Household Food Expenditures across Income Groups: Do Poor Households Spend Differently than Rich Ones?

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Abstract: The Life Cycle - Permanent Income Hypotheses (LCPIH) suggests that the timing of an income payment or government transfer should have no effect on the expenditures of the recipient. In this paper we test the LCPIH against a dynamic model of household consumption which predicts clustered food expenditure. We use data from 7,013 households in fifty-two urban and peri-urban markets throughout the United States containing detailed daily expenditure data collected by ACNielsen Homescan for 2003. Specifically, we examine aggregate food expenditure patterns, shopping trip patterns, and expenditure patterns across retail channels over calendar weeks, weekly seven day cycles, and days of the week. Our main finding is that households in the lowest 25 percent of the income distribution that have zero employed people have a significantly higher differenced expenditure level in the beginning of the month and significantly lower differenced expenditure in the last week or weeks of the calendar month, thus rejecting the LCPIH. Further, we find that, in general, households do not use convenience stores as a complementary retail channel to the grocery channel.

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The Life Cycle - Permanent Income Hypotheses (LCPIH) suggests that the timing of an income payment or government transfer should have no effect on the expenditures of the recipient. This outcome, however, stands in contrast with anecdotal evidence indicating that individuals and households cluster their expenditures around the time of income payments or government assistance distributions. Food expenditures, given their relative frequency compared to other purchases, are typically noted to be especially vulnerable to cyclical fluctuations in purchasing patterns. On May 15, 2006 the New York Times (Associated Press, p. 25) reported that the food expenditure cycle in Michigan was so pronounced in poorer neighborhoods that food retailers were lobbying for a change in the way federal assistance programs were distributed in order to even out the swings in customer traffic, which retailers claim make it difficult to provide sufficient food stocks and staff.

This article makes two contributions toward further understanding food expenditure cycles using detailed household food expenditure data for 7,013 households in fifty-two urban areas throughout the United States. Specifically, we ask: 1) Do consumers' expenditure patterns or trips to the store exhibit cyclical, weekly, or daily patterns? 2) Does consumers' use of alternative food retail channels for food expenditures vary cyclically throughout the month?

We examine monthly household food expenditure patterns across five income groups. Understanding these expenditure patterns across income groups has implications for both private sector retail interests, such as those highlighted by the recent newspaper article, as well as policy makers concerned with the nutrition and food security of low income households. Expenditure patterns over the course of a month are of interest to

food retailers, since "bumps" in food expenditures – especially for perishable items such as dairy, meat, and eggs – have implications for inventory management at the retail level. Further, cyclical purchasing patterns of vegetables, dairy products, and meat products, in low income households may imply that these households experience monthly disruptions in their nutritional balance.

Cyclical patterns in the allocation of food expenditures across market channels are also of interest. Constraints imposed on low-income households by small cash reserves, lack of access to private transportation, and limited food storage space in their homes may make it less attractive to shop in club stores that cater to "stock-up" shoppers. Further, if it is true that poor shoppers supplement their monthly grocery store trip with purchases at neighborhood convenience stores and small grocery stores, this implies the household location influences a low income household's optimal consumption bundle given the higher prices paid at these smaller stores.

In the sections that follow, we first review the relevant literature, focusing on those studies which have upheld and disproved the LCPIH and then those that have examined the LCPIH specifically with respect to food. Next, we present an alternative to the LCPIH in the form of a dynamic model of food purchasing patterns that is the basis for the alternative hypotheses formulation. We then describe the data sources for this article, describe our empirical estimation strategy, and present results. The article concludes with a summary discussion and concluding remarks.

Literature Review

The LCPIH suggests that the expenditure patterns should be unaffected by the receipt of a paycheck or income transfer. Results testing the empirical validity of the

LCPIH have been mixed. Hall uses Euler equations to test the LCPIH and finds supporting evidence using time series data to show that no variable, except for current consumption, has any power in predicting future consumption. Browning and Collado find empirical evidence supporting the LCPIH using expenditure and income data from Spain, which suggests that Spanish households smooth their consumption over the year independent of income flow.

Contrary to these findings, Zeldes and Jappelli et. al. find that liquidity or credit constraints do impact low income households' consumption behavior. Stephens (2003) reports further contradictory evidence suggesting that both the dollar amount and probability of expenditures increase directly after the receipt of a social security check. Shapiro also rejects the LCPIH hypothesis in an analysis of changes in individual consumption patterns in response to receipt of food stamps. Huffman and Barenstein find consumption expenditure declines between paychecks in the UK. These studies are a sample of the numerous studies that exist on both sides of this debate.

A number of studies have examined food consumption (e.g. Stephens, 2003) in light of the LCPIH. Low income households' food purchasing and consumption patterns have received considerable attention in recent literature. There is growing conclusive evidence that low income households exhibit cyclical food consumption and expenditure behavior that is dependent on the timing of their paycheck or government transfer. Wilde and Ranney find that the mean food energy intake for food stamp recipients drops significantly by the fourth week of the month. Stephens (2003) supports the cyclical expenditure hypothesis with his work documenting how food expenditures depend on social security checks, finding that expenditures spike immediately after the receipt of a social security check. Further advancing the idea that poor households exhibit fluctuating

food supplies, Shapiro finds that caloric intake declines 10 to 15 percent over the food stamp month. Stephens (2002) examines the expenditure patterns of perishable, or immediately consumed goods using data from the United Kingdom, and finds that consumption for households that face liquidity constraints is influenced by the timing of pay-check receipt.

These studies provide evidence that government transfers influence the food intake and expenditure patterns of recipients. However, they do not offer a clear picture of food expenditure patterns for the working poor in general. Previous studies suggest that food stamp recipients cluster their expenditures around the time of the transfer and typically have one large grocery shopping trip each month as a result of transportation constraints or lack of storage capacity (Wilde and Ranney). There is anecdotal evidence that low income households make smaller trips to higher price stores for the rest of the month.

This article contributes to this body of literature by using a comprehensive data set documenting all household food expenditure for 7,013 households for each day in 2003 in an empirical analysis based on a simple but robust dynamic programming model of consumption. We integrate the question of food expenditures into the larger body of literature testing the LCPIH and examine whether households with different employment structures in different income groups vary their food expenditure over the course of a month. We examine this question by testing whether expenditures on food items exhibit a cyclical pattern and whether the frequency of food shopping trips differs over the course of a month. We also test whether consumers utilize different food retail channels over the course of the month.

Theoretical Model of Food Purchasing Patterns

The theoretical model presented in this section is used to support the formulation of our alternative hypotheses which reject the LCPIH. Hence this model explains why consumers would not inter-temporally smooth their food expenditures. A highly stylized version of the consumer's problem can be stated as a dynamic programming problem with two choice variables – current food consumption, $\mathbf{c_t}$, and current food purchases, $\mathbf{p_t}$ – and two state variables – current cash balances available for food purchases, $\mathbf{b_t}$, and current food stocks, $\mathbf{s_t}$. The state equations for this problem are:

$$\mathbf{b_{t+1} = b_t - p_t + i_t} \quad (1)$$
$$\mathbf{s_{t+1} = s_t + p_t - c_t} \quad (2)$$

where $\mathbf{i_t}$ is cash income in the current period. Note that stocks of food are measured as a cash-equivalent. The Bellman equation for this problem is:

$$\begin{aligned} &\max_{c_t, p_t} \mathbf{V(b_t, s_t, t) = f(c_t) + dV((b_t - p_t + i_t),(s_t + p_t - c_t),(t+1))} \\ &\mathbf{s.t.} \\ &\mathbf{c_t \le s_t + p_t} \\ &\mathbf{p_t \le b_t + i_t} \end{aligned} \quad (3)$$

where $\mathbf{V(b_t, s_t, t)}$ is the maximum utility that can be achieved over an infinite horizon starting at time t with current cash balances available for food purchases, $\mathbf{b_t}$, and current food stocks, $\mathbf{s_t}$, and $\mathbf{f(c_t)}$ is the utility of current consumption. We assume that $\mathbf{f_1 > 0}$ and $\mathbf{f_{11} < 0}$ and that $\mathbf{V_1 > 0}$, $\mathbf{V_2 > 0}$, $\mathbf{V_{11} < 0}$, and $\mathbf{V_{22} < 0}$. Assuming an interior solution, the first order conditions for the solution are:

$$\begin{aligned} \mathbf{f}_1 - d\mathbf{V}_2 &= 0 \\ -d\mathbf{V}_1 + d\mathbf{V}_2 &= 0 \end{aligned} \quad (4)$$

It can be shown that as current cash balances increase, both food consumption and food purchases increase. As current food stocks increase, consumption increases, while food

purchases decrease. Finally, as current income increases, both current consumption and current food expenditures increase, but the increase is less than the increase in current income. The magnitude of these effects increases as cash balances and food stocks approach zero. Together, these results suggest that food purchases for low income consumers will be concentrated around the time when they receive income or government transfers and that expenditures for higher income consumers will be less sensitive to fluctuations in income.

