	OWN HOME OTH ADD FURNISH AUTOMOBILE PURCHASE		

Table 46. SHARES & WEIGHTED SUM ELASTICITIES, CONSTANT ELASTICITY

CONST.ELAS	ITEM	RATIO	INC ELAS	EDU ELS	WGHT INC	WGHT EDU
FOOD HOME	FOOD HOME	0.0763	0.337	-0.039	0.02571	-0.00298
FOOD OUT	FOOD OUT	0.0269	1.031	0.255	0.02773	0.00686
TOBACCO	TOBACCO	0.0059	0.203	-0.117	0.00120	-0.00069
ALCOHOL	ALCOHOL IN	0.00339	0.498	-0.123	0.00169	-0.00042
NITECLUB	ALCOHOL OUT	0.0028	0.736	0.022	0.00206	0.00006
RENTHOME	RENT	0.033	0.272	0.098	0.00898	0.00323
OWNOCCUP	RENTAL EQUIVALENT OF OWNED HOME	0.189	0.7	0.17	0.13230	0.03213
OHINT	OWNED HOME MORTGAGE INTEREST	0.0648	1.02	0.056	0.06610	0.00363
OHTAX	OWNED HOME PROPERTY TAX	0.0275	0.914	0.133	0.02514	0.00366
OHMAINT	OWNED HOME REPAIRS	0.0177	1.109	0.09	0.01963	0.00159
HOUSADD	OTHER HOME ADDITIONS & ALTERATION	0.01588	1.17	-0.58	0.01858	-0.00921
RENTOTHR	LODGING OUT OF TOWN	0.00643	0.952	0.536	0.00612	0.00345
UTILITIES2	UTILITIES	0.0365	0.47	-0.015	0.01716	-0.00055
TELEPHON	TELEPHONE	0.0189	0.48	0.023	0.00907	0.00043
SERVANTS	HOUSEHOLD SERVICES	0.01315	1.22	0.068	0.01604	0.00089
HOUSUPPL	HOUSEHOLD SUPPLIES	0	0.000	0.000	0.00000	0.00000
FURNISH	HOUSEHOLD FURNITURE & DURABLE EQP	0.0171	1.3	-0.1823	0.02223	-0.00312
CLOTHES	CLOTHING & SHOES	0.0203	0.976	0.141	0.01981	0.00286
TAILORS	CLOTHING SERVICES	0.00218	0.39	-0.136	0.00085	-0.00030
JEWELRY	JEWELRY & WATCHES	0.00213	1.02	-0.118	0.00217	-0.00025
HLTHBEAU	PERSONAL CARE SERVICES	0.0051	0.751	0.247	0.00383	0.00126
TOILETRY	PERSONAL CARE SUPPLIES	0	0.000	0.000	0.00000	0.00000
HELTHINS	MEDICAL PREMIA	0.02537	0.451	0.171	0.01144	0.00434
HOSPITAL	MEDICAL HOSPITAL	0.0016	0.272	-0.325	0.00044	-0.00052
NURSHOME	MEDICAL OUTSIDE HOSPITAL	0.00027	0.923	0.553	0.00025	0.00015
DOCTORS	MEDICAL, DENTAL, EYE ETC.	0.0121	0.879	0.159	0.01064	0.00192
ORTHOPD	MEDICAL APPLIANCES	0.0016	0.372	0.376	0.00060	0.00060
DRUGS	MEDICAL DRUGS	0.0081	0.46	-0.035	0.00373	-0.00028
RECSPORT	TV, RADIO, PARTICIPATION SPORTS	0.01379	1.15	0.022	0.01586	0.00030
OTHREC	SPECTATOR ADMISSION, CLUB,PET,TOYS	0.0258	0.964	0.462	0.02487	0.01192
READING	READING	0.00797	0.93	0.7	0.00741	0.00558
HIGHEDU	HIGHER EDUCATION EXPENSES	0.0077	0.78	0.358	0.00601	0.00276
LOWEDU	NURSERY,ELEMENTARY & SECONDARY EX	0.007	0.827	0.537	0.00579	0.00376
OTHEDU	OTHER EDUCATION SERVICES	0.0015	0.7	0.648	0.00105	0.00097
AUTOS	AUTOMOBILE PURCHASE	0.0748	1.46	-0.536	0.10921	-0.04009
AUTOOPR	AUTOMOBILE OPERATIONS	0.0731	0.885	0.004	0.06469	0.00029
TRAVEL	PUBLIC TRANSPORTATION	0.0077	0.834	0.249	0.00642	0.00192

Table 46. Continued

CONST.ELAS	ITEM	RATIO	INC ELAS	EDU ELS	WGHT INC	WGHT EDU
MISCELCON	MISCELLANEOUS PERS.CONS. EXPENDIT	0.0139	0.897	0.008	0.01247	0.00011
PERSINS	PERSONAL INSURANCE(PREMIA,LIFE INS)	0.0652	1.081	0.184	0.07048	0.01200
CHARITY	GIFTS & CONTRIBUTIONS	0.0204	0.99	0.4	0.02020	0.00816
	SUM RATIOS	**0.95286**			**0.79794**	**0.05644**
OHPRINC	OWNED HOUSE MORTGAGE PRINCIPAL	0.03222	1.03	0.029	0.033187	0.00093438
OHLUMP	OWNED HOUSE MORTGAGE LUMP PMTS	0.00665	1.43	0.0516	0.00951	0.00034314
OHTRANS	OWNED HOUSE TRANSACTION COSTS	0.0033	1.05	-0.567	0.003465	-0.0018711
PPROPTAX	PERSONAL PROPERTY TAXES	0.00058	0.902	-0.164	0.000523	-9.512E-05
OTHTAX	OTHER TAX NOT INCLUDED IN PROP TAX	0.0033	0.994	0.488	0.00328	0.0016104
	SUM RATIOS	**0.99891**			**0.84790**	**0.05736**

Table 47. SHARES & WEIGHTED SUM ELASTICITIES, LINEAR FORM

LINEAR	ITEM	RATIO	INC ELAS	EDU ELS	WGHT INC	WGHT EDU
FOOD HOME	FOOD HOME	0.0763	0.275	0.046	0.02098	0.00351
FOOD OUT	FOOD OUT	0.0269	1.002	0.192	0.02695	0.00516
TOBACCO	TOBACCO	0.0059	0.084	-0.939	0.00050	-0.00554
ALCOHOL	ALCOHOL IN	0.00339	0.883	-0.198	0.00299	-0.00067
NITECLUB	ALCOHOL OUT	0.0028	1.10	-0.03	0.00307	-0.00008
RENTHOME	RENT	0.033	-0.85	0.17	-0.02797	0.00560
OWNOCCUP	RENTAL EQUIVALENT OF OWNED HOME	0.189	0.88	0.29	0.16692	0.05507
OHINT	OWNED HOME MORTGAGE INTEREST	0.0648	1.47	0.05	0.09501	0.00350
OHTAX	OWNED HOME PROPERTY TAX	0.0275	1.20	0.06	0.03291	0.00167
OHMAINT	OWNED HOME REPAIRS	0.0177	1.52	-0.20	0.02691	-0.00347
HOUSADD	OTHER HOME ADDITIONS & ALTERATION	0.01588	3.27	-2.00	0.05198	-0.03173
RENTOTHR	LODGING OUT OF TOWN	0.00643	1.56	0.81	0.01000	0.00522
UTILITIES2	UTILITIES	0.0365	0.383	0.09	0.01398	0.00336
TELEPHON	TELEPHONE	0.0189	0.40	0.10	0.00748	0.00180
SERVANTS	HOUSEHOLD SERVICES	0.01315	1.37	0.24	0.01801	0.00319
HOUSUPPL	HOUSEHOLD SUPPLIES	0			0.00000	0.00000
FURNISH	HOUSEHOLD FURNITURE & DURABLE EQP	0.0171	1.514	-0.47	0.02589	-0.00800
CLOTHES	CLOTHING & SHOES	0.0203	0.885	0.093	0.01796	0.00188
TAILORS	CLOTHING SERVICES	0.00218	1.06	-0.085	0.00231	-0.00018
JEWELRY	JEWELRY & WATCHES	0.00213	1.591	-0.307	0.00339	-0.00065
HLTHBEAU	PERSONAL CARE SERVICES	0.0051	0.75	0.253	0.00381	0.00129
TOILETRY	PERSONAL CARE SUPPLIES	0			0.00000	0.00000
HELTHINS	MEDICAL PREMIA	0.02537	0.418	0.372	0.01060	0.00944
HOSPITAL	MEDICAL HOSPITAL	0.0016	0.43	-0.59	0.00069	-0.00094
NURSHOME	MEDICAL OUTSIDE HOSPITAL	0.00027	1.06	2.38	0.00029	0.00064
DOCTORS	MEDICAL, DENTAL, EYE ETC.	0.0121	1.19	0.06	0.01440	0.00067
ORTHOPD	MEDICAL APPLIANCES	0.0016	0.60	0.73	0.00096	0.00117
DRUGS	MEDICAL DRUGS	0.0081	0.33	0.06	0.00270	0.00049
RECSPORT	TV, RADIO, PARTICIPATION SPORTS	0.01379	1.38	-0.13	0.01900	-0.00186
OTHREC	SPECTATOR ADMISSION, CLUB,PET,TOYS	0.0258	1.05	0.37	0.02700	0.00963
READING	READING	0.00797	0.83	0.66	0.00659	0.00526
HIGHEDU	HIGHER EDUCATION EXPENSES	0.0077	1.71	0.96	0.01317	0.00737
LOWEDU	NURSERY,ELEMENTARY & SECONDARY EX	0.007	1.49	0.95	0.01040	0.00664
OTHEDU	OTHER EDUCATION SERVICES	0.0015	1.72	1.27	0.00258	0.00191
AUTOS	AUTOMOBILE PURCHASE	0.0748	1.74	-1.42	0.12997	-0.10647
AUTOOPR	AUTOMOBILE OPERATIONS	0.0731	0.68	0.03	0.04995	0.00205
TRAVEL	PUBLIC TRANSPORTATION	0.0077	1	0.86	0.00916	0.00661
MISCELCON	MISCELLANEOUS PERS.CONS. EXPENDIT	0.0139	0.86	-0.0033	0.01198	-0.00005

