Gender Difference in Allocation of Time:
Preparing Food-Cooked-At-Home or Purchasing Prepared-Food?

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ABSTRACT

This paper examines the allocation of non-market hours for food preparation and the effect of socio-demographic characteristics, the value of time, and nutrition preferences on time use decisions regarding food choice. A time allocation model is developed and tested using the American Time Use Survey. Working hours and family income are negatively related to time spent preparing food-cooked-at-home, yet education and leisure time are positively related. Gender differences in food choice are not only influenced by the value of time and nutrition consciousness but also by gender roles: educated women devote less time to food preparation and educated men spend more.

I. INTRODUCTION

Food preparation choices, including food-cooked-at-home, prepared-food, and food-away-from-home, vary by socio-economic characteristics and income (Yen, 1993; Lee and Brown, 1986; Kinsey, 1983; and others). High-income households, for example, rely more on food-away-from-home, while low-income households are likely to depend on food-cooked-at-home (Blisard and Stewart, 2007). Young people, men, low-income individuals, and African Americans prefer fast food or prepared-food (Harris and Shiptsova, 2007; Glanz et al., 1998). Hispanic and Asian women, on the other hand, choose to eat more food-cooked-at-home (Mancino and Newman, 2007).

Food preparation choices are also influenced by the value of the homemaker's time (Prochaska and Schrimper, 1973; Becker, 1965). Individuals with a high value of time, due to more hours of market work or high market wages, spend less time eating out or cooking at home, substituting convenience foods from retail stores (Carlson et al., 2002). Households with a wife in full-time employment rely on purchased food (Horton and Campbell, 1991) because of her reduced non-market hours.

One also could argue that food preparation choices vary by nutrition preference and health concerns (Cutler et al., 2003). Educated people are more likely to be nutrition conscious and they increase the demand for quality food (Ramezani and Roeder, 1995; Horton and Campbell, 1991), and also, in turn, consume less ready-to-eat-meals (Harris and Shiptsova, 2007). Older people, who are concerned about their health, are also likely to reduce eating out and engage more in cooking at home (Blisard et al., 2002). Households with a homemaker in full-time employment, on the other hand, reduce their apparent nutrient intake (Horton and Campbell, 1991).

Given significant changes in demographics, food consumption behavior and preferences, and traditional gender roles, plus a rapid increase in working hours, how do socio-demographic characteristics, the value of time, and nutrition preferences affect one's time allocation decision regarding food preparation? This paper examines these questions by focusing on the choice between food-cooked-at-home and prepared-food with specific attention to gender differences. The theoretical framework models the allocation of non-market hours to food preparation choices, and Tobit estimates plus the marginal effects of estimated explanatory variables are tested using the 2005 American Time Use Survey data.

This study finds that hours worked, family income, and education reduce time spent preparing food-cooked-at-home, while time spent on family care and leisure increase time spent on this activity. Further, the presence of children, age, and employment status also had significant and varied effects on time spent preparing food-cooked-at-home. Older people who place a high value on nutrition, for example, spend more time on food preparation at home. This study also suggests that changing gender roles affect time allocation for food preparation, in addition to the presence of a trade-off between the value of time and nutritional consciousness in determining food choice. Educated men, who are more nutrition conscious and who are less likely to adhere to traditional gender roles, increase their time spent preparing food-cooked-at-home. Educated women with a high market wage, who face a high opportunity cost of time, on the other hand, may neglect nutritional concerns, thereby reducing the consumption of food-cooked-at-home.

Our study expands the existing literature by studying how education interacts with nutritional preference, the value of time, and traditional gender roles in determining time allocation regarding food choice. In particular, educated women devote less time to food

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preparation at home, while educated men spend more. This paper also provides useful insights to consumers, food manufacturers and retailers about factors that affect time allocation decisions regarding food choice, and thus offers clues to improving diets and health.

II. MODEL

We develop a simple theoretical model to examine how individuals allocate non-market hours to food preparation, with specific attention to their choice between food-cooked-at-home and prepared-food, while facing both time and budget constraints. We assume that the individual maximizes utility and all individuals have identical preferences, represented by

$$(1) \qquad U = l + \beta n^{\alpha} m^{1-\alpha},$$

where l is leisure, n is the number of meals consisting of food-cooked-at-home, m is the number of meals consisting of prepared-food purchased in the market, and β measures the weight that an individual places on consumption relative to leisure. For simplicity, we assume that all food-cooked-at-home and prepared-food are similar,[1] that is, that there is perfect substitution between food-cooked-at-home and prepared-food. It is also feasible to argue that food-cooked-at-home is more nutritious and has less calories because nutritional information is available and ingredients are controlled by preparers (Nayga et al., 1998), while prepared-food is more convenient but can have more calories and be less nutritious because the nutrient information on prepared-food is not fully provided to consumers (Schroeter and Lusk, 2008). The parameter α then indicates the preference for nutrition and the value of α is larger when the individual is more nutrition-conscious.