The following null hypothesis is based on the LCPIH:

1. Households will not cluster their food expenditures in a cyclical pattern around pay periods, government transfers of food stamps, or social security checks.

If this hypothesis is rejected, especially for low income households, this result would provide evidence in support of our alternative model. We also explore two other hypotheses related to the number of trips and distribution of expenditures among retail channels:

2. Households will not exhibit cyclical, weekly, or daily patterns in their distribution of expenditures among retail channels.

3. Households will not exhibit different shopping trip cyclical, weekly, or daily patterns.

Rejection of these null hypotheses would lend support to Stephens' (2003, 2002) findings that households do respond to paycheck and government transfers by clustering their food expenditures around the time of the paycheck or transfer.

Data Sources

We use ACNielsen Homescan data in this article. This unique data set captures all food expenditures for the participating households, identifying the date and the name

of the store where each purchase was made. The sample includes 7,013 households in fifty-two market areas in the United States for all twelve months of 2003. Market areas include both urban and peri-urban areas. In addition to food expenditures, the data set contains demographic information for each household, including variables that measure household size, household composition, income range, age and education of household heads, presence of children, and employment status of the household head.

For our analysis we group households by per capita income, which is calculated by dividing the median of the income range reported by the household by the reported household size.[1] Households are divided into five income groups based on per capita income. These groups represent the lowest 5^{th}, $5\text{-}10^{th}$, $10\text{-}25^{th}$, and $25\text{-}50^{th}$ percentiles, and top half of the per capita income distribution. A finer segmentation of lower income households was used to better capture cyclical expenditure patterns within these groups and more accurately identify liquidity constrained households.

These income groups are used in three sets of analyses. The first examines the daily expenditure patterns for food items. Second, we examine cyclicity in the patterns of daily trips that a household makes over the course of a month. A trip is defined as a visit to a unique store, therefore there is some error introduced in counting trips, such that if a household makes two trips in one day to the same store, this is counted only as one trip, and further if a household visits two stores in the same trip this is counted as two trips. Finally, we investigate how daily food expenditures are allocated among major retail channels. Four market channels are examined: grocery, drug, convenience, and other.

It is likely that employment status of income earners impacts the liquidity of a household. For this reason, households are further categorized according to the number

[1] This measure of per capita income is subject to error, but it is used only to group households and so does not introduce measurement error into our regression analysis.

of employed household heads to examine how employment status is related to expenditure patterns. Three mutually exclusive and exhaustive employment statuses are used in the estimation process: i) households with no one employed, including dual retired household heads (0 employed), ii) households with one income earner, including single headed households (1 employed), and iii) dual income households (2 employed).

Econometric Model

We consider three cyclical patterns in our analysis. The first is a four week cycle that captures weekly or bi-weekly pay periods. This twenty-eight day cycle is divided into four weeks that begin on Mondays. Each week in the cycle is associated with a binary variable, $WEEKCYCLE_j$, $j \in \{1,2,3,4\}$, and one and only one of these binary variables will be equal to one for each day over the course of the year. The second cycle is the seven days of the week, each of which is associated with a binary variable, DOW_k, $k \in \{1,2,3,4, 5,6,7\}$. One and only one of these binary variables will be equal to one for each day over the course of the year. The final cycle in our analysis is the four weeks of a calendar month, with the first week starting on the first of the month and ending on the seventh. Because the number of days in a month varies, the fourth "week" of the month varies in length from seven days in a non-leap year February to nine days in a thirty day month and ten days in a thirty-one day month. Each of these weeks is associated with a binary variable, $CALWEEK_s$, $s \in \{1,2,3,4\}$. Once again, one and only one of these binary variables will be equal to one for each day over the course of the year.

Daily food expenditure for household *i* on day *t*, $\mathbf{E_{it}}$, can be described by the following expression:

$$\mathbf{E_{it}} = \sum_{\mathbf{j}=1}^{4} a_{\mathbf{j}} \mathbf{WEEKCYCLE_{jt}} + \sum_{\mathbf{k}=1}^{7} b_{\mathbf{k}} \mathbf{DOW_{kt}} + \sum_{\mathbf{s}=1}^{4} g_{\mathbf{s}} \mathbf{CALWEEK_{st}} + e_{\mathbf{it}} \qquad (5)$$

where $\boldsymbol{\alpha_j}$, $\boldsymbol{\beta_k}$, and $\boldsymbol{\gamma_s}$ are parameters to be estimated and $\boldsymbol{\varepsilon_{it}}$ is a random error. There are several problems with this specification, however. A typical household will have many days with no food expenditures, and days with large expenditures are often followed by days with no expenditures or only small expenditures. Therefore, zero observations and autocorrelation pose econometric challenges in this analysis. In addition, the model fails to account for household characteristics that may affect the general level of expenditure for a household.

In order to eliminate zero observations, each household's mean daily food expenditure for the relevant month was subtracted from food expenditures for each day – i.e.,

$$\mathbf{D_{it}} = \mathbf{E_{it}} - \overline{\mathbf{E_{im}}} \qquad (6)$$

where $\mathbf{D_{it}}$ is differenced expenditure, $\mathbf{E_{it}}$ is expenditure, and $\overline{\mathbf{E_{im}}}$ is the mean daily expenditure for household *i* in month *m*, the month associated with day *t*. This yielded 365 daily differenced values for each household. Differencing the daily aggregate expenditures reduces noise in the analysis and also eliminates the need to account for differences in household characteristics that may affect the general level of expenditure. Differencing does not eliminate the problem of autocorrelation, however.

In order to eliminate problems associated with autocorrelation, each household's differenced expenditures D_{it} were averaged for all the days throughout the year with values of one for each of the fifteen binary variables in the model – i.e., each of the four WEEKCYCLE binary variables, each of the seven DOW binary variables, and each of the four CALWEEK binary variables. These variables are designated AVG_D_{ir} , $r \in$

{1,2,3, …, 15}. . For example, there are 84 (12 weeks and 7 days per weekly cycle) daily expenditure observations in 2003 that have a value of one for $WEEKCYCLE_1$. These 84 observations were averaged to create AVG_D_{i1} for each household, the mean value of daily food expenditures for the first week of the twenty-eight day cycle. Repeating this process for each of the binary variables in the model yielded fifteen observations for each household, with each observation being the mean deviation from the average daily food expenditure associated with the corresponding cyclical indicator. The new model is:

$$\mathbf{AVG\_D_{ir}} = \sum_{j=1}^{4} a_j \mathbf{WEEKCYCLE_{jr}} + \sum_{k=1}^{7} b_k \mathbf{DOW_{kr}} + \sum_{s=1}^{4} g_s \mathbf{CALWEEK_{sr}} + e_{ir} \quad (7)$$

Stephens (2003) uses a similar specification to explain household specific expenditure. His model includes the WEEKCYCLE and DOW variables as well as others unique to his analysis.

With fifteen observations for each household and 7,013 households, the dataset used for this analysis consists of 105,195 observations. The model was run for each income group and employment group for to explain four week, day of the week, and calendar week patterns in (1) aggregate differenced food expenditures (tables 1, 2, 3), (2) the number of shopping trips (tables 4,5,6), and (3) expenditures within retail channels (tables 7-15). The model was estimated using ordinary least squares, with parameter standard errors corrected for heteroskedasticity using White's method.