Table 47. Continued

LINEAR	ITEM	RATIO	INC ELAS	EDU ELS	WGHT INC	WGHT EDU
PERSINS	PERSONAL INSURANCE(PREMIA,LIFE INS)	0.0652	0.93	0.43	0.06056	0.02794
CHARITY	GIFTS & CONTRIBUTIONS	0.0204	1.42	0.40	0.02899	0.00811
	SUM RATIOS	**0.95286**			**0.90206**	**0.01953**
OHPRINC	OWNED HOUSE MORTGAGE PRINCIPAL	0.03222	1.73	-0.16	0.055587904	-0.0050488
OHLUMP	OWNED HOUSE MORTGAGE LUMP PMTS	0.00665	3.42	-1.33	0.022739973	-0.00885989
OHTRANS	OWNED HOUSE TRANSACTION COSTS	0.0033	2.64	-2.11	0.008724359	-0.00695254
PPROPTAX	PERSONAL PROPERTY TAXES	0.00058	1.02	-0.14	0.000593563	-7.9198E-05
OTHTAX	OTHER TAX NOT INCLUDED IN PROP TAX	0.0033	1.22	0.35	0.004011199	0.001144315
	SUM RATIOS	**0.99891**			**0.99372**	**-0.00026**

Diagram 22. ELASTICITIES IN SEMILOG FORM

	$\eta>1$	$\eta\approx1$	$\eta<1$
$\varepsilon>0$	LODGING OUT OF TOWN HOUSEHOLD SERVICES OWN HOME MTGE INT	GIFTS & CONTRIBUTIONS PUBLIC TRANSPORTATION HIGHER EDU EXPENSES LOWER EDU EXPENSES OTHER EDU EXPENSES	OWN HOME RENTAL EQUIV PERSONAL CARE SERVICES MEDICAL PREMIA MEDICAL APPLIANCES READING CLOTHING & SHOES CLOTHING SERVICES PERSONAL INSURANCE CLUB,ADMISSION,SPECT FEES,PETS,TOYS FOODOUT RENT
$\varepsilon\approx0$	TV,RADIO,SPORTS OWN HOME PROP TAX OWN HOME REPAIRS JEWELRY & WATCHES	MEDICAL OUTSIDE HOSPITAL MEDICAL,DENTAL,EYE ALCOHOL OUT	MEDICAL DRUGS TELEPHONE UTILITIES2 FOODHOME MISCELLANS CONS EXPENDITURES ALCOHOL IN
$\varepsilon<0$	OWN HOME OTH ADD FURNISH AUTOMOBILE PURCHASE		TOBACCO MEDICAL HOSPITAL AUTOMOBILE OPERATION

Table 48. REGRESSION RESULTS, SEMILOG FORM

Item	ln C	E	A	F	M	S	W	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
FOODHOME	1179	4.05	7.24	716.82	-385.62	-199.77	33.49	**0.292**	**0.0135**	**0.473**	0.472	752
t-values	32.11	0.54	5.25	42.28	-5.9	-3.19	0.51	**-76**	**0.53**			
FOODOUT	1309.6	26.49	-4.94	-57.8	52.02	-0.96	-91.15	**0.920**	**0.250**	**0.268**	0.267	306
t-values	36.84	3.63	-3.7	-3.52	0.82	-0.02	-1.42	**-2.85**	**3.6**			
TOBACCO	75.57	-26.58	-3.57	14.87	26.17	-46.40	-79.33	**0.241**	**-1.141**	**0.026**	0.025	22.47
t-values	4.84	-8.29	-6.08	2.06	0.94	-1.74	-2.82	**-15.05**	**-8**			
ALCOHOL IN	153.84	-2.89	-2.42	-20.89	-22.5	-21.87	22.47	**0.857**	**-0.216**	**0.095**	0.094	89
t-values	20	-1.84	-8.39	-5.88	-1.64	-1.67	1.62	**-3.000**	**-1.830**			
ALCOHOL OUT	153.07	-0.116	-3.84	-51.17	1.3	-37.12	8.244	**1.024**	**-0.010**	**0.116**	**0.115**	110
t-values	20.02	-0.07	-13.37	-14.5	0.1	-2.85	0.6	**0.410**	**-0.070**			
RENT	-1693	52.07	-41.6	67.6	-999	-1186.8	326.8	**-0.97**	**0.401**	**0.134**	**0.132**	129
t-values	-21.82	3.27	-14.26	1.89	-7.23	-8.96	2.34	**-38.00**	**3.200**			
OWN HOME RENTAL EQUIV	8964	148.06	84.3	-301.17	-1117.4	-722.7	266.9	**0.90**	**0.199**	**0.529**	**0.529**	941
t-values	65.44	5.27	16.36	-4.76	-4.58	-3.09	1.08	**-6.70**	**5.200**			
OWN HOME MTGE INT	4381	42.4	-43.32	-42.9	84.3	451.5	877.9	**1.28**	**0.166**	**0.381**	**0.38**	514
t-values	45.32	2.14	-11.92	-0.96	0.49	2.74	5.04	**8.00**	**2.13**			
OWN HOME PROP TAX	1572	14	14	-61.4	-462.06	-741.1	-929.3	**1.08**	**0.129**	**0.277**	**0.276**	321
t-values	37.72	1.64	8.93	-3.2	-6.23	-10.42	-12.37	**2.30**	**1.63**			
OWN HOME REPAIRS	1262	-6.11	11.5	-134.3	59.2	16.53	15.03	**1.34**	**-0.087**	**0.084**	**0.083**	77
t-values	20.24	-0.48	4.92	-4.67	0.53	0.16	0.13	**4.10**	**-0.47**			
OWN HOME OTHER ADDITIONS	1822	-51.71	4.63	-144.4	33.35	-137.28	75.22	**2.17**	**-0.827**	0.048	0.047	43
t-values	15.6	-2.16	1.05	-2.68	0.16	-0.69	0.36	**5.200**	**-2.12**			
LODGING OUT OF TOWN	429	27.01	3.51	-5.5	10.6	16.5	-2.13	**1.26**	**1.068**	**0.147**	**0.146**	**145**
t-values	23.09	7.09	5.03	-0.65	0.32	0.52	-0.06	**3.87**	**6.92**			
UTILITIES2	783.75	4.4	12.25	191.4	-24.08	34.64	-432.05	**0.41**	**0.031**	**0.39**	**0.389**	**535**
t-values	40.17	1.1	16.7	21.25	-0.69	1.04	-12.28	**-57.00**	**1.10**			

