Leisure Expenditures of Retired
and Near-Retired Households

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This study examines the determinants of household expenditures on active and passive leisure by using a double-hurdle model to distinguish between the decision to purchase and the decision of expenditure. The analyzed data were the 1995 Consumer Expenditure Survey. Retirement was a significant variable in explaining leisure expenditures and the effect varied by type of leisure expenditure. Greater income elasticities for active, as compared to passive, leisure as well as for retired, as compared to near-retired, households indicate the growing importance of leisure as one enters retirement.

KEYWORDS: *Leisure expenditures, retired, elasticities.*

Over the past few decades, the United States has undergone significant sociological and economic transitions. Among the many changes, several have combined to focus attention on time as an input to activities that employ goods to provide satisfaction. Studies of time use have found that, as market work-time has decreased, leisure time has increased (Juster, 1985; Stafford & Duncan, 1985). Moreover, the rate of growth in per capita leisure expenditures (227%) far exceeded the rate of growth in per capita income (138%) between 1939 and 1988 (U.S. Department of Commerce, 1989). With older Americans having greater time available to combine with purchased leisure goods (Robinson & Godbey, 1997) and purchased leisure goods becoming a larger proportion of consumer budgets, research on the relationship between retirement and leisure good expenditures is needed.

The transition to retirement forces elderly households to adjust to an altered economic environment. Permanent withdrawal from full-time market work concomitantly reduces household income and increases the time available for leisure (McConnel & Deljavan, 1983). Thus, to maximize their economic well being, retired households adjust consumption patterns to reflect these evolving constraints, defined by time and money, as well as their preferences in retirement. Other empirical studies on the retired report that

retired households spend a larger proportion of their marginal dollar on leisure goods as compared to the non-retired (Rubin & Nieswiadomy's, 1994; 1995) and the preferences of retirees for leisure activities have shifted over time (Nieswiadomy & Rubin, 1995).

Of interest in the current research is our understanding about how theories of consumption help explain leisure expenditures. Often the question is asked as to how our preferences toward consumption and leisure change with age and retirement, however, very few studies focus on the effect of age and life-cycle stage have on preferences, as indicated by expenditure decisions. With a study of leisure goods expenditures, we hope to provide some insight to competing theories of consumption: the life-cycle income hypothesis and hypotheses derived from household production.

Life-cycle models indicate that consumers attempt to smooth their consumption stream over time. As one ages, consumption rises, only to fall at very late life stages. If one views consumption as a substitute to leisure then one would predict that consumption would fall in times of abundant leisure and that retirement would decrease consumption. On the other hand, since leisure time is more abundant in retirement then the demand for goods to use with that time could increase if, in fact, leisure goods and time are complementary in the production of satisfaction, as indicated by models of household production (Hatcher et al., 2000). For, when people participate in leisure activities, they simultaneously consume both time and goods. Leisure good expenditures reflect the input of goods to the production of leisure activities.

There is no doubt about the fact that leisure plays an important role in a person's life. Many empirical studies have suggested that there is a positive relationship between participation in leisure activities and life satisfaction, especially for older people (Kelly, Steinkamp & Kelly, 1987; Ragheb & Griffith, 1982; Riddick, 1985; Riddick & Daniel, 1984; Riddick & Stewart, 1994). Since leisure provides a forum for important interaction with significant others, it is crucial for one's self-concept and sense of well-being (Kelly et al., 1987). For aging persons, the nature and extent of leisure has been found to be a better predictor of life satisfaction than income, health problems, or employment status (Riddick, 1985; Riddick & Daniel, 1984). Studies on household leisure expenditures have been limited (Thomson & Tinsley, 1979; Dardis, Derrick, Lehfeld, & Wolfe, 1981; Dardis, Soberon-Ferrer, & Patro, 1994) and, with few exceptions, have not emphasized the impact of retirement on a household's leisure expenditures.

The purpose of this study is to identify differences between retired and near-retired households, given variations in economic and sociological variables, on their household leisure expenditures. Utilizing a sample of households, at or above the age of 50, we estimate the determinants of both the decision to purchase and the amount of expenditure, if a purchase is made, to provide insights not available in single equation models.

Review of Literature

The aging of the American population has increased interest in older members of that population, yet, there have been few studies of the impact of retirement on households' leisure expenditures. Most researchers have approached the subject from a perspective of the life-cycle consumption hypothesis, while few have examined differences in consumption that may be explained by home-production theory.

Dardis et al. (1981) examined households' recreation expenditures across the range of ages, with the 1972-73 Bureau of Labor Statistics Consumer Expenditure Survey (CES). In this work, the dependent variable was expenditures on total recreation; including households' spending on vacation homes, boats and aircraft, wheel goods, tours, loading and transportation expenses associated with vacations, televisions, and other recreation items. The analysis found recreation expenditures to increase with income and education and to decrease with the age of the household, indicating a life-cycle reduction in expenditures as individuals aged.

In a later piece, Dardis, et al. (1994) conceptually separated leisure expenditures into three categories: active leisure, passive leisure, and social entertainment. Analyzing data from the 1988-89 CES, it was found that income, education, and the number of adults worked to increase expenditures, regardless of leisure expenditure category. Households headed by an African-American and those with older heads of the household had lower amounts of leisure expenditures. The latter result supports a life-cycle approach to expenditures.

A limited number of leisure expenditure studies have focused on the impact of the work status of the elderly and are useful as indicators of the preferences of different demographic categories. Particularly germane to this is work is Rubin and Nieswiadomy's (1994) work with the 1986-87 CES data where they examined differences in expenditure patterns between retired and near-retired households over age 50. The results of their analysis indicated that retired households spent significantly less on entertainment, a component to leisure expenditures, than did near-retired households. Compared to near-retired households, however, retired households had a greater marginal propensity to consume (MPC)[1] for entertainment, indicating that this gap would narrow if retired incomes were greater and brings into focus the effect of preferences, as well as age, in consumption decision. For example, it was found that time intensive entertainment and travel activities were luxury goods for retired households, while, for non-retired households, reading materials were found to be luxury goods. These differences indicate the importance of time, which must be combined with purchased goods, to our understanding of leisure good demand.

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[1]Marginal propensity to consume is defined as the proportion of the next dollar of income that would be spent on the good of interest.

In a related piece, Nieswiadomy and Rubin (1995) analyzed changes over time in retiree expenditure patterns by comparing the 1986-87 CES data with data from the 1972-73 CES. The percentage of the average household budget spent on leisure expenditures increased across the period. An interesting result was that the marginal propensity to consume entertainment more than doubled across time. Both of these results imply that retirees' preference for leisure consumption had increased over time. The results also indicated that permanent income, education, race (non-black), and financial assets positively impacted expenditures, while age had a negative impact on entertainment expenditures, supportive evidence of life-cycle factors affecting consumption. Again, the marginal propensity to consume leisure was found to be significantly larger for all categories after retirement. This result is consistent with a production model of leisure good demand, where lower cost time is combined with greater goods to produce a recreation commodity.