Predictions based on the theoretical model suggest that low income households will respond to liquidity constraints by clustering their expenditures around the time of an income inflow. Therefore, we expect the parameters associated with the CALWEEK and perhaps with the WEEKCYCLE binary variables to be jointly significant based on an F-test. Also, because most transfer payments, such as social security payments and the

assignment of food stamp benefits are made early in the month, we expect parameters associated with $CALWEEK_1$ and $CALWEEK_2$ to be statistically significant and positive. We expect the DOW variables to be jointly significant for all income groups, with the pattern exhibited by individual parameters reflecting differences in time constraints.

Empirical Results

Food expenditure patterns

Weekly cycles show little consistent pattern across income groups and employment structures. If expenditure clustering by weekly cycles were due to liquidity constraints we would expect to see alternating positive and negative coefficient signs for those households who get paid every other week, no pattern for those that get paid weekly, and a single positive week for those that get paid every four weeks,. However, the dataset used does not have information on paycheck or government transfer periodicity and therefore it is likely that many different pay period patterns are represented by the households included. Contrary to prior expectations all three employment groups exhibit a significant and positive differenced expenditure in the second cycle for the highest income group (tables 1,2 and 3). The third cycle is negative and significant in the one employed household at the 5% level and negative and significant at the 10% level in two employed households. It is likely that these cyclical patterns are not reflective of liquidity constraints resulting from pay period cyclicity, but rather that they capture the cyclical shopping behavior of higher income households independent of their pay periods. We likely fail to capture the cyclical nature of low income households due to liquidity constraints because of the multiplicity of pay periods represented by the households.

Results concerning week of the calendar month (CALWEEK) show a much more defined pattern for household food expenditures consistent with our hypothesized outcomes. Zero employed households are the most likely to depend on some sort of government transfer, be it social security payments or food stamps, both of which are issued one time per month and typically at the beginning of the month (table 1). This is reflected in the lowest three income groups for the zero employed households. The results suggest that these low income households have positive and significant differenced expenditures in the first week of the calendar months, with decreasing expenditures throughout the month and negative and significant expenditures in the last week of the calendar month. These results offer strong evidence that government transfers have an important influence on the timing of food expenditures for low income households.

The weekly pattern in the one employed (table 2) and two employed households (table 3) is less pronounced. In the one employed households the lowest three income groups still exhibit negative differenced expenditure in week four of the calendar month, but the first three weeks, save for week 2 in the 5-10% income group, have positive differenced expenditures. The two employed households show no calendar week effects on their food expenditure patterns. This is likely because two income households receive pay checks several times per month and therefore do not cluster their expenditures around a single monthly payment.

Day of the week (DOW) effects are highly supportive of our research hypotheses. In the case of zero employed households (table 1), day of the week effects have a varied and inconsistent pattern throughout the week. We would expect this result given the low opportunity cost of time devoted to shopping for these households. The only notable

patterns for zero employed households are that the highest income group seems to prefer to shop midweek and nearly all income groups shop less on Sundays. One and two employed households (table 2 and table 3) show much stronger results for day of the week shopping patterns. In both cases, across income groups, households have positive and statistically significant differenced expenditures for both Saturday and Sunday. This very likely reflects their increased opportunity cost of shopping during the working week days.

Patterns of food shopping trips

We hypothesize, based on anecdotal evidence that low income households make one large shopping trip at the beginning of the month and then smaller more frequent trips toward the end of the month. Our analysis based on the number of daily shopping trips differenced from the average daily shopping trips for that month does not support this hypothesis. In the case of zero employed households (table 4) the number of trips a household makes is largely consistent with food expenditure patterns. The lowest three income groups make more differenced trips toward the beginning of the calendar month and significantly fewer in the fourth week of the month. One employed households (table 5) also show some evidence that households make fewer shopping trips in the last calendar week of the month. Cyclical patterns in both zero and one employed households show several statistically significant cycle differences, but it is unlikely given their pattern of trip frequencies that these are due to liquidity constraints. Dual employed households (table 6) show no cyclical or weekly trip patterns. Day of the week effects are also consistent with findings from the expenditure analysis. Both one and two employed households make significantly more trips on Saturday and Sunday, whereas

zero employed households make fewer trips on the weekends and significantly fewer on Sundays.

Food expenditure patterns among retail channels

Across income groups and employment groups patterns of expenditures in the grocery retail channel are similar to patterns that we observed in the aggregate food expenditure regression analysis (tables 7, 10, and 13). This is reasonable considering that a majority of household food expenditures are spent in the grocery channel, typically over 70 percent. Lower income households with zero employed spend significantly more in the beginning calendar months and then expenditures drop off as the month goes on.

The drug store retail channel shows relatively no significant patterns in the case of zero employed household (table 8). The signs of coefficient estimates are largely consistent with those of expenditure patterns in the grocery channel. We fail to reject the hypothesis that the coefficients are different from zero at any reasonable significance level in the case of calendar weeks, and we further fail to reject that the coefficients are different from zero for nearly all of the cycles for all employment groups. Day of the week expenditure patterns in drug stores are generally consistent with the opportunity cost induced patterns observed in the aggregate expenditure regressions discussed above.

If it is true that low income households make larger trips to the grocery store at the beginning of the month and smaller trips to smaller retail channels such as convenience stores toward the end of the month, we would expect to see an increase in differenced expenditures in convenience stores as the month proceeds. We do not find evidence of this trend. However, the trend that we do identify may be more troubling in terms of nutritional balance and household food supply. The lowest 10 percent of the income distribution for zero employed households exhibits the same spending patterns in

each retail food channel, which implies that they are not balancing their food expenditures toward the end of the month with smaller convenience store trips (table 9), but rather decreasing their expenditures altogether. This may signal a food insecurity vulnerability for these households. More generally, across income groups and employment groups it appears that conveniences store shopping is not a substitute for grocery store shopping except for possibly in the 10-25 % income group in the zero employed households (table 9) which has opposite and significant signs associated with calendar weeks between grocery and convenience store purchases.

Concluding Remarks

This article examines the expenditure patterns of a sample of 7,013 households in fifty-two urban and peri-urban markets throughout the United States using detailed daily expenditure data collected by ACNielsen Homescan for 2003. Specifically this article examines the aggregate food expenditures patterns, shopping trip patterns, and expenditure patterns within retail channels over calendar weeks, weekly seven day cycles, and days of the week. Our main findings are that households that have zero employed people who are in the lowest 25 percent of the income distribution have a significantly higher differenced expenditure level in the beginning of the month and significantly lower differenced expenditure in the last week or weeks of the calendar month. We suggest that this is likely a result of expenditures clustering around government assistance distributions such as social security payments or food stamps. Further, we find that the frequency of shopping trips is largely consistent with the pattern of aggregate expenditures, rejecting the hypothesis that low income households make one large trip at the beginning of the month and then supplement their household food supply

with smaller trips toward the end of the months. Finally, we find that the poorest of the zero employed households make fewer differenced expenditures in convenience stores toward the end of the month, suggesting that these households may be vulnerable to food insecurity in the later parts of the calendar month. These findings are important for policy makers concerned with the effectiveness of government assistance programs targeted at reducing household food insecurity. Further, these results support statements by retailers about monthly spikes in expenditures that make it difficult for them to adequately stock and staff their retail establishments.