Table 48. Continued

Item	ln C	E	A	F	M	S	W	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
TELEPHONE	418.38	2.78	-4.6	52.4	-8.46	98.2	-78.27	**0.42**	**0.037**	**0.258**	**0.257**	**292**
t-values	30.46	0.99	-8.92	8.27	-0.35	4.19	-3.16	**-41.00**	**0.98**			
HOUSEHOLD SERVICES	766.6	24.55	7.42	-18.68	72.35	218.5	85.25	**1.10**	**0.475**	**0.20**	**0.199**	**209**
t-values	30.04	4.69	7.74	-1.59	1.59	5.02	1.85	**2.36**	**4.66**			
FURNISH	1157.1	-17.994	-2.41	-53.8	36.61	-41.45	11.94	**1.27**	**-0.266**	**0.173**	0.172	175
t-values	30.25	-2.29	-1.68	-3.05	0.54	-0.63	0.17	**5.2**	**-2.3**			
CLOTHING & SHOES	848.9	11.045	-6.9	95.8	-181.3	-187.7	-214.02	**0.79**	**0.138**	**0.303**	**0.303**	365
t-values	34.66	2.2	-7.52	8.48	-4.16	-4.49	-4.85	**-8.4**	**2.2**			
CLOTHING SERVICES	83.64	2.41	-0.875	-0.454	-60.7	-29	-32.4	**0.73**	**0.282**	**0.085**	**0.084**	78
t-values	16.22	2.28	-4.51	-0.19	-6.62	-3.3	-3.49	**-5.67**	**2.27**			
JEWELRY & WATCHES	157.8	-1.39	-0.745	-18.1	-50.6	-54.9	-37.09	**1.40**	**-0.165**	**0.046**	**0.045**	41
t-values	14.39	-0.62	-1.81	-3.58	-2.59	-2.94	-1.88	**3.210**	**-0.61**			
PERS CARE SERVICES	190.65	5.01	1.72	-0.011	-14.4	-6.86	-9	**0.71**	**0.25**	**0.218**	**0.217**	233
t-values	31.71	4.06	7.61	0	-1.35	-0.67	-0.83	**-12.000**	**4.05**			
MEDICAL PREMIA	666.74	23.34	31.36	42.86	74.3	137.18	-53.3	**0.50**	**0.234**	**0.169**	**0.168**	171
t-values	19.99	3.41	25.01	2.78	1.25	2.41	-0.89	**-19.000**	**3.4**			
MEDICAL HOSPITAL	55.83	-5.6	0.535	2.45	47.65	62.58	36.55	**0.65**	**-0.875**	**0.008**	**0.007**	6.85
t-values	5.33	-2.62	1.36	0.51	2.55	3.5	1.93	**-2.700**	**-2.58**			
MEDICAL OUTSIDE HOSPITAL	14.26	2.68	0.568	-1.97	-15.65	-23.78	-4.9	**0.951**	**2.401**	**0.002**	**0.001**	1.92
t-values	1.49	1.37	1.58	-0.45	-0.92	-1.46	-0.29	**-0.03**	**1.22**			0.0617
MEDICAL, DENTAL, EYE	722.4	1.52	9.5	-48.5	75.45	257	184.3	**1.129**	**0.032**	**0.038**	**0.037**	33
t-values	12.71	0.13	4.45	-1.85	0.75	2.65	1.8	**1.220**	**0.13**			
MEDICAL APPLIANCES	65.44	3.72	2.04	-0.329	13.3	-6.978	15.40	**0.744**	**0.568**	**0.037**	0.036	33
t-values	9.69	2.69	8.06	-0.11	1.11	-0.61	1.27	**-3.08**	**2.66**			
MEDICAL DRUGS	209.75	-5.34	16.48	-7.8	108	203.6	-9.9	**0.49**	**-0.167**	**0.137**	**0.136**	134
t-values	12.13	-1.51	25.36	-0.98	3.51	6.9	-0.32	**-12.000**	**-1.5**			

Table 48. Continued

Item	ln C	E	A	F	M	S	W	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
TV, RADIO, SPORTS	871.8	0.0394	-8.68	-18.2	189.58	26.7	196	**1.20**	**0.001**	**0.081**	**0.08**	74
t-values	17.52	0	-4.64	-0.79	2.14	0.31	2.18	**2.360**	**0.003**			
CLUB, ADMISSION SPECT FEES, PETS,TOYS	1221.8	48.96	-1.09	-15.45	-128.3	-189	-126.8	**0.90**	**0.482**	**0.311**	**0.31**	378
t-values	38.46	7.51	-0.91	-1.05	-2.27	-3.49	-2.21	**-4.000**	**7.47**			
READING	320.7	21.38	-0.098	23.4	27.1	-60.6	-18.8	**0.76**	**0.681**	**0.26**	**0.26**	295
t-values	29.96	9.74	-0.25	4.73	1.42	-3.32	-0.98	**-8.600**	**9.6**			
HIGHER EDU EXPENSES	484.58	45.67	-1.53	6.51	-165.7	-240	-182.7	**1.18**	**1.493**	**0.044**	**0.043**	39
t-values	10.3	4.73	-0.87	0.3	-1.98	-2.99	-2.15	**1.300**	**4.51**			
LOWER EDU EXPENSES	344.9	42.5	-4.68	173.3	-108.9	-144.7	-251.5	**0.932**	**1.544**	**0.08**	**0.08**	73
t-values	9	5.41	-3.25	9.8	-1.6	-2.21	-3.64	**-0.580**	**5.14**			
OTHER EDU SERVICES	98.4	11.58	0.59	6.77	39.4	27.9	56.7	**1.19**	**1.875**	**0.034**	**0.033**	30
t-values	8.51	4.88	1.36	1.27	1.91	1.41	2.72	**1.070**	**4.55**			
AUTOMOBIL PURCHASE	6506.5	-426.6	-36.8	-450.2	652.8	605.25	34.4	**1.645**	**-1.45**	**0.186**	**0.185**	192
t-values	34.18	-10.93	-5.14	-5.12	1.93	1.86	0.1	**9.760**	**-10.4**			
AUTOMOBIL OPERATION	2798.8	-24.26	-11	211.7	219.5	186.4	101.4	**0.723**	**-0.084**	**0.414**	**0.414**	592
t-values	49.28	-2.08	-5.15	8.08	2.17	1.92	0.99	**-17.000**	**-2.08**			
PUBLIC TRANSPORT	394.4	32.12	1.08	-32.4	-132	-181	-14.3	**0.967**	**1.058**	**0.104**	**0.103**	97
t-values	17.41	6.91	1.27	-3.1	-3.27	-4.68	-0.35	**-0.530**	**6.75**			
MISCELLANS CONS EXP	626.8	-4.11	1.11	-38.9	-19.5	20.3	66.3	**0.852**	**-0.075**	**0.06**	**0.059**	54
t-values	16.7	-0.53	0.79	-2.25	-0.29	0.32	0.98	**-2.600**	**-0.53**			
PERSONAL INSURANCE	3067.1	102.42	-36.6	40.5	-188.7	-74.5	-502.7	**0.889**	**0.399**	**0.404**	**0.403**	567
t-values	44.26	7.21	-14.04	1.27	-1.53	-0.63	-4.02	**-4.900**	**7.18**			

Table 48. Continued

Item	ln C	E	A	F	M	S	W	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
GIFTS & CONTRIBUTE	1028.1	70.04	28.18	128.8	426.2	391.8	438	**0.953**	**0.872**	**0.068**	**0.067**	61
t-values	13.05	4.33	9.51	3.54	3.04	2.91	3.09	**-0.570**	**4.26**			