The representative individual faces this budget constraint

(2) $I = l_w w = c_0 + N(pn + p^* m)$,

where p and p^* are the prices of food-cooked-at-home and prepared-food, respectively, and

$p < p^*$. Here c_0 represents the consumption of *all* goods *except* food, and the price of c_0 is

normalized as unity. In equation (2), l_w denotes work hours of the individual, and w is the

exogenous wage rate, which positively relates to an individual's human capital (or education).

Further, N in equation (2) denotes family size, and an individual with children and/or other

dependents consumes more meals proportionately.

A representative individual is endowed with T time, which is allocated to work, leisure,

and food preparation. The time constraint is given by

(3) $T = l + l_w + t_n n$,

where t_n denotes the amount of time required to prepare food at home. Time spent preparing

meals at home for an individual alone is not so different from that for a small family, and thus we

assume that time spent on food preparation for an individual alone and a small family are the

same. The assumption is feasible because the households in our sample are mostly small

families,[2] and relaxing this assumption will not alter our results. Further, time spent purchasing

prepared-foods is negligible in comparison to time spent preparing food at home, and thus we

neglect time spent purchasing prepared-food in equation (3) in this model.[3]

With budget constraint (2) and time constraint (3), we can form a Lagrangian function to

maximize the utility function (1).[4] The first order conditions of the Lagrangian function with

respect to n and m are given by

(4) $\alpha \beta n^{\alpha-1} m^{1-\alpha} = \dfrac{Np}{w} + t_n$, and

(5) $\qquad (1-\alpha)\beta n^{\alpha} m^{-\alpha} = \dfrac{Np^{*}}{w}$.

From (4) and (5), we obtain

(6) $\qquad \dfrac{m}{n} = (\dfrac{1-\alpha}{\alpha})(\dfrac{p}{p^{*}})(1+\dfrac{wt_{n}}{Np})$

$\qquad\qquad = (\dfrac{1-\alpha}{\alpha})(\dfrac{p}{p^{*}})(1+\dfrac{w(T-l-l_{w})}{Np})$.

Note that α in the first bracket of equation (6) represents nutrition preference, so we observe that an individual consumes more food-cooked-at-home relative to prepared-food (i.e., a small $\dfrac{m}{n}$) when the individual is more nutrition-conscious (i.e., a large α). Further, wt_{n} in the third bracket of (6) denotes the opportunity cost of preparing food-cooked-at-home, and Np denotes the actual cost of preparing food for a household. This implies that an individual consumes more prepared-foods relative to food-cooked-at-home (i.e., a larger $\dfrac{m}{n}$) while the individual suffers a larger opportunity cost of preparing food-cooked-at-home (i.e., a larger $\dfrac{wt_{n}}{Np}$).

The existing studies document that education, age, and the presence of children in a household increase the value placed on nutrition and the awareness of caloric intake, and lead people to eat healthier diets (Harris and Shiptsova, 2007; Ramezani and Roeder, 1995; Horton and Campbell, 1991). Our model thus predicts that individuals with children, more educated individuals, and/or older adults are more nutrition-conscious (i.e., a larger α) and, in turn,

spend more time preparing food-cooked-at-home than purchasing prepared-foods compared to their counterparts.

The existing literature also shows that the value of the homemaker's time influences food preparation choices (Prochaska and Schrimper, 1973; Becker, 1965). Individuals with long market hours plus higher wage rates face a higher opportunity cost of time for food preparation. Our model thus predicts that individuals with a high opportunity cost of time for food preparation are likely to spend less time preparing food-cooked-at-home and more time purchasing prepared-food.

Our model further predicts two cases in which a highly-educated individual: (1) reduces time spent preparing food-cooked-at-home when s/he faces a higher opportunity cost of time for food preparation and increases time spent purchasing prepared-foods; and (2) increases time spent preparing food-cooked-at-home when s/he places a high value on nutrition and reduces time spent purchasing prepared-foods.