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APPENDIX 1: REGRESSION RESULTS

Table 1. Expenditure Patterns on total food expenditures -- Zero employed Household Heads

	Bottom 5% income		**5-10% Income Group**		**10-25% income group**		**25-50% income groups**		**Top 50% income group**	
	Coefficient	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*
mondaycycle1	0.147	0.090	-0.003	0.121	0.017	0.070	-0.007	0.063	**-0.089**	**0.044**
mondaycycle2	0.064	0.102	0.142	0.105	0.124	0.075	**0.178**	**0.063**	**0.150**	**0.045**
mondaycycle3	-0.134	0.099	**-0.238**	**0.108**	-0.095	0.065	-0.097	0.066	-0.037	0.044
mondaycycle4	-0.076	0.096	0.099	0.110	-0.045	0.073	-0.072	0.060	-0.024	0.044
week1	**0.800**	**0.193**	**1.173**	**0.248**	**0.474**	**0.124**	0.176	0.091	-0.032	0.055
week2	**0.600**	**0.154**	**-0.356**	**0.128**	-0.016	0.078	0.071	0.073	0.047	0.047
week3	**-0.332**	**0.138**	**-0.386**	**0.138**	-0.130	0.087	0.038	0.070	0.021	0.047
week4	**-0.794**	**0.101**	**-0.320**	**0.134**	**-0.244**	**0.067**	**-0.212**	**0.056**	-0.027	0.041
mon	-0.423	0.260	0.120	0.352	**-0.641**	**0.216**	-0.241	0.225	**-0.534**	**0.159**
tues	-0.285	0.219	0.524	0.440	0.089	0.235	0.303	0.262	0.161	0.161
wed	**-0.577**	**0.211**	0.035	0.380	0.117	0.245	**0.721**	**0.295**	**0.371**	**0.158**
thur	0.071	0.251	-0.203	0.406	**0.813**	**0.291**	0.350	0.240	**0.369**	**0.181**
fri	0.190	0.196	-0.092	0.345	**0.737**	**0.274**	0.266	0.220	**0.749**	**0.214**
sat	**0.911**	**0.431**	0.106	0.546	0.252	0.324	0.139	0.428	**-0.418**	**0.196**
sun	0.124	0.329	-0.490	0.484	**-1.369**	**0.260**	-1.552	0.286	**-0.705**	**0.203**
R2	0.024		0.013		0.021		0.014		0.011	
F-Test p-value										
	CYCLE	0.238	CYCLE	0.110	CYCLE	0.260	CYCLE	0.021	CYCLE	0.003
	WEEK	0.000	WEEK	0.000	WEEK	0.000	WEEK	0.001	WEEK	0.747
	DOW	0.015	DOW	0.891	DOW	0.000	DOW	0.000	DOW	0.000

Note: Bold case results indicate significance at the 5% level

Table 2. Expenditure Patterns on total expenditures--One employed Household Head

	Bottom 5% income		**5-10% Income Group**		**10-25% income group**		**25-50% income groups**		**Top 50% income group**	
	Coefficient	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*
mondaycycle1	-0.134	0.122	0.157	0.119	-0.049	0.072	0.006	0.064	0.024	0.030
mondaycycle2	**0.361**	**0.116**	**0.184**	**0.101**	0.143	0.075	0.012	0.064	**0.081**	**0.031**
mondaycycle3	-0.222	0.116	-0.205	0.112	**-0.149**	**0.070**	-0.043	0.067	**-0.072**	**0.031**
mondaycycle4	-0.005	0.112	-0.135	0.105	0.054	0.078	0.025	0.064	-0.033	0.029
week1	0.153	0.153	**0.216**	**0.108**	0.062	0.080	0.118	0.065	-0.008	0.038
week2	0.026	0.116	-0.031	0.115	0.049	0.074	-0.022	0.061	0.008	0.032
week3	0.118	0.123	0.070	0.112	0.130	0.078	-0.086	0.066	0.032	0.031
week4	**-0.220**	**0.102**	**-0.189**	**0.082**	**-0.180**	**0.060**	-0.008	0.051	-0.024	0.026
mon	**-0.731**	**0.306**	-0.403	0.359	**-0.850**	**0.230**	**-1.266**	**0.176**	**-0.955**	**0.089**
tues	**-0.923**	**0.301**	**-1.406**	**0.242**	**-0.637**	**0.287**	**-1.521**	**0.192**	**-1.166**	**0.081**
wed	**-1.315**	**0.253**	**-0.744**	**0.330**	**-1.157**	**0.203**	**-1.479**	**0.169**	**-1.281**	**0.083**
thur	**-1.309**	**0.259**	-0.779	0.423	**-1.136**	**0.257**	**-1.146**	**0.232**	**-1.111**	**0.090**
fri	0.025	0.419	-0.380	0.466	-0.257	0.269	0.176	0.284	-0.099	0.110
sat	**1.206**	**0.434**	**0.964**	**0.411**	**1.542**	**0.342**	**2.297**	**0.373**	**2.282**	**0.163**
sun	**3.072**	**0.513**	**2.762**	**0.505**	**2.518**	**0.378**	**2.966**	**0.371**	**2.353**	**0.152**
R2	0.056		0.038		0.045		0.058		0.074	
	CYCLE	0.006	CYCLE	0.040	CYCLE	0.058	CYCLE	0.963	CYCLE	0.006
	WEEK	0.160	WEEK	0.043	WEEK	0.013	WEEK	0.272	WEEK	0.739
	DOW	0.000	DOW	0.000	DOW	0.000	DOW	0.000	DOW	0.000

Note: Bold case results indicate significance at the 5% level

Table 3. Expenditure Patterns on total expenditures -- Two Household Heads Employed

	Bottom 5% income		**5-10% Income Group**		**10-25% income group**		**25-50% income groups**		**Top 50% income group**	
	Coefficient	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*
mondaycycle1	0.010	0.167	0.229	0.177	-0.127	0.113	-0.039	0.085	-0.065	0.047
mondaycycle2	0.035	0.200	0.017	0.192	-0.002	0.110	0.144	0.082	**0.152**	**0.049**
mondaycycle3	-0.136	0.171	-0.083	0.148	-0.098	0.113	**-0.246**	**0.080**	-0.077	0.047
mondaycycle4	0.090	0.199	-0.162	0.135	0.224	0.117	0.140	0.085	-0.010	0.048
week1	0.128	0.226	0.182	0.220	0.104	0.130	-0.130	0.083	-0.017	0.052
week2	0.126	0.207	0.066	0.173	-0.027	0.109	-0.020	0.081	-0.049	0.048
week3	0.170	0.208	-0.028	0.192	-0.053	0.104	0.077	0.079	0.024	0.050
week4	-0.315	0.178	-0.164	0.147	-0.018	0.089	0.054	0.063	0.032	0.040
mon	**-1.464**	**0.339**	**-1.289**	**0.487**	**-2.126**	**0.317**	**-1.948**	**0.240**	**-1.511**	**0.147**
tues	**-1.108**	**0.391**	**-1.988**	**0.511**	**-2.321**	**0.412**	**-2.499**	**0.211**	**-2.318**	**0.140**
wed	-0.589	0.471	**-2.409**	**0.400**	**-2.214**	**0.326**	**-2.691**	**0.216**	**-2.440**	**0.131**
thur	**-1.135**	**0.408**	**-1.598**	**0.562**	**-1.854**	**0.379**	**-2.447**	**0.229**	**-2.290**	**0.143**
fri	-0.474	0.496	**-1.041**	**0.454**	-0.494	0.414	**-1.266**	**0.263**	**-1.025**	**0.171**
sat	**1.204**	**0.604**	**3.447**	**1.164**	**3.285**	**0.673**	**3.396**	**0.444**	**3.948**	**0.297**
sun	**3.578**	**0.894**	**4.924**	**0.895**	**5.766**	**0.668**	**7.507**	**0.513**	**5.682**	**0.303**
R2	0.081		0.113		0.114		0.166		0.153	
	CYCLE	0.929	CYCLE	0.487	CYCLE	0.227	CYCLE	0.004	CYCLE	0.007
	WEEK	0.346	WEEK	0.717	WEEK	0.910	WEEK	0.380	WEEK	0.734
	DOW	0.000	DOW	0.000	DOW	0.000	DOW	0.000	DOW	0.000