Table 49. SHARES & WEIGHTED SUM ELASTICITIES, SEMILOG FORM

SEMILOG	ITEM	RATIO	INC ELAS	EDU ELS	WGHT INC	WGHT EDU
FOOD HOME	FOOD HOME	0.0763	0.292	0.0135	0.02228	0.00103
FOOD OUT	FOOD OUT	0.0269	0.920	0.250	0.02474	0.00672
TOBACCO	TOBACCO	0.0059	0.241	-1.141	0.00142	-0.00673
ALCOHOL	ALCOHOL IN	0.00339	0.857	-0.216	0.00290	-0.00073
NITECLUB	ALCOHOL OUT	0.0028	1.024	-0.010	0.00287	-0.00003
RENTHOME	RENT	0.033	-0.97	0.401	-0.03198	0.01322
OWNOCCUP	RENTAL EQUIVALENT OF OWNED HOME	0.189	0.90	0.199	0.16945	0.03761
OHINT	OWNED HOME MORTGAGE INTEREST	0.0648	1.28	0.166	0.08286	0.01078
OHTAX	OWNED HOME PROPERTY TAX	0.0275	1.08	0.129	0.02965	0.00355
OHMAINT	OWNED HOME REPAIRS	0.0177	1.34	-0.087	0.02379	-0.00155
HOUSADD	OTHER HOME ADDITIONS & ALTERATION	0.01588	2.17	-0.827	0.03444	-0.01314
RENTOTHR	LODGING OUT OF TOWN	0.00643	1.26	1.068	0.00811	0.00686
UTILITIES2	UTILITIES	0.0365	0.41	0.031	0.01480	0.00112
TELEPHON	TELEPHONE	0.0189	0.42	0.037	0.00789	0.00070
SERVANTS	HOUSEHOLD SERVICES	0.01315	1.10	0.475	0.01450	0.00624
HOUSUPPL	HOUSEHOLD SUPPLIES	0			0.00000	0.00000
FURNISH	HOUSEHOLD FURNITURE & DURABLE EQP	0.0171	1.274	-0.2663	0.02179	-0.00455
CLOTHES	CLOTHING & SHOES	0.0203	0.79	0.138	0.01602	0.00280
TAILORS	CLOTHING SERVICES	0.00218	0.73	0.282	0.00159	0.00061
JEWELRY	JEWELRY & WATCHES	0.00213	1.40	-0.165	0.00297	-0.00035
HLTHBEAU	PERSONAL CARE SERVICES	0.0051	0.71	0.25	0.00361	0.00128
TOILETRY	PERSONAL CARE SUPPLIES	0			0.00000	0.00000
HELTHINS	MEDICAL PREMIA	0.02537	0.50	0.234	0.01260	0.00593
HOSPITAL	MEDICAL HOSPITAL	0.0016	0.65	-0.875	0.00104	-0.00140
NURSHOME	MEDICAL OUTSIDE HOSPITAL	0.00027	0.951	2.401	0.00026	0.00065
DOCTORS	MEDICAL, DENTAL, EYE ETC.	0.0121	1.129	0.032	0.01366	0.00039
ORTHOPD	MEDICAL APPLIANCES	0.0016	0.744	0.568	0.00119	0.00091
DRUGS	MEDICAL DRUGS	0.0081	0.49	-0.167	0.00396	-0.00135
RECSPORT	TV, RADIO, PARTICIPATION SPORTS	0.01379	1.20	0.001	0.01649	0.00001
OTHREC	SPECTATOR ADMISSION, CLUB,PET,TOYS	0.0258	0.90	0.482	0.02311	0.01244
READING	READING	0.00797	0.76	0.681	0.00606	0.00543
HIGHEDU	HIGHER EDUCATION EXPENSES	0.0077	1.18	1.493	0.00908	0.01150
LOWEDU	NURSERY,ELEMENTARY & SECONDARY EX	0.007	0.932	1.544	0.00653	0.01080
OTHEDU	OTHER EDUCATION SERVICES	0.0015	1.19	1.875	0.00178	0.00281
AUTOS	AUTOMOBILE PURCHASE	0.0748	1.645	-1.45	0.12302	-0.10839
AUTOOPR	AUTOMOBILE OPERATIONS	0.0731	0.723	-0.084	0.05288	-0.00616
TRAVEL	PUBLIC TRANSPORTATION	0.0077	0.967	1.058	0.00744	0.00815

Table 49. Continued

SEMILOG	ITEM	RATIO	INC ELAS	EDU ELS	WGHT INC	WGHT EDU
MISCELCON	MISCELLANEOUS PERS.CONS. EXPENDIT	0.0139	0.852	-0.075	0.01184	-0.00104
PERSINS	PERSONAL INSURANCE(PREMIA,LIFE INS)	0.0652	0.889	0.399	0.05796	0.02601
CHARITY	GIFTS & CONTRIBUTIONS	0.0204	0.953	0.872	0.01944	0.01779
	SUM RATIOS	**0.95286**			**0.82206**	**0.04991**
OHPRINC	OWNED HOUSE MORTGAGE PRINCIPAL	0.03222	1.45	0.048	0.046753035	0.001537255
OHLUMP	OWNED HOUSE MORTGAGE LUMP PMTS	0.00665	2.383	-0.280	0.01584443	-0.001863632
OHTRANS	OWNED HOUSE TRANSACTION COSTS	0.0033	2.30	-1.862	0.007586207	-0.006144641
PPROPTAX	PERSONAL PROPERTY TAXES	0.00058	1.12	-0.284	0.000648103	-0.000164932
OTHTAX	OTHER TAX NOT INCLUDED IN PROP TAX	0.0033	1.194	0.508	0.003938759	0.00167697
	SUM RATIOS	**0.99891**			**0.89683**	**0.04495**

Diagram 23. ELASTICITIES IN DOUBLE LOG FORM

	$\eta>1$	$\eta\approx1$	$\eta<1$
$\varepsilon>0$	PERSONAL INSURANCE	FOODOUT LODGING OUT OF TOWN CLOTHING & SHOES GIFTS & CONTRIBUTIONS	OWN HOME RENTAL EQUIV OWN HOME PROP TAX PERSONAL CARE SERVICES MEDICAL APPLIANCES CLUB,ADMISSION,SPECT FEES,PETS,TOYS READING OTHER EDU EXPENSES PUBLIC TRANSPORTATION
$\varepsilon\approx0$	OWN HOME REPAIRS HOUSEHOLD SERVICES TV,RADIO,SPORTS	OWN HOME MTGE INT JEWELRY & WATCHES MEDICAL OUTSIDE HOSPITAL LOWER EDU EXPENSES	FOODHOME ALCOHOL IN ALCOHOL OUT RENT UTILITIES2 TELEPHONE CLOTHING SERVICES MEDICAL PREMIA MEDICAL,DENTAL,EYE HIGHER EDU EXPENSES MISCELLANS CONS EXPENDITURES
$\varepsilon<0$	FURNISH AUTOMOBILE PURCHASE	OWN HOME OTH ADD	TOBACCO MEDICAL HOSPITAL MEDICAL DRUGS AUTOMOBILE OPERATION

Table 50. REGRESSION RESULTS, DOUBLE LOG FORM

ln Item	ln C	E	A	F	M	S	W	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
FOODHOME	0.335	-0.002	0.001	0.182	-0.078	-0.008	0.029	**0.335**	**-0.027**	0.506	0.505	856
t-values	36.49	-1.24	2.93	42.89	-4.83	-0.57	1.8	**-72**	**-1.23**			
FOODOUT	1.016	0.025	-0.009	-0.036	0.135	0.0702	0.045	**1.016**	**0.336**	0.396	0.396	515
t-values	46.21	5.8	-11.74	-3.74	3.6	1.92	1.19	**0.77**	**5.8**			
TOBACCO	0.231	-0.0269	0.0012	-0.002	0.062	-0.14	-0.192	**0.231**	**-0.361**	0.025	0.021	6.7
t-values	5.22	-2.65	0.62	-0.09	0.78	-1.84	-2.28	**-17**	**-2.64**			
ALCOHOL IN	0.5	-0.012	-0.007	-0.046	-0.124	0.026	0.065	**0.5**	**-0.1613**	0.074	0.072	35
t-values	13.09	-1.65	-5.45	-2.79	-2.02	0.44	1.060	**-13**	**-1.65**			
ALCOHOL OUT	0.732	-0.0002	-0.02	-0.22	-0.021	-0.234	-0.106	**0.732**	**-0.003**	0.110	0.100	51
t-values	14.22	-0.02	-11.33	-9.81	-0.27	-2.93	-1.34	**-5.20**	**-0.02**			
RENT	0.267	0.011	-0.002	0.011	-0.347	-0.34	0.04	**0.267**	**0.15**	0.085	0.081	22
t-values	6.18	1.3	-1.71	0.61	-4.69	-4.78	0.57	**-17.00**	**1.300**			
OWN HOME RENTAL EQUIV	0.692	0.017	0.004	-0.019	-0.154	-0.141	0.071	**0.692**	**0.23**	0.542	0.541	760
t-values	54.72	7.65	10.46	-3.7	-7.98	-7.6	3.6	**-24.00**	**7.650**			
OWN HOME MTGE INT	1.006	0.01	-0.018	-0.02	0.015	0.111	0.307	**1.006**	**0.13**	0.273	0.271	153
t-values	24.39	1.48	-12.61	-1.46	0.28	1.99	5.33	**0.15**	**1.48**			
OWN HOME PROP TAX	0.9	0.02	0.005	-0.04	-0.33	-0.67	-0.588	**0.9**	**0.269**	0.326	0.325	306
t-values	33.53	4.23	5.41	-3.6	-8.19	-17.15	-14.1	**-3.90**	**4.22**			
OWN HOME REPAIRS	1.11	0.004	0.017	-0.133	0.025	0.104	-0.031	**1.11**	**0.054**	0.135	0.133	72
t-values	19.17	0.46	9.1	-5.65	0.3	1.24	-0.36	**1.94**	**0.460**			
OWN HOME OTHER ADDITIONS	1.15	-0.036	0.007	0.018	0.06	-0.205	-0.312	**1.15**	**-0.484**	0.102	0.098	24
t-values	11.32	-2.2	2.13	0.49	0.43	-1.45	-2.23	**1.530**	**-2.2**			
LODGING OUT OF TOWN	0.938	0.047	0.006	-0.036	-0.067	-0.04	-0.25	**0.938**	**0.63**	0.188	0.186	87
t-values	19.08	5.47	4.09	-1.81	-0.92	-0.55	-3.44	**-1.24**	**5.47**			
UTILITIES2	0.477	-0.0038	0.008	0.103	0.018	0.073	-0.262	**0.477**	**-0.051**	0.38	0.379	497
t-values	40.29	-1.62	18.33	19.26	0.91	3.66	-12.43	**-44.00**	**-1.61**			
TELEPHONE	0.48	0.0025	-0.005	0.05	-0.003	0.11	-0.116	**0.48**	**0.034**	0.318	0.317	387
t-values	35.66	0.92	-11	8.06	-0.13	4.84	-4.85	**-38.00**	**0.91**			
HOUSEHOLD SERVICES	1.21	0.008	0.016	-0.027	0.231	0.439	0.045	**1.21**	**0.108**	0.314	0.313	295
t-values	38.28	1.31	14.3	-2.03	4.45	8.68	0.85	**6.80**	**1.30**			