In a related piece, using the 1972-73 CES data, McConnel and Deljavan (1983) examined expenditure differences between retired- and working-elderly households. The closest category to leisure was recreation and vacations, where the results found no differences in average budget shares between the retired and the working elderly. Expenditure elasticities (percentage change in consumption divided by the percentage change in income), however, indicated that leisure expenditures, defined as recreation and vacations, met the definition of a luxury good (defined as an income elasticity greater than one) for non-retired households, while being necessity goods for retired households (positive income elasticity less than one). Permanent income and financial assets both increased the proportion of the budget spent on leisure goods, while greater age was found to decrease leisure expenditure shares. The results indicate support for life-cycle factors but, in particular, these results indicate that elderly households prefer leisure goods as expenditures on these goods were increasingly greater for the elderly with greater resources.

Hill (1985) focused on the time use of people across the life-cycle, and found patterns consistent with both life-cycle and household production theories. For men, time spent in active leisure peaked in the youngest age group, 18-24, while time spent in social entertainment peaked for women at the same age group. For both men and women, passive leisure peaked markedly after age 64, when market work time dropped precipitously and time was spent in passive endeavors.

Theoretical Orientations

As briefly discussed in the introduction, this study employs the life-cycle theory of consumption with the theory of a household time allocation and production (Becker, 1975). The life-cycle approach to consumer decisions is built on the observation that, while people expect their income to vary over

their lifetime, they would prefer to have less variation in their consumption. At each life-cycle stage, they must be fed, clothed, housed, and re-created through leisure activities.

As is well known, the consumer's income is not constant over time. When they are young, their income is low and, given their expectations of greater future incomes, people borrow against their future income in order to have consumption. Following this period, incomes exceed consumption needs and the household saves resources for expending during retirement when their income is reduced. The emphasis is on savings and borrowing to even out variations in income and to maintain a relatively constant stream of consumption. This model would indicate that leisure expenditures would be relatively constant, particularly as a proportion of income, as individuals reach retirement.

A competing theory for the study of the demand for goods is household production theory. Here, the demand for goods is a derived demand where the goods are inputs to a production process where the goods are combined with consumer time to produce commodities from which the consumer derives utility (satisfaction). In the current framework, the consumer receives utility from two composite goods: the quantity of household produced goods (G) and quantity of produced recreation goods (R). The consumer maximizes the utility function:

$$U = u\ (G(X,H), R(C, L))\qquad(1)$$

Where, $U(.)$ and the production functions, $G(.)$ and $R(.)$, are assumed to be concave and twice continuously differential with positive marginal utilities for G and R, as well as positive first partial derivatives for X and H, and C and L, respectively. X is the quantity of market purchased goods used in the production of G, H is hours of household production, C is quantity of market purchased leisure goods (the focus good), and L is hours of leisure time.

If the total time available to the individual for market work (M), household work (H), and leisure time (L) is T, then:

$$T = M + H + L\qquad(2)$$

Let the consumer be paid an hourly wage, w, and V be nonlabor income, then:

$$wM + V = P_X X + P_C C\qquad(3)$$

Where, P_X = price vector for other market purchased goods and P_C = price vector for leisure goods used to produce recreation services. Substituting for M, the consumer's full income can be expressed as:

$$wT + V = P_X X + P_C C + wL + wH\qquad(4)$$

Utilizing a Lagrange function to maximize the utility function within this constraint,

$$L = u\ (G(X,H),\ R(C,L))\ +\ \lambda\ (wT\ +\ V\ -\ P_X X\ -\ P_C C\ -\ wL\ -\ wH) \quad (5)$$

one is able to derive standard first order conditions for the existence of an optimal solution, as well as demand functions for each input to the production process. Of particular interest are the marginal rates of substitution, derived from the first order conditions:

$$MRS_{hx} = U_g\, g_h/\, U_g\, g_x = g_h/g_x = w/P_x \quad (6)$$

and:

$$MRS_{lc} = U_r\, r_l/\, U_r r_c = r_l/r_c = w/P_c, \quad (7)$$

as they state the theoretical consumer equilibrium conditions that allow us to infer testable hypotheses.

Equations (6) and (7) state that the marginal rate of technical substitutions of household time to market purchased goods (g_h/g_x or r_l/r_c) are equal to the respective consumer's wage rate divided by the price of purchased goods (w/P_x or w/P_c). Thus, there exists a technical, production decision and inputs are determined as a function of the relative prices of those inputs. If the individual's wage rate increases with the price of purchased inputs fixed, in order for the consumer to maintain equilibrium, the demand for purchased inputs (either X or C) would increase, resulting in an increase in the marginal product of production time. Simultaneously, the marginal product of purchased inputs would fall, and the demand for production time would decrease. From equations (6) and (7), it is clear that, if the consumer's wage rate increases, the demand for time allocated to both household production and leisure should decrease and the demand for both leisure goods and market purchased goods would increase. As such, market employed individuals would be expected to use more goods (leisure and other market goods) and less time (leisure and household production) in production, relative to retired people, because the wage rates of employed people are clearly greater than those of retired people.

Continuing with a focus on retirement and remembering that in maximizing equation (5), one will derive demand functions for each production input: leisure goods (C), leisure time (L), all other market goods (X), and household production time (H). Focusing on the demand for leisure goods, we will state the input demand function:

$$C_k = f\ (V,\ P_x,\ P_c,\ w),\ k = 1,\ \ldots,n \quad (8)$$

where, V is household unearned income, P_X is the vector or prices for market purchased goods, P_c is the vector of prices for the $k = 1, \ldots, n$ leisure goods, and w is the consumer's market wage rate.

Recall equation (1) where recreation commodities are produced as a function of leisure goods and leisure time, $R = r(C,L)$. The impact of the change of the wage rate on the demand for leisure goods decomposes into the substitution effect ($\partial C^s/\partial w$) and the consumption income effect ($-C^*(\partial C/\partial V)$) (Varian, 1999),

$$\partial C/\partial w = \partial C^s/\partial w - (C)\partial C/\partial V. \tag{9}$$

Given that the cross-price substitution effect ($\partial C^s/\partial w$) is always non-negative and assuming that leisure goods are normal goods, where demand increases with income ($\partial C/\partial V > 0$), it is clear that a change in the wage rate has an ambiguous effect on the demand for leisure goods. That is, if $|\partial C^s/\partial w| > |(C)\partial C/\partial V|$, then $\partial C/\partial w > 0$ and vice versa.

If leisure time and leisure goods are economic complements, an increase (decrease) in the consumer's wage rate would result in a decrease (increase) in the demand for leisure goods. On the other hand, if goods and time are substitutes, an increase in the wage rate would induce greater expenditures on goods to employ with relatively expensive time to produce recreational services. As such, whether the individual is market employed or retired has a direct, yet ambiguous, effect on leisure good demand that depends on the overall relationship between goods and time in the production process. For example, if goods and time are substitutes, one would expect retired people to use fewer goods and more time. On the other hand, if they are complements, we would expect retired people to purchase more goods to use with more time.

In a similar manner, the first order conditions may be used to examine equilibrium conditions where optimum quantities of both home produced goods and recreation goods are determined. Here, the result varies according to the preferences of the consumer. Starting with:

$$U_g/U_r = r_t/g_h \tag{10}$$

The implication is that the decision of the individual regarding time allocation between household production and recreation depends on the individual's preferences or tastes for recreation vis-à-vis household produced goods. Individuals with greater marginal utility from recreation would be expected to spend more time on leisure or less time on household production.