Note: Bold case results indicate significance at the 5% level

Table 4. Household Shopping Trips -- Zero employed Household Heads

	Bottom 5% income		**5-10% Income Group**		**10-25% income group**		**25-50% income groups**		**Top 50% income group**	
	Coefficient	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*
mondaycycle1	**0.008**	**0.004**	0.000	0.005	0.005	0.003	-0.001	0.003	-0.001	0.002
mondaycycle2	0.000	0.004	0.005	0.004	0.003	0.003	**0.006**	**0.002**	0.002	0.002
mondaycycle3	**-0.011**	**0.004**	-0.009	0.005	**-0.006**	**0.003**	-0.004	0.003	**-0.004**	**0.002**
mondaycycle4	0.003	0.004	0.004	0.005	-0.002	0.003	0.000	0.002	0.003	0.002
week1	**0.027**	**0.006**	**0.027**	**0.006**	**0.009**	**0.004**	0.004	0.003	-0.001	0.002
week2	**0.011**	**0.005**	-0.002	0.005	0.003	0.003	0.005	0.003	0.001	0.002
week3	**-0.011**	**0.004**	-0.010	0.005	-0.002	0.003	-0.001	0.003	0.002	0.002
week4	**-0.020**	**0.004**	**-0.012**	**0.005**	**-0.008**	**0.002**	**-0.006**	**0.002**	-0.001	0.002
mon	-0.015	0.015	0.006	0.014	-0.017	0.009	0.003	0.009	**-0.018**	**0.006**
tues	-0.011	0.010	**0.048**	**0.017**	**0.023**	**0.010**	**0.028**	**0.009**	**0.018**	**0.007**
wed	-0.010	0.010	0.003	0.012	**0.027**	**0.011**	**0.039**	**0.011**	**0.015**	**0.006**
thur	0.010	0.013	0.003	0.015	**0.035**	**0.014**	0.015	0.009	0.010	0.006
fri	0.012	0.010	0.008	0.015	0.018	0.012	**0.016**	**0.008**	**0.024**	**0.007**
sat	0.027	0.018	0.006	0.018	-0.001	0.013	-0.012	0.015	-0.005	0.009
sun	-0.013	0.018	**-0.074**	**0.016**	**-0.086**	**0.014**	**-0.089**	**0.011**	**-0.044**	**0.009**
r2	0.011		0.037		0.028		0.033		0.013	
	CYCLE	0.013	CYCLE	0.226	CYCLE	0.061	CYCLE	0.052	CYCLE	0.050
	WEEK	0.000	WEEK	0.000	WEEK	0.002	WEEK	0.017	WEEK	0.809
	DOW	0.319	DOW	0.000	DOW	0.000	DOW	0.000	DOW	0.000

Note: Bold case results indicate significance at the 5% level

Table 5. Household Shopping Trips-- One employed Household Head

	Bottom 5% income		**5-10% Income Group**		**10-25% income group**		**25-50% income groups**		**Top 50% income group**	
	Coefficient	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*
mondaycycle1	0.003	0.003	0.003	0.003	0.000	0.002	-0.001	0.002	0.001	0.001
mondaycycle2	0.003	0.003	0.003	0.003	**0.007**	**0.003**	0.001	0.002	0.002	0.001
mondaycycle3	**-0.008**	**0.003**	-0.004	0.004	**-0.006**	**0.002**	-0.003	0.002	**-0.003**	**0.001**
mondaycycle4	0.002	0.003	-0.002	0.004	-0.001	0.002	0.002	0.002	0.001	0.001
week1	0.004	0.003	0.006	0.003	0.000	0.003	0.000	0.002	0.000	0.001
week2	0.001	0.003	0.001	0.004	0.005	0.003	-0.002	0.002	0.002	0.001
week3	**0.007**	**0.003**	-0.003	0.003	0.002	0.002	0.000	0.002	0.001	0.001
week4	**-0.009**	**0.003**	-0.003	0.003	**-0.005**	**0.002**	0.001	0.002	**-0.002**	**0.001**
mon	**-0.020**	**0.010**	-0.009	0.013	**-0.026**	**0.007**	**-0.034**	**0.006**	**-0.034**	**0.003**
tues	-0.010	0.008	**-0.035**	**0.009**	**-0.017**	**0.008**	**-0.030**	**0.006**	**-0.037**	**0.003**
wed	**-0.027**	**0.008**	**-0.027**	**0.010**	**-0.037**	**0.006**	**-0.030**	**0.006**	**-0.042**	**0.003**
thur	**-0.031**	**0.010**	**-0.034**	**0.010**	**-0.038**	**0.007**	**-0.037**	**0.007**	**-0.045**	**0.003**
fri	-0.005	0.011	**-0.022**	**0.011**	-0.011	0.008	0.000	0.008	**-0.011**	**0.004**
sat	**0.039**	**0.017**	**0.056**	**0.016**	**0.070**	**0.012**	**0.080**	**0.014**	**0.095**	**0.006**
sun	**0.054**	**0.014**	**0.070**	**0.017**	**0.059**	**0.012**	**0.051**	**0.010**	**0.074**	**0.005**
r2	0.025		0.037		0.046		0.038		0.077	
	CYCLE	0.086	CYCLE	0.535	CYCLE	0.012	CYCLE	0.488	CYCLE	0.031
	WEEK	0.008	WEEK	0.264	WEEK	0.045	WEEK	0.926	WEEK	0.067
	DOW	0.000	DOW	0.000	DOW	0.000	DOW	0.000	DOW	0.000

Note: Bold case results indicate significance at the 5% level

Table 6. Household Shopping Trips-- Two employed Household Head

	Bottom 5% income		**5-10% Income Group**		**10-25% income group**		**25-50% income groups**		**Top 50% income group**	
	Coefficient	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*
mondaycycle1	0.006	0.005	0.000	0.005	-0.005	0.003	-0.002	0.002	-0.002	0.001
mondaycycle2	-0.001	0.006	0.000	0.005	0.005	0.003	0.004	0.002	0.003	0.001
mondaycycle3	-0.005	0.005	-0.007	0.005	-0.003	0.003	-0.004	0.002	-0.002	0.001
mondaycycle4	-0.001	0.006	0.006	0.005	0.004	0.003	0.002	0.002	0.001	0.001
week1	0.004	0.006	-0.004	0.006	0.004	0.003	-0.003	0.002	-0.001	0.002
week2	0.009	0.006	0.007	0.005	-0.005	0.003	0.000	0.002	-0.001	0.001
week3	-0.002	0.006	0.001	0.005	-0.002	0.003	0.002	0.002	0.002	0.001
week4	-0.009	0.005	-0.003	0.004	0.003	0.003	0.001	0.002	0.000	0.001
mon	-0.012	0.012	-0.022	0.015	**-0.053**	**0.008**	**-0.041**	**0.007**	**-0.038**	**0.004**
tues	**-0.022**	**0.012**	**-0.039**	**0.012**	**-0.048**	**0.008**	**-0.051**	**0.006**	**-0.058**	**0.004**
wed	-0.010	0.013	**-0.025**	**0.014**	**-0.046**	**0.008**	**-0.055**	**0.005**	**-0.058**	**0.004**
thur	**-0.039**	**0.013**	**-0.046**	**0.013**	**-0.043**	**0.009**	**-0.061**	**0.006**	**-0.060**	**0.004**
fri	**-0.028**	**0.013**	**-0.034**	**0.014**	-0.011	0.011	**-0.029**	**0.008**	**-0.029**	**0.005**
sat	**0.033**	**0.019**	**0.073**	**0.023**	**0.073**	**0.015**	**0.094**	**0.012**	**0.112**	**0.008**
sun	**0.077**	**0.025**	**0.094**	**0.022**	**0.129**	**0.015**	**0.142**	**0.010**	**0.132**	**0.008**
r2	0.052		0.078		0.109		0.127		0.136	
	CYCLE	0.709	CYCLE	0.485	CYCLE	0.089	CYCLE	0.090	CYCLE	0.161
	WEEK	0.268	WEEK	0.549	WEEK	0.232	WEEK	0.592	WEEK	0.654
	DOW	0.000	DOW	0.000	DOW	0.000	DOW	0.000	DOW	0.000

Note: Bold case results indicate significance at the 5% level

Table 7. Household Expenditure in Grocery Channel -- Zero employed Household Heads