Despite changes in the traditional gender roles, women still make most of the food-related decisions (Redman, 1980) and tend to prepare and serve food more often than men (Roos, 1995), and thus still have the primary impact on food choices. The traditional situation is one in which women have limited education and job market involvement, mainly acting as "housekeepers," while men are responsible for earning market wages. In the recent years, however, women have attained more education, which increases their market wages and market hours, yet it also raises their nutrition consciousness and their demand for food-cooked-at-home. The effect of education on time spent on food preparation for a highly-educated individual thus may depend on which of these two, the value of time or nutritional consciousness, is dominant.

Proposition: The relative demand for prepared-food compared to food-cooked-at-home decreases as their relative prices converge and the value placed on nutrition declines, but increases with the opportunity cost of preparing food at home.

III.   DATA

This paper uses the American Time Use Survey (ATUS) data for the year 2005. The ATUS respondents are selected from individuals that have completed their eighth and final month of interviews for the Current Population Survey (CPS).

The micro data that are used in this paper have three sources: (1) the ATUS respondent file; (2) the ATUS activity summary file; and (3) the ATUS-CPS file. The ATUS respondent file contains one record per individual with information on demographic status (such as age, sex, race, ethnicity, educational attainment, marital status, metropolitan living status, wage, weeks worked, occupation, and industry). The ATUS activity summary file has information collected in the ATUS diary, with over 400 categories of time use,[5] and contains ATUS respondents' detailed accounts of their activities on the diary date for a 24-hour window, starting at 4 AM on the day before the interview and ending at 4 AM on the day of the interview. The ATUS-CPS file gathers one record per household member for all households in which an individual participates in ATUS and contains each household member's demographic status. All information on this file is from the eighth CPS interview and dates from 2-5 months prior to the ATUS interview.[6] The 2005 ATUS data, gathered from three linked ATUS files using information on the ATUS-CPS file, contains 13,038 respondents and includes household members aged 15 and older. In this paper, we focus on individuals aged 18-65 at the survey date. After restrictions, the sample size falls to 10,417 (4,551 men and 5,866 women). Time use categories of interest in this paper are time

spent preparing food-cooked-at-home and the socio-demographic status of respondents. Further, in this paper we focus on analyzing the primary activities and selected socio-economic characteristics of respondents.

IV.   DESCRIPTIVE ANALYSIS

This section summarizes relevant individual and household characteristics of the sample data and the average time spent (in minutes per day) on selected daily activities by all respondents, by gender, and by the socio-demographic characteristics of households.

Table 1 shows selected characteristics of individual respondents. In the 2005 ATUS sample, about 50 percent are in ages 26-45, about 40 percent are 46-65, and the remaining 10 percent are 18-25. The distribution is similar when the sample is separated by gender, yet households with children are concentrated in ages 26-45 and households without children are most likely in ages 46-65. About 42 percent of the population in the full sample is unmarried, while 39 percent of men, 45 percent of women, 30 percent of households with children and 58 percent of households without children are unmarried. Approximately 56 percent, 21 percent, and 12 percent of the population has a high school diploma or equivalent (GED) plus those with some college, a bachelor's degree, and an advanced (Master's, professional, or Doctoral) degree, respectively. The distribution is similar when the sample is separated by households. A greater percentage of women than men have a high school diploma or equivalent (GED) plus those with some college, but larger percentages of men have higher levels of education. Over 80 percent of the population lived in metropolitan areas.

Table 2 provides the weighted average and mean of time spent on selected daily activities. We use the weighted average time spent to analyze how individuals allocate their time across the

daily activities since simple tabulation of unweighted ATUS data produces either upward or downward biased results. The weighted average time spent on each activity is calculated using the average-hours-per-day formula to ensure that: each group is correctly represented in the population; each day of the week is correctly represented for the sample month; and groups and days of the week are correctly represented for the sample month.

Column 1 in Table 2 shows time spent on food-cooked-at-home, which is the sum of time spent on: (1) food and drink preparation; (2) food presentation; (3) kitchen and food clean-up; and (4) travel related to grocery shopping.[7] The average daily time spent on food-cooked-at-home was 34 minutes per day for all respondents, 49 minutes for women, and 18 minutes for men. Women, in general, spend more time on food preparation at home than men, confirming the existence of traditional gender roles. Households with children under age 18 spent about 41 minutes and households without children spent 29 minutes. These results suggest that being a woman and having children in the household had significant positive impacts on an individual's time spent preparing food-cooked-at-home.