Table 50. Continued

ln Item	ln C	E	A	F	M	S	W	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
FURNISH	1.3	-0.018	-0.0018	-0.032	0.081	0.064	0.037	**1.30**	**-0.242**	0.266	0.265	240
t-values	35.55	-2.45	-1.33	-2.08	1.32	1.07	0.61	**8.3**	**-2.45**			
CLOTHING & SHOES	0.972	0.012	-0.013	0.12	-0.128	-0.1	-0.15	**0.972**	**0.161**	0.404	0.403	526
t-values	40.7	2.53	-14.7	11.3	-3.09	-2.78	-3.53	**-1.15**	**2.52**			
CLOTHING SERVICES	0.346	0.0044	-0.01	0.026	-0.364	-0.186	-0.145	**0.346**	**0.059**	0.069	0.067	36
t-values	8.96	0.55	-6.85	1.45	-5.26	-2.83	-2.13	**-17.000**	**0.55**			
JEWELRY & WATCHES	1.013	-0.0083	-0.002	-0.088	-0.27	-0.125	-0.295	**1.013**	**-0.112**	0.16	0.15	57
t-values	18.02	-0.78	-0.97	-3.71	-3.01	-1.4	-3.29	**0.23**	**-0.78**			
PERS CARE SERVICES	0.744	0.022	0.007	0.03	-0.1	-0.014	-0.09	**0.744**	**0.296**	0.256	0.255	264
t-values	32.84	4.91	8.83	3.01	-2.56	-0.38	-2.26	**-11.000**	**4.9**			
MEDICAL PREMIA	0.464	0.009	0.02	0.06	0.043	0.063	-0.031	**0.464**	**0.121**	0.159	0.158	120
t-values	18.85	1.89	21.1	5.14	1.03	1.57	-0.74	**-21.000**	**1.88**			
MEDICAL HOSPITAL	0.325	-0.049	0.004	-0.0001	0.41	0.429	0.196	**0.325**	**-0.658**	0.026	0.017	3.17
t-values	3.09	-2.58	1.1	0	2.37	2.59	1.15	**-6.38**	**-2.570**			0.0025
MEDICAL OUTSIDE HOSPITAL	0.89	0.054	0.038	0.0027	-0.136	-1.2	0.21	**0.89**	**0.726**	0.378	0.26	3.31
t-values	2.05	0.85	2.34	0.02	-0.17	-1.54	0.28	**-0.25**	**0.85**			0.0076
MEDICAL, DENTAL, EYE	0.882	0.013	0.015	0.028	0.206	0.248	0.316	**0.882**	**0.175**	0.158	0.157	118
t-values	22.44	1.76	10.79	1.7	3.26	4.05	4.98	**-3.000**	**1.76**			
MEDICAL APPLIANCES	0.388	0.021	0.0096	0.003	0.102	-0.04	-0.026	**0.388**	**0.282**	0.063	0.059	17
t-values	7.73	2.27	5.42	0.15	1.33	-0.52	-0.35	**-12.00**	**2.3**			
MEDICAL DRUGS	0.494	-0.016	0.036	-0.018	0.226	0.46	0.03	**0.494**	**-0.215**	0.18	0.17	135
t-values	12.8	-2.21	25.83	-1.03	3.61	7.53	0.50	**-13.000**	**-2.2**			
TV, RADIO, SPORTS	1.144	0.004	-0.016	-0.01	0.214	0.153	0.28	**1.144**	**0.054**	0.238	0.237	187
t-values	28.94	0.52	-11.26	-0.63	3.28	2.39	4.23	**3.650**	**0.51**			

Table 50. Continued

ln Item	ln C	E	A	F	M	S	W	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test Pr>F
CLUB, ADMISSION SPECT FEES, PETS,TOYS	0.961	0.039	-0.0037	-0.028	-0.083	-0.133	-0.13	**0.961**	**0.524**	0.387	0.386	501
t-values	44.71	9.16	-4.72	-2.93	-2.24	-3.75	-3.53	**-1.820**	**9.15**			
READING	0.91	0.066	0.0026	0.047	0.09	-0.116	-0.009	**0.91**	**0.887**	0.316	0.315	343
t-values	33.35	11.94	0.26	3.92	1.98	-2.61	-0.2	**-3.270**	**11.9**			
HIGHER EDU EXPENSES	0.76	0.035	-0.008	-0.095	-0.205	-0.36	-0.553	**0.76**	**0.47**	0.1	0.09	11.000
t-values	6.75	1.72	-1.89	-2.14	-1.21	-2.12	-3.33	**-2.140**	**1.72**			
LOWER EDU EXPENSES	0.832	0.034	-0.014	0.035	-0.488	-0.11	-0.378	**0.832**	**0.457**	0.115	0.107	15
t-values	7.08	1.47	-2.78	0.7	-2.91	-0.65	-2.19	**-1.430**	**1.46**			
OTHER EDU SERVICES	0.682	0.056	0.003	-0.001	-0.026	0.088	0.182	**0.682**	**0.753**	0.12	0.11	24
t-values	9	3.98	1.01	-0.04	-0.21	0.68	1.42	**-4.2**	**4**			
AUTOMOBIL PURCHASE	1.46	-0.047	-0.0006	-0.132	0.096	0.226	0.069	**1.46**	**-0.632**	0.322	0.319	101
t-values	25.29	-4.43	-0.31	-6.48	1.11	2.65	0.78	**8.030**	**-4.4**			
AUTOMOBIL OPERATION	0.903	-0.008	-0.005	0.056	0.069	0.052	0.022	**0.903**	**-0.108**	0.402	0.401	529
t-values	48.05	-2.15	-7.3	6.87	2.16	1.7	0.7	**-5.150**	**-2.14**			
PUBLIC TRANSPORT	0.794	0.037	0.0027	-0.045	-0.187	-0.257	-0.194	**0.794**	**0.497**	0.163	0.161	70
t-values	16.62	3.87	1.45	-2.06	-2.18	-3.07	-2.43	**-4.280**	**3.87**			
MISCELLANS CONS EXP	0.9	-0.001	-0.003	-0.05	-0.05	-0.036	0.024	**0.9**	**-0.013**	0.149	0.148	121
t-values	24.97	-0.17	-2.86	-3.28	-0.97	-0.62	0.4	**-2.700**	**-0.17**			
PERSONAL INSURANCE	1.066	0.02	-0.021	0.004	0.006	0.018	-0.088	**1.066**	**0.269**	0.387	0.387	430
t-values	38.73	3.75	-20.81	0.41	0.13	0.42	-1.86	**2.400**	**3.75**			
GIFTS & CONTRIBUTE	0.953	0.048	0.029	0.015	0.366	0.333	0.108	**0.953**	**0.645**	0.197	0.196	149
t-values	21.88	5.88	18.58	0.83	5.16	4.81	1.5	**-1.060**	**5.88**			