Similarly,

$$U_g/U_r = r_c/g_x * P_x/P_c \text{ or } U_r/U_g * r_c/g_x = P_c/P_x \tag{11}$$

and the individual's choices between goods as inputs to either leisure or household production depend on the relative price of each good, its marginal product, as well as consumer preferences (i.e., U_r and U_g). Individuals will buy leisure goods as long as they receive greater marginal utility from recreation goods, as compared to home produced goods. Following previous research, younger, better educated, white households with established assets are expected to purchase greater leisure goods.

To ascertain preferences for goods, or between focus groups, the focus will be on the income elasticity of leisure expenditures. Income elasticity is defined as the percentage change in consumption relative to a percentage change in income. If the percentage change in consumption is greater than the percentage change in income, then the good is defined as a luxury good,

indicating that as income increases the proportion of the consumer's budget spent on that good increases. It follows that greater income elasticities within a focus population would indicate greater preference toward that good by that population. Past researchers (Thompson & Tinsley, 1979; Dardis, 1994) have indicated that leisure goods are a luxury good for most income classes. A greater income elasticity for one group, say the retired, would indicate a greater preference for leisure consumption in retirement.

Other family life-cycle variables: age, race, education, marital status, and home ownership are also expected to effect consumer preferences. In general, findings have indicated that leisure expenditures decrease with age, non-white race, lower levels of education, and single person households (Dardis et al. 1981, 1994) and similar results are expected with these data. Importantly, the focus is on how the effect of independent variables is different, at the margin, between the retired and the near retired. Of prime interest is the difference in the response to permanent income, on average, between the focus samples.

Method

Sample

The study data are four quarters of data from the 1995-96 Consumer Expenditure Interview Survey (CES). The Bureau of Labor Statistics (1998) conducts a nationwide consumer survey to provide a continuous flow of data on the consumption habits of Americans and to support periodic updates of the Consumer Price Index. The sample is a rotation panel that targets 5,000 consumer units that are interviewed quarterly, for five quarters, with the first quarter omitted from the data. The data contain socio-economic characteristics of households, as well as monthly data on all expenditures.

Similar to Rubin and Nieswiadomy (1994, 1995), a retired household is defined as one headed by an individual aged 50 or over who reported being retired in the year 1995. A non-retired household is defined as aged 50 or over that reported being employed. For a married-couple household, when a husband reported retired status, the household is included as a retired household, regardless of the wife's work status. A household in which the head is not working for reasons other than retirement is excluded from the sample. Moreover, the sample was limited to those that provided complete data on income and income sources. The final sample sizes were 5,468 observations consisting of 2,510 retired and 2,958 near-retired households.

Table 1 presents the descriptive statistics of retired and near-retired households. For annualized leisure expenditures, retired households spent less on both active and passive leisure than did near-retired households. Specifically, retired households spent $1,064 on active leisure and $729 on passive leisure, while near-retired households spent $1,841 on active leisure and $1,255 on passive leisure. Average annual total expenditures of retired households ($20,949) were much smaller than those of near-retired households ($37,783), which resulted in retired households allocating a slightly greater

TABLE 1
Economic and Demographic Profiles of Two Sub-Samples

Variables	Near-Retired (n=2,958)	Retired (n=2,510)
	Mean (Std.Dev.)/Frequency (Percent)	
Household Leisure Expenditure:		
Annual expenditures on active leisure	$1,841.38 (5,041.75)	$1,063.80 (4,028.06)
Annual expenditures on passive leisure	$1,255.06 (1,956.93)	$728.86 (1,154.34)
Annual total leisure expenditures	$3,096.44 (5,717.33)	$1,792.66 (4,406.45)
Economic and Demographic Variables:		
Income		
Annual total expenditures	$37,783.02 (27,771.21)	$20,948.90 (17,162.87)
Age		
Age of household head	58.52 (7.19)	73.21 (7.79)
Education of Head		
Less than high school	514 (17.4%)	918 (36.6%)
High school graduate	980 (33.1%)	816 (32.5%)
Some college	592 (20.0%)	377 (15.0%)
College graduate or over	872 (29.5%)	399 (15.9%)
Race of Head		
White	2,605 (88.1%)	2,257 (89.9%)
Black	249 (8.4%)	195 (7.8%)
Other	104 (3.5%)	58 (2.3%)
Family Type		
Married-couple	1,909 (64.5%)	1,237 (49.3%)
Female-headed	707 (23.9%)	949 (37.8%)
Owned with mortgage	1,446 (48.9%)	410 (16.3%)
Owned without mortgage	1,037 (35.1%)	1,606 (64.0%)
Rent	475 (16.1%)	94 (19.7%)
Residential Location		
Northeast	567 (19.2%)	570 (22.7%)
Midwest	705 (23.8%)	506 (20.2%)
South	744 (25.2%)	636 (25.3%)
West	664 (22.4%)	468 (18.6%)
Rural	278 (9.4%)	330 (13.1%)
Presence of Income Sources*		
Earned income	2,688 (90.9%)	358 (14.3%)
Pension income	540 (18.3%)	1,303 (51.9%)
Social Security retirement income	719 (24.3%)	2,304 (91.8%)
Asset income	1,116 (37.7%)	1,046 (41.7%)
Transfer income	382 (12.9%)	318 (12.7%)
Quarter		
1995 first quarter	745 (25.2%)	644 (25.6%)
1995 second quarter	765 (25.9%)	609 (24.3%)
1995 third quarter	762 (25.7%)	640 (25.5%)
1995 fourth quarter	686 (23.2%)	617 (24.6%)
Month of Interview		
First month	1,016 (34.3%)	879 (35.0%)
Second month	998 (33.4%)	827 (32.9%)
Third month	944 (31.9%)	804 (32.0%)

* Since households have multiple sources of income, the sum of income sources is more than 100 percent.

portion of their budget for leisure than near-retired households. For retired households, the budget shares for active and passive leisure were 5.1 percent and 3.5 percent, respectively, while for near-retired households, the budget shares for active and passive leisure were 4.9 percent and 3.3 percent, respectively. While a small difference, it does indicate that retired households spend a greater portion of income on leisure, even though total expenditures decline following retirement. This fact reflects a strong preference toward leisure in retirement. Other differences between the two groups may be observed in Table 1.

Dependent Variables

The dependent variables were a household's dollar expenditures on active and passive leisure and were composed of 90 specific expenditure items in the UCC codes from the 1995 monthly expenditure files. Based on measures of leisure expenditures from the review of literature, expenditures on (1) fees and admissions; (2) televisions, radios, and sound equipment; (3) pets, toys, and playground equipment; (4) reading; (5) sports equipment; (6) recreation vehicles; and (7) vacations and trips were the large expenditure categories used to denote household spending on leisure.