	Bottom 5% income		**5-10% Income Group**		**10-25% income group**		**25-50% income groups**		**Top 50% income group**	
	Coefficient	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*
mondaycycle1	0.082	0.069	-0.072	0.081	-0.007	0.050	-0.061	0.053	-0.058	0.033
mondaycycle2	0.084	0.074	0.142	0.075	**0.161**	**0.052**	**0.170**	**0.051**	**0.101**	**0.032**
mondaycycle3	-0.110	0.077	-0.102	0.084	**-0.138**	**0.049**	**-0.099**	**0.051**	-0.024	0.033
mondaycycle4	-0.055	0.074	0.031	0.080	-0.016	0.048	-0.010	0.047	-0.019	0.033
week1	**0.635**	**0.152**	**0.817**	**0.152**	**0.236**	**0.084**	0.083	0.067	-0.020	0.042
week2	**0.381**	**0.136**	-0.114	0.086	0.032	0.058	0.039	0.050	0.034	0.036
week3	**-0.246**	**0.102**	**-0.194**	**0.092**	-0.042	0.063	0.016	0.055	0.033	0.036
week4	**-0.572**	**0.085**	**-0.379**	**0.082**	**-0.168**	**0.051**	**-0.103**	**0.040**	-0.035	0.030
mon	-0.343	0.209	-0.132	0.255	**-0.488**	**0.144**	-0.257	0.184	**-0.353**	**0.131**
tues	**-0.363**	**0.170**	0.309	0.360	-0.117	0.157	0.066	0.216	0.205	0.142
wed	**-0.339**	**0.176**	-0.094	0.281	0.290	0.181	0.445	0.242	**0.317**	**0.140**
thur	0.358	0.265	-0.115	0.293	**0.542**	**0.208**	0.323	0.198	0.203	0.143
fri	**0.457**	**0.223**	0.748	0.492	**0.499**	**0.190**	0.213	0.180	**0.484**	**0.175**
sat	0.226	0.317	-0.086	0.435	0.149	0.243	0.229	0.335	**-0.335**	**0.149**
sun	0.010	0.273	-0.629	0.348	**-0.881**	**0.169**	**-1.027**	**0.231**	**-0.527**	**0.157**
R2	0.014		0.013		0.016		0.009		0.007	
	CYCLE	0.254	CYCLE	0.196	CYCLE	0.002	CYCLE	0.003	CYCLE	0.009
	WEEK	0.000	WEEK	0.000	WEEK	0.001	WEEK	0.070	WEEK	0.515
	DOW	0.015	DOW	0.440	DOW	0.000	DOW	0.000	DOW	0.000

Note: Bold case results indicate significance at the 5% level

Table 8. Household Expenditure in the Drug Retail Channel-- Zero employed Household Heads

	Bottom 5% income		**5-10% Income Group**		**10-25% income group**		**25-50% income groups**		**Top 50% income group**	
	Coefficient	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*
mondaycycle1	-0.002	0.005	-0.017	0.010	0.005	0.004	0.003	0.004	-0.001	0.003
mondaycycle2	-0.001	0.005	0.012	0.009	0.000	0.004	-0.001	0.004	0.002	0.003
mondaycycle3	0.007	0.004	0.004	0.007	-0.004	0.004	-0.005	0.003	0.000	0.003
mondaycycle4	-0.004	0.004	0.000	0.005	-0.001	0.005	0.003	0.004	-0.001	0.003
week1	0.007	0.007	0.053	0.045	0.004	0.004	0.004	0.004	0.005	0.003
week2	-0.002	0.005	-0.035	0.022	0.003	0.004	0.001	0.004	-0.005	0.003
week3	-0.001	0.004	-0.013	0.020	-0.003	0.004	-0.002	0.003	0.001	0.003
week4	-0.003	0.003	-0.004	0.007	-0.002	0.003	-0.002	0.003	0.000	0.003
mon	-0.016	0.008	0.007	0.013	-0.001	0.006	0.006	0.006	0.001	0.006
tues	0.000	0.007	0.000	0.011	0.012	0.007	0.006	0.006	0.009	0.006
wed	0.003	0.006	-0.008	0.014	-0.007	0.007	0.001	0.006	-0.003	0.004
thur	-0.001	0.007	0.012	0.028	0.001	0.006	-0.003	0.008	**-0.010**	**0.004**
fri	0.003	0.008	0.007	0.020	0.001	0.006	-0.001	0.007	-0.001	0.005
sat	-0.005	0.008	-0.035	0.021	-0.008	0.007	-0.018	0.013	-0.001	0.007
sun	0.016	0.010	0.018	0.046	0.002	0.010	0.009	0.010	0.005	0.006
r2	0.005		0.006		0.002		0.002		0.001	
	CYCLE	0.303	CYCLE	0.305	CYCLE	0.558	CYCLE	0.478	CYCLE	0.973
	WEEK	0.770	WEEK	0.330	WEEK	0.706	WEEK	0.783	WEEK	0.304
	DOW	0.373	DOW	0.812	DOW	0.621	DOW	0.685	DOW	0.292

Note: Bold case results indicate significance at the 5% level

Table 9. Households Expenditure in the Convenience Retail Channel--Zero employed Household Heads

	Bottom 5% income		**5-10% Income Group**		**10-25% income group**		**25-50% income groups**		**Top 50% income group**	
	Coefficient	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*	*Coefficient*	*S.E*
mondaycycle1	-0.003	0.002	0.005	0.003	-0.001	0.001	0.003	0.002	0.000	0.001
mondaycycle2	0.006	0.004	0.000	0.005	0.000	0.002	**-0.004**	**0.001**	0.002	0.001
mondaycycle3	-0.005	0.003	-0.010	0.006	0.001	0.002	0.000	0.001	0.000	0.001
mondaycycle4	0.001	0.003	0.006	0.003	-0.001	0.001	0.001	0.001	-0.001	0.002
week1	**0.015**	**0.006**	0.018	0.012	-0.001	0.002	0.003	0.002	-0.001	0.001
week2	**-0.005**	**0.003**	-0.001	0.003	0.000	0.002	**-0.004**	**0.002**	0.001	0.001
week3	-0.001	0.003	-0.010	0.007	-0.003	0.002	0.003	0.002	0.002	0.001
week4	-0.007	0.004	-0.005	0.004	0.003	0.002	-0.001	0.001	-0.002	0.002
mon	**-0.009**	**0.003**	-0.004	0.005	-0.002	0.002	0.003	0.004	0.000	0.003
tues	0.008	0.005	-0.011	0.006	**-0.006**	**0.003**	0.000	0.003	0.002	0.002
wed	**-0.009**	**0.003**	-0.012	0.006	0.000	0.002	0.000	0.002	0.000	0.002
thur	0.003	0.003	0.001	0.003	0.006	0.006	0.000	0.002	0.000	0.002
fri	**-0.007**	**0.004**	0.014	0.008	0.001	0.002	-0.002	0.002	-0.001	0.002
sat	0.010	0.005	0.000	0.005	0.001	0.003	0.003	0.003	-0.001	0.002
sun	0.005	0.005	0.013	0.012	0.000	0.003	-0.004	0.003	-0.001	0.002
r2	0.013		0.011		0.003		0.003		0.001	
	CYCLE	0.117	CYCLE	0.109	CYCLE	0.872	CYCLE	0.023	CYCLE	0.642
	WEEK	0.021	WEEK	0.177	WEEK	0.117	WEEK	0.023	WEEK	0.386
	DOW	0.000	DOW	0.130	DOW	0.280	DOW	0.652	DOW	0.987

Note: Bold case results indicate significance at the 5% level

Table 10. Household Expenditure in Grocery Channel -- One employed Household Head