Table 51. SHARES & WEIGHTED SUM ELASTICITIES, DOUBLE LOG FORM

DOUBLE LOG	ITEM	RATIO	INC ELAS	EDU ELAS	WGHT INC	WGHT EDU
FOOD HOME	FOOD HOME	0.0763	0.335	-0.027	0.02556	-0.00205
FOOD OUT	FOOD OUT	0.0269	1.016	0.336	0.02733	0.00904
TOBACCO	TOBACCO	0.0059	0.231	-0.361	0.00136	-0.00213
ALCOHOL	ALCOHOL IN	0.00339	0.5	-0.1613	0.00170	-0.00055
NITECLUB	ALCOHOL OUT	0.0028	0.732	-0.003	0.00205	-0.00001
RENTHOME	RENT	0.033	0.267	0.15	0.00881	0.00488
OWNOCCUP	RENTAL EQUIVALENT OF OWNED HOME	0.189	0.692	0.23	0.13079	0.04318
OHINT	OWNED HOME MORTGAGE INTEREST	0.0648	1.006	0.13	0.06519	0.00871
OHTAX	OWNED HOME PROPERTY TAX	0.0275	0.9	0.269	0.02475	0.00739
OHMAINT	OWNED HOME REPAIRS	0.0177	1.11	0.054	0.01965	0.00095
HOUSADD	OTHER HOME ADDITIONS & ALTERATION	0.01588	1.15	-0.484	0.01826	-0.00768
RENTOTHR	LODGING OUT OF TOWN	0.00643	0.938	0.63	0.00603	0.00406
UTILITIES2	UTILITIES	0.0365	0.477	-0.051	0.01741	-0.00186
TELEPHON	TELEPHONE	0.0189	0.48	0.034	0.00907	0.00063
SERVANTS	HOUSEHOLD SERVICES	0.01315	1.21	0.108	0.01591	0.00141
HOUSUPPL	HOUSEHOLD SUPPLIES	0			0.00000	0.00000
FURNISH	HOUSEHOLD FURNITURE & DURABLE EQP	0.0171	1.30	-0.242	0.02223	-0.00414
CLOTHES	CLOTHING & SHOES	0.0203	0.972	0.161	0.01973	0.00327
TAILORS	CLOTHING SERVICES	0.00218	0.346	0.059	0.00075	0.00013
JEWELRY	JEWELRY & WATCHES	0.00213	1.013	-0.112	0.00216	-0.00024
HLTHBEAU	PERSONAL CARE SERVICES	0.0051	0.744	0.296	0.00379	0.00151
TOILETRY	PERSONAL CARE SUPPLIES	0			0.00000	0.00000
HELTHINS	MEDICAL PREMIA	0.02537	0.464	0.121	0.01177	0.00307
HOSPITAL	MEDICAL HOSPITAL	0.0016	0.325	-0.658	0.00052	-0.00105
NURSHOME	MEDICAL OUTSIDE HOSPITAL	0.00027	0.89	0.726	0.00024	0.00020
DOCTORS	MEDICAL, DENTAL, EYE ETC.	0.0121	0.882	0.175	0.01067	0.00211
ORTHOPD	MEDICAL APPLIANCES	0.0016	0.388	0.282	0.00062	0.00045
DRUGS	MEDICAL DRUGS	0.0081	0.494	-0.215	0.00400	-0.00174
RECSPORT	TV, RADIO, PARTICIPATION SPORTS	0.01379	1.144	0.054	0.01578	0.00074
OTHREC	SPECTATOR ADMISSION, CLUB,PET,TOYS	0.0258	0.961	0.524	0.02479	0.01352
READING	READING	0.00797	0.91	0.887	0.00725	0.00707
HIGHEDU	HIGHER EDUCATION EXPENSES	0.0077	0.76	0.47	0.00585	0.00362
LOWEDU	NURSERY,ELEMENTARY & SECONDARY EX	0.007	0.832	0.457	0.00582	0.00320
OTHEDU	OTHER EDUCATION SERVICES	0.0015	0.682	0.753	0.00102	0.00113
AUTOS	AUTOMOBILE PURCHASE	0.0748	1.46	-0.632	0.10921	-0.04724
AUTOOPR	AUTOMOBILE OPERATIONS	0.0731	0.903	-0.108	0.06601	-0.00786

Table 51. Continued

DOUBLE LOG	ITEM	RATIO	INC ELAS	EDU ELAS	WGHT INC	WGHT EDU
TRAVEL	PUBLIC TRANSPORTATION	0.0077	0.794	0.497	0.00611	0.00383
MISCELCON	MISCELLANEOUS PERS.CONS. EXPENDIT	0.0139	0.9	-0.013	0.01251	-0.00019
PERSINS	PERSONAL INSURANCE(PREMIA,LIFE INS)	0.0652	1.066	0.269	0.06950	0.01752
CHARITY	GIFTS & CONTRIBUTIONS	0.0204	0.953	0.645	0.01944	0.01316
	SUM RATIOS	**0.95286**			0.79367	**0.07804**
OHPRINC	OWNED HOUSE MORTGAGE PRINCIPAL	0.03222	1.025	0.060	0.0330255	0.00194838
OHLUMP	OWNED HOUSE MORTGAGE LUMP PMTS	0.00665	1.43	0.040	0.0095095	0.00026809
OHTRANS	OWNED HOUSE TRANSACTION COSTS	0.0033	1.14	-1.075	0.003762	-0.0035476
PPROPTAX	PERSONAL PROPERTY TAXES	0.00058	0.9	-0.161	0.000522	-9.353E-05
OTHTAX	OTHER TAX NOT INCLUDED IN PROP TAX	0.0033	0.979	0.591	0.0032307	0.0019512
	SUM RATIOS	**0.99891**			0.84372	**0.07857**

Diagram 24. ELASTICITIES IN INTERACTION FORM

	$\eta>1$	$\eta\approx1$	$\eta<1$
$\varepsilon>0$	PERSONAL INSURANCE FOODOUT	LODGING OUT OF TOWN CLOTHING & SHOES GIFTS & CONTRIBUTIONS	OWN HOME RENTAL EQUIV OWN HOME PROP TAX PERSONAL CARE SERVICES MEDICAL APPLIANCES MEDICAL PREMIA CLUB,ADMISSION,SPECT FEES,PETS,TOYS READING OTHER EDU EXPENSES PUBLIC TRANSPORTATION
$\varepsilon\approx0$	OWN HOME REPAIRS HOUSEHOLD SERVICES TV,RADIO,SPORTS FURNISH	OWN HOME MTGE INT JEWELRY & WATCHES MEDICAL OUTSIDE HOSPITAL LOWER EDU EXPENSES HIGHER EDU EXPENSES	FOODHOME ALCOHOL IN ALCOHOL OUT UTILITIES2 TELEPHONE CLOTHING SERVICES MEDICAL,DENTAL,EYE MISCELLANS CONS EXPENDITURES MEDICAL HOSPITAL MEDICAL DRUGS AUTOMOBILE OPERATION
$\varepsilon<0$	AUTOMOBILE PURCHASE	OWN HOME OTH ADD	TOBACCO RENT

Table 52. REGRESSION RESULTS, INTERACTION FORM

ln Item	ln C	ln E	ln C* ln E	ln C* ln A	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test
FOODHOME	-0.0049	-0.762	0.069	0.003	0.332	-0.028	0.51	0.50	674
t-values	-0.07	-3.28	3.07	6.56	-73	-1.180			
FOODOUT	0.522	-0.635	0.083	0.005	1.029	0.248	0.399	0.398	404
t-values	3.03	-1.05	1.45	4.85	1.64	5.000			
TOBACCO	1.452	4.897	-0.488	1.56E-06	0.203	-0.300	0.031	0.03	6.49
t-values	3.98	3.93	-4.05	0	-18	-2.7			
ALCOHOL IN	-0.151	-2.017	0.178	0.0037	0.496	-0.1213	0.0760	0.073	27
t-values	-0.52	-1.94	1.82	1.69	-13	-1.3300			
ALCOHOL OUT	0.087	-1.14	0.106	0.0077	0.756	-0.011	0.113	0.111	41
t-values	0.19	-0.66	0.66	2.63	-4.4	-0.095			
RENT	1.6	4.07	-0.406	-0.006	0.251	-0.254	0.095	0.09	19
t-values	5.17	4.01	-3.91	-2.68	-17	-2.06			
OWN HOME RENTAL EQUIV	0.997	0.379	-0.017	-0.005	0.695	0.198	0.545	0.544	597
t-values	9.68	1.07	-0.52	-6.86	-23	7.30			
OWN HOME MTGE INT	0.998	-1.18	0.113	-0.006	0.978	0.023	0.274	0.272	119
t-values	2.38	-0.76	0.8	-1.89	-0.1	0.27			
OWN HOME PROP TAX	0.22	-2.99	0.295	-0.0014	0.903	0.152	0.331	0.329	242
t-values	1.02	-4.01	4.22	-0.99	-3.7	2.70			
OWN HOME REPAIRS	0.774	-2.23	0.216	-0.004	1.121	0.070	0.137	0.134	56
t-values	1.45	-1.17	1.22	-1.3	1.77	0.58			
OWN HOME OTHER ADDITIONS	0.018	-5.47	0.451	-0.0008	1.131	-0.667	0.104	0.099	19
t-values	0.02	-1.64	1.47	-0.14	1.23	-2.930			
LODGING OUT OF TOWN	0.02	-2.1	0.2399	0.006	0.944	0.455	0.186	0.183	66
t-values	0.04	-1.15	1.43	2.06	0.15	3.63			
UTILITIES2	0.47	0.185	-0.019	0.0009	0.468	-0.017	0.379	0.378	384
t-values	5.04	0.56	-0.62	1.44	-45	-0.84			