In studies of leisure time use, Hill (1985), Stafford and Duncan (1985), and Juster (1985) have helped identify the major categories of leisure expenditure by defining leisure time as active leisure, passive leisure, and social entertainment. Accordingly, Dardis et al. (1994) used these three categories of leisure to analyze a household's leisure expenditures. In their study, active leisure included a wide range of activities needing some physical effort such as jogging, cycling, fishing, and photography. Passive leisure was defined as activities that do not demand active participation on the part of the individual; watching television, use of radios, VCRs, and other sound equipment are examples. Social entertainment included attendance at spectator activities such as a sports event, as well as admissions to theaters and museums. When allocating specific leisure expenditure items in the data by the definition of the three categories of leisure used in Dardis et al. (1994), we found that household spending on leisure largely fell into only two categories: active leisure and passive leisure. Expenditures on social entertainment, with fees and admissions being the predominant item, were included in the category of passive leisure. As such, active leisure expenditures are a household's spending on leisure that requires some physical effort and includes expenditures on fees and admissions related to participant sports; pets, toys, and playground equipment; sport equipment; recreation vehicles; and vacations and trips. Passive leisure expenditures are the sum of a household's spending on leisure that involves non-physical activities and include expenditures on reading; and televisions, radio, and sound equipment. Table 2 details how the two-category leisure expenditures are composed and how seven leisure expenditure categories have been reduced to two.

TABLE 2
Definitions of Active and Passive Leisure Expenditures

Variable and Description

Active leisure:
— Fees and admissions:
  Expenditures on membership fees for country clubs, health clubs, swimming pools, tennis
    clubs, social or other recreational organizations
  Expenditures on fees for participant sports, such as golf, tennis, and bowling; management
    fees for recreational facilities, such as tennis court
  Expenditures on fees for participant sports on out-of-town trips
  Expenditures on fees for recreational lessons or other instructions
— TVs, radios, and sound equipment:
  Expenditures on musical instruments, supplies, and accessories
  Expenditures on rental and repair of musical instruments and supplies
— Pets, toys, and playground equipment:
  Expenditures on toys, games, hobbies, tricycles, and battery powered riders
  Expenditures on playground equipment
  Expenditures on pets, pet supplies, medicine for pets, and pet services
  Expenditures on veterinarian expenses for pets
  Expenditures on film, film processing, and photographic equipment
  Expenditures on rental and repair of photographic equipment
— Sport equipment:
  Expenditures on ping pong, pool tables, other similar recreation room items, general sports
    equipment, and health and exercise equipment
  Expenditures on bicycle
  Expenditures on camping, hunting, and fishing equipment
  Expenditures on winter, water, and other sports equipment
— Recreation vehicles:
  Expenditures on new or used motorcycles, motor scooters, or mopeds
  Expenditures on boat with motor or boat without motor
  Expenditures on motor, camper and motorized camper
  Expenditures on purchase of other vehicles
  Expenditures on docking and landing fees for boats and planes
  Expenditures on rental of aircraft, motorcycle and non-camper-type trailer
  Expenditures on rental of all boats, motorized camper, and other RV's
  Expenditures on rental and repair of sports, recreation, and exercise equipment
— Vacations and trips:
  Expenditures on airline fairs, train fares, and ship fares on out-of-town trips
  Expenditures on inter-city bus fares and taxi fares on out-of-town trips
  Expenditures on gasoline and motor oil on out-of-town trips
  Expenditures on auto rental on out-of-town trips
  Expenditures on parking fees and tolls on out-of-town trips
  Expenditures on motorcycle, motor scooter, or moped rental on out-of-town trips
  Expenditures on rental of aircraft, boat, all campers, and all vehicles

TABLE 2
(Continued)

Variable Name and Description

Passive leisure:
— Fees and admissions:
  Expenditures on miscellaneous recreational expenses on out-of-town trips
  Expenditures on admission fees for entertainment activities, including movie, theater,
    concert, opera or other musical series
  Expenditures on admission fees to sporting events
  Expenditures on miscellaneous entertainment services on out-of-town trips
  Expenditures on entertainment expenses on out-of-town trips, including admissions to
    events, museums and tours
— TVs, radios, and sound equipment:
  Expenditures on community antenna or cable TV and portion of management fees
  Expenditures on black and white TV, and combinations of TV with other items
  Expenditures on color TV; large screen color TV; color monitor and other items
  Expenditures on VCR, video-disc player, video camera, and camcorder
  Expenditures on video cassettes, tapes, and discs
  Expenditures on TV computer games and computer game software
  Expenditures on radio
  Expenditures on phonograph or record player; tape recorder and player
  Expenditures on sound components and compact disc sound system
  Expenditures on other sound and video equipment, including accessories
  Expenditures on compact discs, tapes, videos, or records
  Expenditures on repair of television, radio, and sound equipment
  Expenditures on rental of televisions, VCR, radio, and sound equipment
  Expenditures on rental of video cassettes, tapes, and discs
  Expenditures on computers and related hardware for non-business use
  Expenditures on computer software and accessories for non-business use
  Expenditures on repair of computers and related equipment for non-business use
— Reading:
  Expenditures on newspapers
  Expenditures on magazines
  Expenditures on books
  Expenditures on encyclopedias and other sets of reference books

Independent Variables

The independent variables are total household expenditures as a proxy
for household permanent income[2]; work status of the household head; and
demographic characteristics of the household such as age, education, race
of the household head, family type, home ownership, residential location,

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[2]Total expenditures have less variation, quarter to quarter, than income. As such, transitory
changes in income are less likely to effect measure and it is a truer measure of economic
resources.

and presence of income sources. With the exception of age and total expenditures, all variables are categorical to capture shifts in the intercept as an indicator of preferences. Interview quarter and month are also included to control for possible variations in household leisure expenditures that occur in different times of the year[3]. Table 3 presents the definitions and coding of independent variables.

Double-Hurdle Model

Household leisure expenditures involve a two-step process: whether to buy leisure goods or services (purchase decision) and how much to spend (expenditure decision). The double-hurdle model, proposed by Cragg (1971), is a general model of consumer demand that models the probability of the purchase decision as independent of the expenditure decision[4]. By featuring two separate stochastic processes, the double-hurdle model allows an independent variable to have opposite effects on the two decisions. This allows one to examine both the purchase and expenditure decisions to provide more useful insights into a household's leisure expenditures than traditional Tobit models, where the coefficient is constrained to be the same sign for both the purchase and expenditure decision. As an example, retirement status might decrease the probability that leisure expenditures are made, yet increase the amount spent by the average retired household once that decision to purchase has been made.

To estimate, the double-hurdle model decomposes consumer purchases into two decisions: whether to be a buyer and, for buyers, how much to spend. The first dependent variable, P_i, is a one-zero indicator, measuring the decision by one consumer to make a leisure expenditure ($P_i = 1$) or not ($P_i = 0$). Given the independence of errors across equations and the normality assumption on the errors of the equation, the purchase decision parameters, β_p, can be estimated by using probit analysis. Actual expenditure, C_i, is a continuous measure valued at greater than zero[5] (Abdel-Ghany and Silver, 1998). The double-hurdle model can be specified as follows:

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[3]The month/quarter combination uniquely holds constant the three-month period of observation. This allows the reduction in possible bias to the coefficients for the focus variables. No claim is made for interpretations relating to calendar seasons.

[4]For frequencies of zero and non-zero observations in the two categories of leisure expenditure, 28.1 percent of the sample had zero active leisure expenditures, while 3.1 percent did not spend on passive leisure.