	Bottom 5% income		**5-10% Income Group**		**10-25% income group**		**25-50% income groups**		**Top 50% income group**	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
mondaycycle1	-0.0174	0.0985	0.0154	0.081	-0.0197	0.0543	-0.0152	0.0477	0.0059	0.0234
mondaycycle2	0.1273	0.0883	**0.1796**	**0.077**	0.098	0.0547	0.0514	0.0492	**0.0706**	**0.0236**
mondaycycle3	-0.0824	0.0874	**-0.1676**	**0.08**	**-0.1169**	**0.0515**	-0.0148	0.0498	**-0.0455**	**0.0231**
mondaycycle4	-0.0272	0.0872	-0.027	0.077	0.0382	0.0561	-0.0212	0.0474	-0.0306	0.023
week1	0.1796	0.1196	0.1614	0.084	0.0411	0.0633	0.0729	0.0517	-0.0058	0.0309
week2	0.0711	0.0866	0.0324	0.088	0.047	0.0569	-0.0219	0.0489	-0.0138	0.0243
week3	0.0127	0.0983	0.0294	0.081	0.0487	0.0609	-0.0452	0.0529	**0.0506**	**0.0247**
week4	**-0.1958**	**0.0722**	**-0.1659**	**0.063**	**-0.1017**	**0.0464**	-0.0044	0.0391	-0.0231	0.0214
mon	**-0.5235**	**0.2165**	**-0.5302**	**0.235**	**-0.6194**	**0.1702**	**-0.902**	**0.1417**	**-0.6853**	**0.0728**
tues	**-0.5437**	**0.2233**	**-0.809**	**0.194**	**-0.4449**	**0.2169**	**-1.1127**	**0.1403**	**-0.8859**	**0.0672**
wed	**-0.7173**	**0.2287**	**-0.5349**	**0.233**	**-0.8225**	**0.1622**	**-1.021**	**0.1332**	**-0.918**	**0.0691**
thur	**-0.7662**	**0.2157**	**-0.5277**	**0.268**	**-0.7443**	**0.2026**	**-0.7747**	**0.1932**	**-0.8343**	**0.0762**
fri	-0.246	0.2366	0.011	0.383	-0.0729	0.2172	0.1096	0.2169	-0.0771	0.0929
sat	**0.762**	**0.3161**	**0.583**	**0.311**	**0.8654**	**0.2425**	**1.4483**	**0.2471**	**1.5626**	**0.1326**
sun	**2.0485**	**0.3591**	**1.8182**	**0.376**	**1.8544**	**0.2945**	**2.2722**	**0.2953**	**1.8557**	**0.1268**
R2	0.0363		0.026		0.0314		0.0463		0.0547	
	CYCLE	0.542	CYCLE	0.042	CYCLE	0.0623	CYCLE	0.8302	CYCLE	0.0055
	WEEK	0.0357	WEEK	0.028	WEEK	0.1624	WEEK	0.5696	WEEK	0.2207
	DOW	0	DOW	0	DOW	0	DOW	0	DOW	0

Note: Bold case results indicate significance at the 5% level

Table 11. Household Expenditure in the Drug Retail Channel-- One employed Household Head

	Bottom 5% income		**5-10% Income Group**		**10-25% income group**		**25-50% income groups**		**Top 50% income group**	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
mondaycycle1	0.0053	0.0036	-0.0037	0.005	-0.0016	0.0032	0.004	0.0044	0.0011	0.0017
mondaycycle2	0.0032	0.0039	0.0031	0.004	**0.0063**	**0.0036**	-0.0036	0.0043	0.0016	0.0016
mondaycycle3	**-0.0081**	**0.0033**	0.0023	0.006	**-0.006**	**0.0033**	0.0025	0.0029	-0.0011	0.0016
mondaycycle4	-0.0004	0.0035	-0.0017	0.005	0.0014	0.004	-0.0029	0.0031	-0.0016	0.0015
week1	0.0057	0.0058	-0.0017	0.005	-0.0027	0.0041	-0.0033	0.0027	0.0017	0.0021
week2	-0.0001	0.0041	-0.0037	0.005	0.0028	0.0036	-0.0041	0.0037	-0.0004	0.0017
week3	-0.0043	0.0038	-0.0017	0.004	0.002	0.0038	0.0003	0.0032	**-0.0043**	**0.0016**
week4	-0.001	0.0038	0.0053	0.004	-0.0016	0.0028	**0.0053**	**0.0026**	**0.0022**	**0.0013**
mon	-0.0012	0.0069	-0.0019	0.009	-0.0073	0.0056	**-0.0083**	**0.0047**	**-0.005**	**0.0028**
tues	-0.002	0.0061	-0.0088	0.008	-0.0086	0.0066	-0.0061	0.0043	-0.0042	0.0026
wed	-0.0139	0.0054	0.0006	0.007	-0.0093	0.0058	-0.0068	0.0043	**-0.0093**	**0.0023**
thur	-0.0007	0.0076	-0.0164	0.009	-0.0074	0.0057	0.0019	0.0066	**-0.0111**	**0.0025**
fri	**-0.0118**	**0.0051**	0.0052	0.009	0.0212	0.0191	-0.0082	0.0056	-0.0013	0.0038
sat	0.0118	0.009	**-0.0154**	**0.008**	0.0044	0.0086	0.0068	0.0068	**0.0177**	**0.0043**
sun	0.018	0.0086	0.0367	0.019	0.0073	0.0067	**0.0208**	**0.0092**	**0.0134**	**0.0035**
r2	0.0062		0.0072		0.0024		0.0031		0.0037	
	CYCLE	0.0684	CYCLE	0.817	CYCLE	0.1528	CYCLE	0.5334	CYCLE	0.547
	WEEK	0.6828	WEEK	0.56	WEEK	0.7965	WEEK	0.136	WEEK	0.0312
	DOW	0.0114	DOW	0.071	DOW	0.1683	DOW	0.0243	DOW	0

Note: Bold case results indicate significance at the 5% level

Table 12. Households Expenditure in the Convenience Retail Channel--One employed Household Heads

	Bottom 5% income		**5-10% Income Group**		**10-25% income group**		**25-50% income groups**		**Top 50% income group**	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
mondaycycle1	0.003	0.0057	**0.0092**	**0.004**	0.0028	0.0035	-0.0003	0.0032	0.0004	0.0006
mondaycycle2	-0.0063	0.0094	-0.0054	0.004	0.0033	0.0026	0.0001	0.0015	0.0004	0.0009
mondaycycle3	**-0.0073**	**0.0037**	**-0.0059**	**0.003**	-0.0033	0.0024	-0.0021	0.0019	0	0.0008
mondaycycle4	0.0105	0.007	0.002	0.005	-0.0028	0.0021	0.0023	0.004	-0.0009	0.0008
week1	-0.0073	0.0068	-0.0013	0.004	0.0013	0.0024	0.0005	0.0027	-0.0011	0.0008
week2	0.0049	0.0089	-0.0053	0.004	-0.0026	0.0025	-0.0033	0.0025	0.0011	0.0008
week3	0.0128	0.0084	-0.0004	0.004	0.0039	0.0025	0.0005	0.0017	0.0007	0.0009
week4	-0.0078	0.0079	0.0052	0.006	-0.0019	0.003	0.0018	0.0013	-0.0005	0.0006
mon	**-0.0167**	**0.0082**	0.0005	0.006	0.0019	0.0064	0.0034	0.0035	-0.0016	0.0018
tues	0.0139	0.0093	-0.0072	0.005	0.001	0.0044	**-0.0045**	**0.0023**	**-0.0032**	**0.0014**
wed	-0.0054	0.0069	-0.0041	0.005	-0.0051	0.0041	**-0.0051**	**0.0027**	-0.0015	0.0015
thur	**-0.0156**	**0.0083**	-0.0071	0.005	**-0.0084**	**0.003**	**-0.0045**	**0.0027**	-0.0019	0.0014
fri	0.0034	0.0084	-0.0058	0.005	-0.0023	0.0059	0.0046	0.0039	-0.0014	0.0015
sat	-0.0056	0.0096	0.0029	0.008	0.0129	0.0087	0.0012	0.0031	**0.005**	**0.0022**
sun	0.026	0.0153	0.0209	0.014	0.0002	0.0056	0.005	0.0044	**0.0046**	**0.0018**
r2	0.0055		0.0052		0.0023		0.0016		0.0013	
	CYCLE	0.1487	CYCLE	0.008	CYCLE	0.2006	CYCLE	0.8032	CYCLE	0.756
	WEEK	0.3179	WEEK	0.506	WEEK	0.3685	WEEK	0.4278	WEEK	0.2085
	DOW	0.0538	DOW	0.262	DOW	0.0975	DOW	0.054	DOW	0.0038