Table 52. Continued

ln Item	ln C	ln E	ln C* ln E	ln C* ln A	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test
TELEPHONE	0.398	-0.193	0.021	0.0005	0.478	0.031	0.316	0.315	297
t-values	3.92	-0.56	0.62	0.78	-39	0.89			
HOUSEHOLD SERVICES	1.4	-0.349	0.041	-0.0055	1.221	0.088	0.316	0.315	232
t-values	5.3	-0.38	0.47	-3.14	7	1.27			
FURNISH	0.996	-1.48	0.125	-0.0005	1.29	-0.149	0.265	0.26	185
t-values	3.63	-1.56	1.38	-0.25	8	-1.8			
CLOTHING & SHOES	0.507	-0.532	0.063	0.006	0.983	0.139	0.407	0.406	414
t-values	2.84	-0.86	1.05	4.69	-0.66	2.47			
CLOTHING SERVICES	-2.1	-8.86	0.837	0.006	0.352	0.054	0.093	0.09	38
t-values	-7.4	-8.92	8.81	3.02	-16	0.550			
JEWELRY & WATCHES	0.953	0.327	-0.043	0.004	1.049	-0.131	0.16	0.15	45
t-values	2.07	0.2	-0.28	1.08	0.58	-1.050			
PERS CARE SERVICES	0.096	-2.16	0.232	0.001	0.742	0.311	0.258	0.257	207
t-values	0.55	-3.57	3.99	0.84	-11	5.700			
MEDICAL PREMIA	0.907	1.3	-0.107	-0.003	0.478	0.160	0.162	0.160	95
t-values	4.73	2.04	-1.76	-2.41	-21	2.7			
MEDICAL HOSPITAL	1.81	4.72	-0.482	-0.0055	0.292	-0.413	0.024	0.014	2.33
t-values	2.21	1.61	-1.72	-0.94	-6.6	-1.82			0.0134
MEDICAL OUTSIDE HOSPITAL	1.55	5.33	-0.444	0.01	0.929	0.601	0.378	0.223	2.44
t-values	0.35	0.35	-0.31	0.39	-0.13	0.67			0.028
MEDICAL, DENTAL, EYE	0.311	-0.79	0.088	0.006	0.846	0.147	0.159	0.157	92
t-values	0.96	-0.68	0.81	3	-3.3	1.700			
MEDICAL APPLIANCES	1.05	3.8	-0.321	0.003	0.383	0.381	0.068	0.064	15
t-values	2.16	2.19	-1.99	1.11	-12.00	3.20			
MEDICAL DRUGS	1.31	4.01	-0.382	0.0025	0.461	-0.058	0.184	0.182	107
t-values	3.82	3.33	-3.38	1.21	-14	-0.800			
TV, RADIO, SPORTS	0.55	-2.97	0.282	-0.003	1.120	0.044	0.238	0.237	145
t-values	1.67	-2.47	2.51	-1.29	3	0.450			

Table 52. Continued

ln Item	ln C	ln E	ln C* ln E	ln C* ln A	MEAN INC ELAST	MEAN EDU ELAST	R^2	Adj. R^2	F test
CLUB, ADMISSION SPECT FEES, PETS,TOYS	0.464	-1.914	0.23	-0.002	0.950	0.536	0.389	0.388	394
t-values	2.83	-3.36	4.2	-1.65	-2.14	10.5			
READING	0.715	0.442	0.023	0.003	0.929	0.687	0.315	0.314	264
t-values	3.27	0.58	0.31	2.06	-2.5	10.6			
HIGHER EDU EXPENSES	-0.831	-0.235	0.0401	0.034	1.028	0.202	0.127	0.116	11
t-values	-0.68	-0.05	0.09	4.79	0.42	0.58			
LOWER EDU EXPENSES	0.292	0.7	-0.0185	0.0145	0.993	0.503	0.118	0.108	12
t-values	0.23	0.13	-0.04	1.62	-0.03	1.15			
OTHER EDU SERVICES	-0.275	-2.42	0.28	0.005	0.701	0.566	0.12	0.11	19
t-values	-0.39	-0.87	1.1	1.03	-3.66	3.0			
AUTOMOBIL PURCHASE	2.96	4.91	-0.5	-0.004	1.474	-0.415	0.326	0.322	80
t-values	5.02	2.12	-2.36	-1.2	7.56	-3.0			
AUTOMOBIL OPERATION	1.9	4.33	-0.411	0.001	0.899	-0.047	0.408	0.407	421
t-values	11.94	7.52	-7.55	0.98	-5.15	-1.2			
PUBLIC TRANSPORT	-0.118	-2.5	0.263	0.005	0.813	0.301	0.161	0.158	53
t-values	-0.34	-2.12	2.33	1.93	-3.7	2.7			
MISCELLANS CONS EXP	1.06	1.668	-0.158	0.005	0.914	-0.015	0.151	0.149	95
t-values	3.42	1.51	-1.53	2.47	-2.5	-0.27			
PERSONAL INSURANCE	0.881	-0.543	0.069	0.0004	1.078	0.192	0.387	0.386	334
t-values	4.08	-0.71	0.96	0.26	2.9	3.1			
GIFTS & CONTRIBUTE	-0.156	-3.41	0.365	0.0035	0.959	0.477	0.197	0.195	115
t-values	-0.49	-3.19	3.57	1.53	-0.75	5.01			

Table 53. SHARES & WEIGHTED SUM ELASTICITIES, INTERACTION FORM

INTERACTION	ITEM	RATIO	INC ELAS	EDU ELS	WGHT INC	WGHT EDU
FOOD HOME	FOOD HOME	0.0763	0.332	-0.028	0.02531	-0.00212
FOOD OUT	FOOD OUT	0.0269	1.029	0.248	0.02767	0.00667
TOBACCO	TOBACCO	0.0059	0.203	-0.30	0.00120	-0.00174
ALCOHOL	ALCOHOL IN	0.00339	0.496	-0.1213	0.00168	-0.00041
NITECLUB	ALCOHOL OUT	0.0028	0.756	-0.011	0.00212	-0.00003
RENTHOME	RENT	0.033	0.251	-0.254	0.00828	-0.00838
OWNOCCUP	RENTAL EQUIVALENT OF OWNED HOME	0.189	0.695	0.198	0.13145	0.03741
OHINT	OWNED HOME MORTGAGE INTEREST	0.0648	0.978	0.023	0.06335	0.00152
OHTAX	OWNED HOME PROPERTY TAX	0.0275	0.903	0.152	0.02483	0.00417
OHMAINT	OWNED HOME REPAIRS	0.0177	1.121	0.070	0.01983	0.00125
HOUSADD	OTHER HOME ADDITIONS & ALTERATION	0.01588	1.131	-0.667	0.01796	-0.01059
RENTOTHR	LODGING OUT OF TOWN	0.00643	0.944	0.455	0.00607	0.00293
UTILITIES2	UTILITIES	0.0365	0.468	-0.017	0.01707	-0.00063
TELEPHON	TELEPHONE	0.0189	0.478	0.031	0.00903	0.00058
SERVANTS	HOUSEHOLD SERVICES	0.01315	1.221	0.088	0.01606	0.00115
HOUSUPPL	HOUSEHOLD SUPPLIES	0			0.00000	0.00000
FURNISH	HOUSEHOLD FURNITURE & DURABLE EQP	0.0171	1.29	-0.149	0.02206	-0.00254
CLOTHES	CLOTHING & SHOES	0.0203	0.983	0.139	0.01996	0.00282
TAILORS	CLOTHING SERVICES	0.00218	0.352	0.054	0.00077	0.00012
JEWELRY	JEWELRY & WATCHES	0.00213	1.049	-0.131	0.00224	-0.00028
HLTHBEAU	PERSONAL CARE SERVICES	0.0051	0.742	0.311	0.00378	0.00159
TOILETRY	PERSONAL CARE SUPPLIES	0			0.00000	0.00000
HELTHINS	MEDICAL PREMIA	0.02537	0.478	0.160	0.01213	0.00407
HOSPITAL	MEDICAL HOSPITAL	0.0016	0.292	-0.413	0.00047	-0.00066
NURSHOME	MEDICAL OUTSIDE HOSPITAL	0.00027	0.929	0.601	0.00025	0.00016
DOCTORS	MEDICAL, DENTAL, EYE ETC.	0.0121	0.846	0.147	0.01024	0.00178
ORTHOPD	MEDICAL APPLIANCES	0.0016	0.383	0.381	0.00061	0.00061
DRUGS	MEDICAL DRUGS	0.0081	0.461	-0.058	0.00373	-0.00047
RECSPORT	TV, RADIO, PARTICIPATION SPORTS	0.01379	1.120	0.044	0.01544	0.00061
OTHREC	SPECTATOR ADMISSION, CLUB,PET,TOYS	0.0258	0.950	0.536	0.02450	0.01382
READING	READING	0.00797	0.929	0.687	0.00740	0.00547
HIGHEDU	HIGHER EDUCATION EXPENSES	0.0077	1.028	0.202	0.00792	0.00155
LOWEDU	NURSERY,ELEMENTARY & SECONDARY EX	0.007	0.993	0.503	0.00695	0.00352
OTHEDU	OTHER EDUCATION SERVICES	0.0015	0.701	0.566	0.00105	0.00085
AUTOS	AUTOMOBILE PURCHASE	0.0748	1.474	-0.415	0.11023	-0.03104
AUTOOPR	AUTOMOBILE OPERATIONS	0.0731	0.899	-0.047	0.06575	-0.00345
TRAVEL	PUBLIC TRANSPORTATION	0.0077	0.813	0.301	0.00626	0.00232