[5]The PROBIT and LIFEREG procedures in the SAS program were used to obtain the estimates for the decision to purchase and total expenditure equations, respectively. The significance of the double-hurdle model is tested by using the chi-square statistical test (Greene, 1993): Chi-square $= X^2 = -2$ {ln L_T − (ln L_P + ln L_{TR})}, where, L_T = likelihood for the Tobit model, L_P = likelihood for the probit model, and L_{TR} = likelihood for the truncated regression model. This statistic has a chi-square distribution with k degrees of freedom, where k is equal to the number of independent variables minus the constant. The likelihood for the tobit, the null, one would calculate: $(X^2/(-2)) + ($ln $L_P + $ln $L_{TR})$.

Variables (Reference group in parenthesis)	Variable Description

Total Expenditures Total household expenditures for the quarter times four
Age of Head Age of household head
Work Status (Near-retired=0)
  Retired household=1, else=0
Race of Head (Nonblack=0)
  Black household head=1, else=0
Family Type (Male-headed=0)
  Married couple household=1, else=0
  Female-headed household=1, else=0
Education (College graduate or over=0)
  Less than high school graduate=1, else 0
  High school graduate=1, else 0
  Some college=1, else 0
Home ownership (Rent=0)
  Owned with mortgage=1, else 0
  Owned without mortgage=1, else 0
Region (Rural=0)
  Urban Northeast=1, else 0
  Urban Midwest=1, else 0
  Urban South=1, else 0
  Urban West=1, else 0
Presence of Income Sources
  Earned   Presence of income from wage and salary=1, else=0
  Pension   Presence of income from pensions=1, else=0
  SSRR   Presence of social security and railroad retirement income=1, else=0
  Asset   Presence of income from dividends royalties, estates, or trusts, interests on saving accounts or bonds, and rental units=1, else=0
  Transfer   Presence of income from government assistance programs=1, else=0
Quarter (Quarter 4=0)
  Quarter1   Interviewed in the first quarter in 1995=1, else=0
  Quarter2   Interviewed in the second quarter in 1995=1, else=0
  Quarter3   Interviewed in the fourth quarter in 1995=1, else=0
Interview Month (Month 3=0)
  Month1   Interviewed in the first month in a quarter=1, else=0
  Month2   Interviewed in the second month in a quarter=1, else=0

Purchase equation: $P_i = \chi_{pi}\beta_p + \varepsilon_{pi}; \varepsilon_{pi} \sim \text{n.i.d. } (0, \sigma^2{}_p), i = 1, ,N$ (12)

Expenditure equation: $C_i = \chi_{ci}\beta_c + \varepsilon_{ci}; \varepsilon_{ci} \sim \text{n.i.d. } (0, \sigma^2{}_c) \ i = 1, ,N_c$ (13)

Where, in the purchase equation, χ_{pi} is a vector of factors explaining variation in the purchase decision for $i = 1, \ldots, N$ total observations, β_p is a vector of unknown parameters relating χ_{pi} to P_i, and ε_{pi} is the error term. In the expenditure equation, χ_{ci} is a vector of factors explaining variation in expen-

diture for $i = 1, \ldots, N_c$, where N_c is the number of households with positive leisure expenditures, β_c is a vector of unknown parameters relating χ_{ci} to C_i, and ε_{ci} is the error term. It is assumed that ε_{pi} and ε_{ci} are normally and independently distributed and that each has a zero mean.

Results

Table 4 presents results for double-hurdle analyses for active and passive leisure expenditures for the total sample. A maximum likelihood ratio test[6] confirms that the double-hurdle models for both active and passive leisure expenditures are statistically significant at the 1% level, supporting the separability of the purchase and expenditure decisions for active and passive leisure.

Retirement

Importantly, the double-hurdle estimates indicate that work status has a significantly different impact on both the purchase and expenditure decisions for both active leisure and passive leisure. For active leisure, retired households are less likely to have expenditures than near-retired households but, once they decide to purchase active leisure, retired households spend significantly more than near-retired households. In contrast, for passive leisure, retired households are more likely to purchase passive leisure but, once they decide to consume, they spend somewhat less, although this latter result was not significant.

Considering the theoretical model, these results are mixed and somewhat contradictory. Retired households, according to the life-cycle hypothesis would spend less on goods in retirement. We did find that the retired were less likely to purchase active but they were more likely to purchase passive leisure. Clearly, given the household production hypotheses, the value of their time has fallen and they are combining it with passive leisure as a complement to the production of this leisure commodity. This was also the case with active leisure, once they decided to purchase active leisure. Here, the retired were found, on average, to purchase more active leisure when the analysis is restricted to only the purchasers of active leisure.

Expectedly, total expenditures as a proxy for permanent income have a significant and positive impact on both the purchase and expenditure equations for both active and passive leisure. For the total sample, active leisure was a luxury good with a permanent income elasticity of 1.70, indicating it to be a luxury good, while passive leisure had an estimated income elasticity of .68, a necessary good. Across the total sample, as income increases, the percentage of the budget spent on active leisure increases while it decreases for passive leisure.

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[6]To calculate a likelihood ratio statistic, the probit model, the truncated regression model, and the Tobit model were estimated separately.

TABLE 4
Results of Double-Hurdle Analysis for Active and Passive Leisure
Expenditures for the Total Sample

| Variable | Active leisure | | Passive leisure | |
	Purchase (n = 5,468)	Expenditure (n = 3,934)	Purchase (n = 5,468)	Expenditure (n = 5,301)
Constant	0.350*	−694.592	0.760**	478.053***
	(0.159)	(469.724)	(0.291)	(125.222)
Work Status (near-retired=0)				
Retired	−0.101*	687.311***	0.247**	−40.106
	(0.044)	(173.600)	(0.080)	(47.046)
Income				
Total Expenditures	0.207E-4***	0.084***	0.18E-4***	0.023***
	(1.507E-6)	(0.003)	(3.652E 6)	(0.000)
Race of Head (non-Black=0)				
Black	−0.499***	442.317	−0.032	−34.810
	(0.068)	(345.860)	(0.122)	(79.009)
Family Type (single male-headed=0)				
Married couple	0.241***	−251.278	0.234*	−53.991
	(0.061)	(267.329)	(0.100)	(69.808)
Female-headed	0.024	−76.827	0.304**	−101.563
	(0.062)	(288.040)	(0.103)	(72.094)
Education of Head (college graduate or over=0)				
Less than H.S.	−0.630***	−513.087*	0.403***	−467.678***
	(0.063)	(244.613)	(0.120)	(65.164)
H.S. graduate	−0.320***	−365.222	−0.062	−354.588***
	(0.060)	(207.995)	(0.123)	(58.881)
Some college	−0.088	−158.380	−0.001	−237.185***
	(0.070)	(229.316)	(0.142)	(66.275)
Home Ownership (rent=0)				
Own w/mortgage	0.358***	−18.483	0.257*	77.176
	(0.060)	(262.276)	(0.114)	(66.568)
Own w/o mortgage	0.336***	288.524	0.051	74.056
	(0.053)	(252.497)	(0.092)	(60.996)
Region (rural=0)				
Northeast	−0.212**	−456.186	0.586***	156.361*
	(0.072)	(295.844)	(0.136)	(79.283)
Midwest	−0.060	−328.324	0.320**	124.680
	(0.072)	(287.496)	(0.119)	(78.493)
South	−0.084	−322.137	0.130	108.093
	(0.071)	(285.970)	(0.111)	(77.760)
West	−0.069	189.664	0.214	113.351
	(0.074)	(291.612)	(0.121)	(80.277)