Note: Bold case results indicate significance at the 5% level

Table 13. Household Expenditure in Grocery Channel -- Two employed Household Head

	Bottom 5% income		**5-10% Income Group**		**10-25% income group**		**25-50% income groups**		**Top 50% income group**	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
mondaycycle1	-0.008	0.123	0.194	0.135	-0.102	0.083	-0.078	0.062	-0.049	0.037
mondaycycle2	0.077	0.145	0.086	0.135	0.007	0.083	**0.142**	**0.059**	**0.130**	**0.038**
mondaycycle3	-0.070	0.121	-0.094	0.105	0.010	0.085	**-0.124**	**0.060**	-0.055	0.037
mondaycycle4	0.001	0.130	-0.184	0.106	0.085	0.084	0.059	0.063	-0.026	0.038
week1	0.009	0.169	0.084	0.147	0.050	0.086	-0.029	0.063	-0.030	0.039
week2	0.171	0.156	-0.011	0.125	0.032	0.082	0.015	0.062	-0.018	0.038
week3	0.142	0.153	0.101	0.125	-0.061	0.078	0.015	0.058	0.010	0.038
week4	-0.240	0.131	-0.130	0.091	-0.016	0.064	-0.001	0.047	0.028	0.031
mon	**-0.982**	**0.303**	**-0.992**	**0.364**	**-1.447**	**0.208**	**-1.256**	**0.181**	**-1.101**	**0.119**
tues	**-0.818**	**0.307**	**-1.122**	**0.432**	**-1.448**	**0.341**	**-1.720**	**0.162**	**-1.649**	**0.117**
wed	-0.423	0.342	**-1.573**	**0.333**	**-1.369**	**0.246**	**-1.879**	**0.166**	**-1.750**	**0.120**
thur	**-0.793**	**0.322**	-0.715	0.434	**-1.161**	**0.293**	**-1.660**	**0.180**	**-1.663**	**0.122**
fri	-0.431	0.355	-0.712	0.406	-0.494	0.303	**-0.724**	**0.223**	**-0.834**	**0.149**
sat	**1.071**	**0.486**	**2.235**	**0.828**	**1.932**	**0.509**	**1.818**	**0.306**	**2.546**	**0.234**
sun	2.384	0.643	**2.909**	**0.686**	**4.013**	**0.484**	**5.458**	**0.411**	**4.484**	**0.252**
r2	0.058		0.061		0.080		0.124		0.116	
	CYCLE	0.961	CYCLE	0.182	CYCLE	0.636	CYCLE	0.015	CYCLE	0.003
	WEEK	0.247	WEEK	0.558	WEEK	0.884	WEEK	0.988	WEEK	0.784
	DOW	0.000	DOW	0.000	DOW	0.000	DOW	0.000	DOW	0.000

Note: Bold case results indicate significance at the 5% level

Table 14. Household Expenditure in the Drug Retail Channel-- Two employed Household Head

	Bottom 5% income		**5-10% Income Group**		**10-25% income group**		**25-50% income groups**		**Top 50% income group**	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
mondaycycle1	-0.001	0.005	-0.004	0.005	-0.006	0.004	**0.008**	**0.004**	-0.002	0.002
mondaycycle2	0.017	0.009	-0.002	0.003	0.000	0.003	-0.003	0.002	0.002	0.002
mondaycycle3	-0.012	0.007	0.004	0.006	0.000	0.003	-0.001	0.003	0.001	0.002
mondaycycle4	-0.005	0.005	0.002	0.004	0.005	0.006	-0.004	0.003	-0.001	0.002
week1	-0.002	0.006	0.002	0.009	0.000	0.004	-0.002	0.003	0.004	0.002
week2	0.008	0.005	-0.002	0.003	-0.001	0.005	-0.005	0.003	-0.004	0.002
week3	-0.010	0.006	0.004	0.006	-0.001	0.005	0.006	0.003	-0.001	0.002
week4	0.003	0.007	-0.002	0.005	0.002	0.002	0.001	0.003	0.001	0.002
mon	-0.006	0.008	-0.004	0.005	-0.010	0.005	-0.007	0.005	-0.003	0.003
tues	-0.009	0.007	-0.008	0.005	-0.009	0.006	-0.003	0.005	**-0.011**	**0.003**
wed	-0.011	0.007	0.005	0.007	-0.011	0.006	**-0.012**	**0.004**	**-0.009**	**0.003**
thur	0.020	0.018	**-0.009**	**0.004**	0.001	0.006	**-0.012**	**0.004**	**-0.007**	**0.003**
fri	0.001	0.010	0.013	0.009	-0.002	0.008	-0.005	0.005	0.001	0.004
sat	0.002	0.008	-0.001	0.008	0.009	0.006	0.006	0.008	**0.011**	**0.005**
sun	0.003	0.008	0.004	0.008	**0.022**	**0.010**	**0.034**	**0.009**	**0.018**	**0.007**
r2	0.010		0.005		0.005		0.007		0.004	
	CYCLE	0.124	CYCLE	0.810	CYCLE	0.554	CYCLE	0.131	CYCLE	0.583
	WEEK	0.202	WEEK	0.901	WEEK	0.913	WEEK	0.176	WEEK	0.125
	DOW	0.549	DOW	0.170	DOW	0.020	DOW	0.000	DOW	0.000

Note: Bold case results indicate significance at the 5% level

Table 15. Households Expenditure in the Convenience Retail Channel--Two employed Household Heads

	Bottom 5% income		5-10% Income Group		10-25% income group		25-50% income groups		Top 50% income group	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
mondaycycle1	0.005	0.007	-0.001	0.003	-0.001	0.002	0.003	0.002	0.000	0.001
mondaycycle2	0.003	0.005	0.001	0.004	-0.002	0.003	-0.002	0.002	0.001	0.001
mondaycycle3	**-0.010**	**0.005**	-0.002	0.002	-0.001	0.003	-0.002	0.002	-0.001	0.001
mondaycycle4	0.002	0.007	0.002	0.003	0.004	0.003	0.001	0.002	0.000	0.001
week1	0.006	0.005	0.000	0.003	-0.002	0.003	-0.001	0.002	-0.002	0.001
week2	0.004	0.005	0.001	0.003	-0.005	0.003	-0.001	0.002	0.000	0.001
week3	**-0.011**	**0.005**	0.002	0.002	-0.001	0.003	-0.003	0.003	0.000	0.002
week4	0.001	0.004	-0.002	0.002	0.006	0.003	0.003	0.002	0.001	0.001
mon	0.014	0.011	0.003	0.005	**-0.012**	**0.005**	**-0.006**	**0.003**	-0.003	0.002
tues	-0.007	0.005	-0.001	0.005	-0.001	0.008	-0.005	0.003	**-0.007**	**0.002**
wed	**-0.015**	**0.006**	0.010	0.005	0.000	0.006	**-0.008**	**0.004**	0.005	0.006
thur	-0.011	0.006	-0.010	0.005	-0.006	0.005	-0.002	0.004	-0.003	0.002
fri	-0.005	0.004	-0.004	0.004	0.014	0.018	-0.005	0.003	**-0.005**	**0.003**
sat	0.015	0.010	0.006	0.008	0.006	0.005	**0.014**	**0.005**	0.005	0.004
sun	0.008	0.010	-0.004	0.005	-0.001	0.007	**0.013**	**0.004**	**0.007**	**0.004**
r2	0.016		0.007		0.002		0.006		0.002	
	CYCLE	0.234	CYCLE	0.899	CYCLE	0.492	CYCLE	0.345	CYCLE	0.828
	WEEK	0.131	WEEK	0.765	WEEK	0.115	WEEK	0.457	WEEK	0.453
	DOW	0.018	DOW	0.213	DOW	0.227	DOW	0.000	DOW	0.003

Note: Bold case results indicate significance at the 5% level