Table 53. Continued

INTERACTION	ITEM	RATIO	INC ELAS	EDU ELS	WGHT INC	WGHT EDU
MISCELCON	MISCELLANEOUS PERS.CONS. EXPENDIT	0.0139	0.914	-0.015	0.01270	-0.00020
PERSINS	PERSONAL INSURANCE(PREMIA,LIFE INS)	0.0652	1.078	0.192	0.07030	0.01251
CHARITY	GIFTS & CONTRIBUTIONS	0.0204	0.959	0.477	0.01956	0.00974
	SUM RATIOS	**0.95286**			**0.79621**	**0.05465**
OHPRINC	OWNED HOUSE MORTGAGE PRINCIPAL	0.03222	0.976	-0.106	0.0314603	-0.00340565
OHLUMP	OWNED HOUSE MORTGAGE LUMP PMTS	0.00665	1.374	-0.196	0.0091347	-0.00130274
OHTRANS	OWNED HOUSE TRANSACTION COSTS	0.0033	1.064	-0.858	0.0035102	-0.00283127
PPROPTAX	PERSONAL PROPERTY TAXES	0.00058	0.951	-0.177	0.0005514	-0.00010292
OTHTAX	OTHER TAX NOT INCLUDED IN PROP TAX	0.0033	1.048	0.505	0.0034568	0.001666665
	SUM RATIOS	**0.99891**			**0.84433**	**0.04868**

VIII. BIBLIOGRAPHY

Afriat, S.N. (1974). "The effect of education on efficiency in consumption"(Book Review). *Monthly Labor Review*, January 1974, 86-87.

Benham, L. (1974) "Benefits of women's education within marriage." *Journal of Political Economy*, 82(2), S57-S71.

Corman, H. (1986) "The demand for education for home production." *Economic Inquiry*, 24(2), 213-230.

Dee, T.S. (2003). "Are there civic returns to education?" *NBER Working Paper No. 9588.*

Dye, R.F. (1980). "Contributions of volunteer time: Some evidence on income tax effect." *National Tax Journal*, 33, 89-93.

Ehrlich, I. (1975). "On the relation between education and crime." F.T. Juster, ed., Education, Income and Human Behavior, Mc-Graw Hill, NY.

Fahr, R. (2005). "Loafing or learning?- the demand for informal education." *European Economic Review*, 49 (1), 75-98.

Gibson, J. (2001). "Unobservable family effects and the apparent external benefits of education." *Economics of Education Review*, 20, 225-233.

Gilleskie, D.B., and Harrison, A.L. (1998). "The effect of endogenous health inputs on the relationship between health and education." *Economics of Education Review*, 17(3), 279-297.

Graham, J.W, and Green, C. A. (1984). "Estimating the parameters of a household production function with joint outputs." *Review of Economics and Statistics*, 66, 277-282.

Gronau, R. (1977). "Leisure, home production, and work-the theory of the allocation of time revisited." *Journal of Political Economy*, 85(3), 1099-1123.

_____ (1980). "Home production- a forgotten industry." *Review of Economics and Statistics*, 62, 408-416.

Gronau, R., and Hamermesh, D.S. (2006). "Time vs. goods: The value of measuring household production technologies." *Review of Income and Wealth*, 52(1), 1-16.

_____ (2008). "The demand for variety: a household production perspective." *Review of Economics and Statistics*, 90(3), 562-572.

Grossman, M. (1972a). “On the concept of health capital and the demand for health.” *Journal of Political Economy,* 80, 223-255.

_____ (1972b). “*The demand for Health: A Theoretical and Empirical Investigation*.” Columbia University Press for the NBER, NY.

_____ (1975). “*The correlation between health and schooling*.” N.E. Terleckyi ed., Household Production and Consumption, Columbia University Press for the NBER, NY, 147-211.

_____ (2006). “*Education and Nonmarket Outcomes.”* Hanuchek, E.A., and Welch, F. ed., Handbook of the Economics of Education, 2006(1), Chapter 10, 578-633.

Grossman, M., and Joyce, T. (1989). “*Socio-economic status and health: A personal research perspective.”* Bunker, J., Genby, D., and Kehrer, B. ed., Pathways to Health: The Role of Social Factors, Kaiser Foundation.

_____ (1990). “Unobservables, pregnancy solutions and birth weight production functions in New York City.” *Journal of Political Economy, 98*, 983-1007.

Grossman, M., and Kaestner, R. (1997). “*Effects of education on health.”* Behrman, J.R., and Stacey, N., ed., The Social Benefits of Education, University of Michigan Press, Ann Arbor, Michigan, 69-123.

Harris, E., and Sabelhaus, J. (2000). Consumer Expenditure Survey Extracts, NBER, www.nber.org

Haveman, R.H., and Wolfe, B.L. (1984). “Schooling and economic well-being: The role of nonmarket effects.” *Journal of Human Resources, 19*, 377-407.

Kenkel, D.S. (1991). “Health behavior, health knowledge and schooling.” *Journal of Political Economy,* 99, 287-305.

Lochner, L., and Moretti, E. (2004). “The effect of education on crime: evidence from prison inmates, arrests and self-reports.” *American Economic Review,* 94, 155-189.

Michael, R.T. (1972). “The effect of education on efficiency in consumption.” Columbia University Press for the NBER, NY.

_____ (1973a). “Education in nonmarket production.*” Journal of Political Economy,* 81, 306-327.

_____ (1973b). “Education and the derived demand for children.*” Journal of Political Economy,* 81, S128-S164.

Milligan, K., Moretti, E., and Oreopoulos, P. (2003). “Does education improve citizenship? Evidence from the US and the UK.” *NBER Working Paper No. 9584.*

Morris, J. (1976). “Some simple tests of the direct effect of education on preferences and on nonmarket productivity.” *Review of Economics and Statistics*, 58(1), 112-117.

Oettinger, G.S., (1999). “The effects of sex education on teen sexual activity and teen pregnancy.” *Journal of Political Economy*, 107(3), 606-639.

Pauly, M. (1980). *“Doctors and their workshops: Economic models of Physician behavior.”* University of Chicago Press for the NBER.

Pritchett, L. (2006). “Does learning to add up add up ? The returns to schooling in aggregate data.” Hanuchek, E.A., and Welch, F. ed., Handbook of the Economics of Education, 2006(1), Chapter 11, 635-695.

Rosenweig, M. R., and Schultz, T.P. (1989). “Schooling, information and nonmarket productivity: Contraceptive use and its effectiveness.” *International Economic Review*, 30(2), 457-477.

Sander, W. (1995). “Schooling and smoking.” *Economics of Education review*, 14, 23-33.

Shakotko, R.A., Edwards, L.N. and Grossman, M. (1981, 1982). “An Exploration of the Dynamic Relationship between Health and Cognitive Development in Adolescence.” J.Van Der Gaag and Perlman, M., ed., Contributions to economic Analysis: Health, Economics, and Health Economics, and NBER Working Papers No. 0454.

Sharp, D.C, Heath J.A., Smith W.T., and Knowlton D.S. (2004). “But can she cook? Women’s education and housework productivity.” *Economics of Education Review, 23*, 605-614.

Wolfe, B., and Zuvekas, S. (1995). “Nonmarket outcomes of schooling.” *Institute for research on Poverty, Discussion PaperNo. 1065-95.*