TABLE 4
(Continued)

Variable	Active leisure		Passive leisure	
	Purchase (n = 5,468)	Expenditure (n = 3,934)	Purchase (n = 5,468)	Expenditure (n = 5,301)
Quarter (fourth quarter=0)				
First quarter	−0.127*	−38.831	−0.005	162.536**
	(0.056)	(220.393)	(0.105)	(59.531)
Second quarter	0.019	39.064	0.018	1.984
	(0.055)	(224.105)	(0.104)	(59.775)
Third quarter	−0.063	300.069	0.059	−39.533
	(0.056)	(220.765)	(0.102)	(59.495)
Interview Month (month 3=0)				
Month 1	−0.021	28.011	0.104	−3.584
	(0.048)	(191.634)	(0.091)	(51.896)
Month 2	0.078	−221.037	0.134	1.541
	(0.049)	(191.699)	(0.092)	(51.732)
Log Likelihood	−2679.776	−38974.449	−667.511	−46353.946
Chi-square (df =38)	3405.658***		988.072***	

*Significant at 0.05 level
**Significant at 0.01 level
***Significant at 0.001 level
Standard errors are in parentheses

Households, in which the head was black, were less likely to purchase active leisure while race showed no statistically significant impact in any of the other equations: active leisure expenditures, passive leisure purchase decision, and passive leisure expenditures. Household type was found to have significant impacts on purchase decisions but no significant impacts on expenditure decisions for both active and passive leisure. Compared to single male-headed households, two-parent households have significantly higher probabilities to purchase both active and passive leisure, while single female-headed households are more likely to purchase passive leisure, compared to their single-male counterparts.

The results for the education of the household head indicate that, as expected, the lower the educational level of the household head, the less likely they are to purchase and, if they purchase, the lower their expenditures on both active and passive leisure. Compared to those with an education level of at least college graduate, households with an education level of at most high school are less likely to purchase both active and passive leisure and to spend significantly less on both types of leisure. Compared to the reference group of college-educated, households with an education level of high school graduate are less likely to purchase active leisure and, for those who purchase passive leisure, they tend to spend less on passive leisure.

Households with an education level of some college spend significantly less on passive leisure than the college educated.

Indicating the importance of assets to leisure consumption, compared to rental households, households owning a home with a mortgage are more likely to purchase both active and passive leisure, while households owning a home without a mortgage are more likely to purchase passive leisure. Homeownership appears to complement leisure expenditures, whether by creating demand for leisure goods to supply the home or by the home-owner's preferences shifting due to the relative preferences of other nearby homeowners. The region variable indicates that, compared to rural house-holds, households in the urban Northeast are less likely to purchase active leisure, but more likely to purchase passive leisure and spend significantly more. Residents in the Midwest are also more likely to purchase passive lei-sure, when compared to rural households.

The variables of interview quarters and months were used to control for possible demand shifts across times of the year. The results show that, com-pared to households interviewed during the fourth quarter of the year 1995, households interviewed during the first quarter of the year 1995 were sig-nificantly less likely to purchase active leisure and they spent significantly more on passive leisure, if they purchased passive leisure. The effects of the interview month are not statistically significant in terms of the purchase of, or the expenditure on, both active and passive leisure.

Retired Compared to Near-Retired

Since the results indicate that retirement does impact households' lei-sure expenditures, the sample was separated by work status of the household head. Table 5 presents the results of the double-hurdle analyses of active and passive leisure for retired households. Similarly, Table 6 presents the results for the near-retired households. A maximum likelihood ratio test confirms the significance of the double-hurdle models and the separability of the pur-chase and expenditure decisions for both groups.

Total expenditures have a significant and positive impact on both the purchase of, and expenditures on, both active and passive leisure for both the retired and near retired. Active leisure was found to be a luxury good for both samples. A permanent income elasticity of 2.09 was found for the retired, while it was 1.62 for the near retired. In both cases, the share of the budget spent on active leisure increases faster than total expenditures. It is clear, however, that this rate of increase is greater for the retired, indicating greater preference for leisure goods to combine with their lower cost time, supportive of the household production model of consumer demand.

The results for age of the household head show that when a household head of either group is older, the household is less likely to purchase active leisure. Also, the retired tend to spend less on passive leisure as they age. Age did not significantly reduce active leisure expenditures for those of ei-ther group that decided to consumer active leisure.

TABLE 5

Results of Double-Hurdle Analysis for Active and Passive Leisure Expenditures for Retired Households

Variable	Active leisure		Passive leisure	
	Purchase (n = 2,510)	Expenditure (n = 1,586)	Purchase (n = 2,510)	Expenditure (n = 2,427)
Constant	1.152***	2403.110	1.439*	751.612
	(0.342)	(1380.576)	(0.709)	(261.159)
Income				
Total Expenditures	0.322E-4***	0.106***	0.129E-4*	0.023***
	(3.069E-6)	(0.006)	(5.615E-6)	(0.000)
Age of Head	−0.019***	−26.844	−0.002	−7.561*
	(0.004)	(17.505)	(0.007)	(3.221)
Race of Head (non-Black= 0)				
Black	−0.400***	−580.672	−0.232	−77.258
	(0.106)	(532.823)	(0.167)	(85.536)
Family Type (single male-headed= 0)				
Married Couple	0.075	34.350	0.267	−218.569**
	(0.089)	(366.767)	(0.145)	(70.599)
Female-headed	−0.096	78.075	0.396**	−193.106**
	(0.089)	(389.893)	(0.146)	(71.544)
Education of Head (college graduate or over= 0)				
Less than H.S.	−0.664***	−453.080	0.017	−179.131*
	(0.098)	(349.377)	(0.162)	(70.545)
H.S. graduate	−0.389***	−557.217	0.269	−113.172
	(0.098)	(323.379)	(0.172)	(68.428)
Some college	−0.308**	−835.643*	0.271	−61.551
	(0.113)	(364.305)	(0.212)	(78.276)
Home Ownership (rent=0)				
Own w/mortgage	0.520***	127.966	0.176	−6.967
	(0.105)	(436.980)	(0.209)	(80.072)
Own w/o mortgage	0.372***	116.198	0.017	60.700
	(0.074)	(368.765)	(0.137)	(60.897)
Region (rural=0)				
Northwest	−0.236*	−723.995	0.597**	117.575
	(0.098)	(399.824)	(0.185)	(77.186)
Midwest	−0.160	−239.814	0.292	6.194
	(0.099)	(401.495)	(0.165)	(78.353)
South	−0.144	−488.996	0.241	107.903
	(0.096)	(389.109)	(0.153)	(76.159)
West	−0.139	331.261	0.338	202.497*
	(0.104)	(403.365)	(0.175)	(80.459)

TABLE 5
(Continued)

Variable	Active leisure		Passive leisure	
	Purchase (n = 2,510)	Expenditure (n = 1,586)	Purchase (n = 2,510)	Expenditure (n = 2,427)
Presence of Income Sources				
Earn income	0.084	−917.774**	−0.357	162.032*
	(0.092)	(330.264)	(0.215)	(66.751)
Pension	−0.252***	−550.331*	−0.336**	76.983
	(0.060)	(247.623)	(0.115)	(47.334)
SSRR	−0.065	−410.470	−0.139	214.303*
	(0.118)	(433.333)	(0.212)	(87.319)
Asset	−0.135*	−205.018	0.061	−2.309
	(0.061)	(240.982)	(0.116)	(47.217)
Transfer	−0.112	−464.345	0.018	−17.093
	(0.091)	(380.813)	(0.152)	(70.125)
Quarter (fourth quarter=0)				
First quarter	−0.143	210.034	0.172	85.912
	(0.080)	(317.013)	(0.145)	(61.307)
Second quarter	−0.029	40.351	−0.011	−2.550
	(0.080)	(325.790)	(0.155)	(61.975)
Third quarter	−0.024	369.871	0.065	−8.451
	(0.079)	(318.337)	(0.149)	(61.136)
Interview Month (month 3=0)				
Month 1	−0.012	139.874	−0.048	−106.303*
	(0.069)	(278.698)	(0.127)	(53.273)
Month 2	−0.072	−239.233	0.017	−37.334
	(0.071)	(282.038)	(0.129)	(54.414)
Log Likelihood	−1328.398	−15582.024	−331.557	−20359.407
Chi-square (df =48)	1423.166***		466.994***	

*Significant at 0.05 level
**Significant at 0.01 level
***Significant at 0.001 level
Standard errors are in parentheses

Compared to non-Black households, near retired and retired households with a Black households head are less likely to purchase active leisure. For near-retired household, it is of interest to note that once they decide to purchase active leisure, they spend relatively more on active leisure than non-black households.

Household type had significant impacts on leisure expenditures that varied by retirement status. For retired households, household type did not affect decisions relating to active leisure however, for the near retired, married couple and single female-headed households were more likely to purchase active leisure, compared to single male-headed households. For passive

TABLE 6
Results of Double-Hurdle Analysis for Active and Passive Leisure Expenditures for Near-Retired Households

Variable	Active leisure		Passive leisure	
	Purchase (n = 2,958)	Expenditure (n = 2,348)	Purchase (n = 2,958)	Expenditure (n = 2,874)
Constant	1.537***	−977.802	1.807*	825.320*
	(0.439)	(1448.434)	(0.887)	(449.504)
Income				
Total Expenditures	0.184E-4***	0.079***	0.179E-4***	0.022***
	(1.745E-6)	(0.004)	(5.011E-6)	(0.001)
Age of Head	−0.012**	8.768	0.001	−7.205
	(0.005)	(21.439)	(0.010)	(6.580)
Race of Head (non-Black=0)				
Black	−0.600***	981.715*	0.258	28.028
	(0.093)	(457.350)	(0.194)	(125.977)
Family Type (single male-headed=0)				
Married Couple	0.402***	−532.380	0.245	99.321
	(0.086)	(379.281)	(0.147)	(114.006)
Female-headed	0.307***	−298.963	0.296	16.444
	(0.092)	(415.809)	(0.159)	(124.426)
Education of Head (college graduate or over=0)				
Less than H.S.	−0.470***	−441.918	−0.760***	−661.162***
	(0.090)	(358.912)	(0.201)	(111.637)
H.S. graduate	−0.285***	−223.302	−0.314	−484.481***
	(0.080)	(276.117)	(0.200)	(90.016)
Some college	0.002	246.786	−0.228	−325.800***
	(0.094)	(297.614)	(0.222)	(99.204)
Home Ownership(rent=0)				
Own w/mortgage	0.153	6.762	0.292	63.567
	(0.080)	(337.224)	(0.150)	(103.264)
Own w/o mortgage	0.213**	381.525	−0.011	81.663
	(0.083)	(351.565)	(0.142)	(108.154)
Region (rural)				
Northeast	−0.219*	−256.455	0.505*	200.424
	(0.112)	(429.158)	(0.218)	(137.311)
Midwest	−0.026	−326.808	0.263	195.384
	(0.111)	(406.554)	(0.190)	(132.976)
South	−0.017	−169.120	0.004	110.770
	(0.110)	(410.489)	(0.175)	(133.418)
West	0.046	209.937	0.074	64.423
	(0.113)	(415.032)	(0.189)	(135.862)

TABLE 6
(Continued)

Variable	Active leisure		Passive leisure	
	Purchase (n = 2,958)	Expenditure (n = 2,348)	Purchase (n = 2,958)	Expenditure (n = 2,874)
Presence of Income Sources				
Earn income	−0.001	−60.092	0.077	7.854
	(0.102)	(402.359)	(0.203)	(125.904)
Pension	−0.299***	250.641	−0.480*	44.490
	(0.087)	(287.688)	(0.115)	(94.858)
SSRR	0.081	−12.178	−0.212	−66.261
	(0.088)	(348.258)	(0.212)	(108.521)
Asset	−0.313***	184.437	−0.357*	88.374
	(0.065)	(220.393)	(0.116)	(72.940)
Transfer	0.026	−200.618	−0.028	−144.872
	(0.085)	(327.697)	(0.156)	(103.108)
Quarter (fourth quarter=0)				
First quarter	−0.117	−240.693	−0.232	245.886*
	(0.083)	(300.854)	(0.169)	(97.116)
Second quarter	0.058	−9.651	0.044	16.140
	(0.080)	(302.913)	(0.150)	(96.773)
Third quarter	−0.089	234.507	0.067	−62.785
	(0.081)	(299.144)	(0.150)	(96.831)
Interview Month (month 3=0)				
Month 1	−0.012	−133.254	0.315*	87.622
	(0.069)	(261.079)	(0.144)	(83.266)
Month 2	−0.072	−221.482	0.356*	16.112
	(0.071)	(260.696)	(0.147)	(83.825)
Log Likelihood	−1263.860	−23354.380	−305.520	−25625.839
Chi-square (df =48)	1634.796***		447.388***	

*Significant at 0.05 level
** Significant at 0.01 level
***Significant at 0.001 level
Standard errors are in parentheses

leisure, no significant difference between in household types was found for the near retired however, for the retired, compared to single-male retired households, retired single-female households were more likely to purchase passive leisure, while both retired married couples and single-female households who purchased passive leisure spent less on passive leisure than their single-male counterparts.

The results for education of the household head indicate that education has a greater impact on active leisure expenditures compared to passive leisure, for retired households and a greater impact on passive leisure expenditures for the near retired. Compared to households with an educational level of at least a college degree, the three household groups with lesser

education than the reference group are less likely to purchase active leisure for both retired and near retired households. Retired households that purchased leisure demonstrated little difference by education with respect to preference for either active or passive leisure expenditures. On the other hand, near retired households found each successively lower level of education demonstrating lesser expenditures on passive leisure goods. In total, the results support the expectation that greater education has a positive effect on the preference for leisure expenditures.

Home ownership, as an asset indicator, continued to have a significant and positive impact on the purchase of active leisure, but no significant impact on passive leisure, for the retired. Regarding home ownership, near retired households owning their home without a mortgage are more likely to purchase active leisure than rental tenure households. One can easily conjecture that an owned home is likely to be complementary to active leisure expenditures if, for no other reason, the home provides a place where the goods may be stored and utilized.

According to the coefficients found for the region variable, compared to the reference group of rural households, retired and near retired households in Northeast urban areas are less likely to purchase active leisure and more likely to purchase passive leisure. In addition, retired households in the urban West spend significantly more on passive leisure than those from rural areas.

The results from the five dummy variables to indicate the presence of income sources exhibits few differences between the retired and near retired samples. Both pension and asset income reduce the probability of active leisure expenditures for both the retired and near retired. Of interest is the result that demonstrates that the presence of earned income in a retired household reduced the active leisure expenditures, indicating support for the hypothesis that goods and time are complements, as the greater the value of time, the lesser the purchase of active leisure goods. Pension income reduced the probability of expenditures for both active and passive leisure for both retired and near retired households, while asset income reduced the probability of expenditures for active leisure for both samples, as well as passive leisure expenditures of the near retired.

Summary and Conclusions

In analyzing household leisure expenditures for the retired and near retired, this study found that among our sample, a household, on average, spent $2,494 on total leisure with a budget share of 8.3% in 1995. Moreover, the percentage of the budget spent on both active and passive leisure, by retired households, exceeded that of near-retired households. It is clear that households spend considerable amounts of money on leisure, implying that leisure expenditures are considerably important to satisfaction.

The primary focus of this research was the effect of retirement status on leisure expenditures. Leisure expenditures are increasingly seen as an important part of individuals' life satisfaction and well being. Given the ex-

pected growth in the retired population, we employed a national representative sample of households, over the age of 50, to aid the understanding of this important population. A double-hurdle model of both active and passive leisure demand was used to test the separability of the decision to purchase each type of leisure good and, if a purchase was made, the amount of expenditure on that leisure good category. Importantly, the results support theoretical expectations and previous research, while the insights gained from the double-hurdle model attest to its appropriateness to this topic of consumer demand.

First, retired households, compared to those near retirement, were less likely to have any active leisure expenditures but more likely to have passive leisure expenditures. This is not very surprising, given the reduced activity level of some seniors. When expenditures on active leisure were the focus, however, it was found that retired consumers of active leisure had greater active leisure expenditures than the near retired. Given the theory, what does this tell us? First, retirement lowers the cost of time as an input to leisure activities. As the probability of active leisure purchase decreased with retirement status, it infers that the decision to purchase active leisure goods is a substitute for time in the production of active leisure. For those households that purchased active leisure goods, however, the amount of active leisure expenditures actually increased with retirement status, indicating that time and goods are complements in the production of active leisure. It also points to the possible existence of a shift in preferences toward greater active leisure goods by the retired.

An additional insight that we have gained from this research is the inappropriateness of single-equation models to model the truncated dependent variable of leisure expenditures. We have noted that the sign on retirement status, for example, is different for both the active and passive leisure purchase and level of expenditure equations. Single equation models have, for the most part, indicated that retirement reduces expenditures and, while it was found here to reduce the probability of expenditure, retirement actually increased expenditures, for those over the age of 50 that had active leisure expenditures.

The results for passive leisure weakly indicate the opposite. That is, purchases were more likely if the household was retired, indicative of a complementary relationship between time and passive leisure good purchase decision.

To suppliers of active leisure, these results make it appear fruitful for working to increase the understanding of the retired as to their time as an inexpensive input to leisure activities and to encourage them to begin to purchase active leisure goods. If successful, it is clear that the retired, active leisure consumer would have greater active leisure expenditures and, to the extent the active leisure is social or physical in nature, the welfare of the retired will be improved, along with the sales revenues of the suppliers.

Total expenditures, as a proxy for permanent income, consistently were found to have significant and positive impacts on both active and passive

leisure expenditures for both retired and near-retired households. Active leisure was found to be a luxury good for both the near-retired and retired samples with a permanent income elasticity of 1.62 and 2.09, respectively, while passive leisure was inelastic with a permanent income elasticity of .66 for both sub-samples, indicating that passive leisure is a necessary good. We found the response to a change in total expenditures for active leisure to be greater for retired households than it is for the near retired households, highlighting the importance of the income of the retired, as well as an in-dicator of their greater preference toward active leisure. As retired house-holds' incomes increase, following sound retirement financial planning or within a target geographic market, we can expect greater involvement by the retired in active leisure as their expenditures on active leisure goods increase faster than the rate of growth in income. On the other hand, ineffective retirement financial planning or markets with lower income retired would have the opposite effect, as expenditures would decrease faster than income decreases.

Single female households, compared to single male households, were found to be more likely to consume leisure but, once they decided to con-sume, they spent less than their single-male counterparts. Inducements aimed at the single male market appear to be warranted to encourage their participation in leisure markets for, once they are participating, their con-sumption is greater.

The race of the household head has a significant effect in only the active leisure equations where it was found that black households have a lower probability of active leisure expenditure. When the amount of expenditures by near-retired households is the dependent variable, however, the result is significant and blacks were found to spend more on active leisure. As other factors were held constant, one can interpret this result as an indicator of the potential emergence of markets for active leisure with the African-American population, if participation is successfully encouraged.

Regarding methodological matters, the double-hurdle model was em-ployed to analyze both active and passive leisure expenditures. Several changes in the signs of effects between the purchase of, and the expenditure on, leisure were found. For instance, for active leisure, retirement, race, fam-ily type, and homeownership with a mortgage had conflicting signs in the purchase equation and the expenditure equation. In spite of the same signs, some variables were significant in either the purchase or expenditure equa-tion, but not both. These sign changes and magnitude differences highlight the main advantage of the double-hurdle model over traditional models, that being the delineation of factors important to consumers' decisions of whether to spend on leisure versus factors important to the amount of leisure expenditures. It suggests that there exists a decision to purchase that is sep-arate from the function that determines the level of participation. For leisure activities, the choice to participate is clearly a necessary antecedent.

This study provides information to leisure researchers, policymakers, and business managers concerned with the household leisure expenditures

of retired and near-retired consumers. Leisure researchers would be wise to extend the methodology we employed to other, more defined categories of leisure, as well as conduct the analysis during a period of economic contraction to ascertain how leisure expenditures react to a changed economic landscape.

As the number of the elderly in the United States continues to increase and average retirement age tends to decrease, their expenditure patterns become more important to our society than before. Retired households have strong preference for leisure and this preference increases their spending on leisure goods. Policy makers would be prudent to consider the preferences of the retired for leisure expenditures, as well as the value of their time as a complement to leisure good purchase. Moreover, business managers should be more aware of retirees as a growing market segment in the American economy and target various leisure goods and services to retired households. In particular, when considering the estimated permanent income elasticities, greater permanent income will lead to proportionately greater increases in active leisure expenditures, and vice versa. To the extent active leisure enhances life-satisfaction and personal well being, it is clear that the financial preparedness of the retired is key to this growing market of retired individuals for active leisure goods.

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