Hours worked per day are defined as the weekly weighted average, including Saturday and Sunday. Column 3 in Table 2 presents the weighted average working hours for all respondents as 241 minutes per day. Men worked longer than women (286 minutes vs. 199 minutes). While households with children under age 18 spent 233 minutes at work, those without children under age 18 spent 249 minutes. The presence of children seems to have very little effect on hours worked, but gender affects one's decision on time spent at work.

Column 3 in Table 2 shows time spent on family care. The average time spent on this activity by all respondents was 33 minutes per day. Women and households with children under age 18 spent 23 minutes and 32 minutes, respectively, while men and households without

children spent 10 minutes and 1 minute, respectively. It appears that men and those without children spent less time on family care.

Time spent on socializing, relaxing, and leisure varies by socio-demographic characteristics. Column 4 in Table 2 further shows that the average time spent on these activities for all respondents was 249 minutes per day. Men spent slightly more time than women (262 minutes vs. 236 minutes). As expected, households with children under age 18 spent less time on socializing, relaxing, and leisure than households without children under that age (221 minutes vs. 272 minutes). These results indicate that women and households with children spend less time on leisure activity.

V.   EMPIRICAL STRATEGY

We empirically analyze the time allocation decision of individuals regarding food preparation and examine how differences in socio-demographic characteristic, nutritional preferences, and the value of time affect time use decisions for non-market hours, mainly regarding food preparation at home,[8] with specific attention to gender differences. As implied in (6), we argue that the relative demand for prepared-food compared to food-cooked-at-home decreases as its relative price rises and as nutrition becomes more important, but increases as the opportunity cost of preparing food-cooked-at-home rises.

When individuals do not spend time on food preparation, there will be a zero value for these observations. Since food preparation is the dependent variable and approximately 40 percent (or 4,120 out of 10,417) of observations equal zero in our dataset, these zero values lead to censored response bias. In this case, conventional regression methods fail to account for the qualitative differences between zero observations and continuous observations[9]; hence, we

employ the Tobit model (Tobin, 1958), which accounts for observations with a zero value, as follows.

(7) $\qquad Y_i = X_i\beta + \varepsilon_i$,

where ε_i is a mean zero individual error term and Y_i denotes the amount of time spent per day on food preparation. In equation (7), we use the Y_i to represent the relative consumption of prepared-foods relative to food-cooked-at-home (i.e., $\dfrac{m}{n}$), which is positively related to l_w, l, and w, and negatively related to N, as implied in equation (6).

The explanatory variables (X_i) in equation (7) include: time spent per day working (l_w), time spent on socializing, relaxing and leisure (l), family size (N), and hourly wage rates (w). We also add the following control variables. The "family income" dummy variables are constructed for four income levels: less than \$40,000, \$40,000-59,999, \$60,000-99,999, and \$100,000 or more. The "age" dummy variables are constructed for three age levels: 18-25, 26-45, and 46-65. The "education" dummy variables are constructed for four education levels: less than high school diploma, a high school diploma or equivalent (GED) plus those with some college, a bachelor's degree, and an advanced degree. Other variables of interest include: (i) respondent's hourly earnings; (ii) respondent's race; (iii) respondent's marital status; (iv) labor force status (part-time or full-time); (v) metropolitan living status; and (vi) region.[10] The subscript i refers to each individual.

The post-estimation analysis is recommended in the Tobit model. We thus also present marginal effects of all explanatory variables in the estimated specifications using the decomposition procedure developed by McDonald and Moffitt (1980). Marginal effect is the conditional mean of the dependent variable (time spent preparing food-cooked-at-home), when

the explanatory variable (i.e., hours worked) changes by one unit. Implied in (7), we estimate the proposed estimation equation with the following three specifications: (1) all respondents; (2) men and women, separately; (3) households with children under age 18 and those without children, separately.

VI. EMPIRICAL RESULTS

This section examines the results of the Tobit estimates and the marginal effects of estimated explanatory variables on one's allocation of time to food preparation. The analyses of time spent preparing food-cooked-at-home are conducted using the estimation results in Table 3. We focus on examining the effect of the following explanatory variables on time spent preparing food-cooked-at-home as shown in Table 3: (1) hours worked; (2) family care; (3) leisure time; (4) family income; (5) age; and (6) education. We further analyze the effect of these explanatory variables on time spent preparing food-cooked-at-home for: (i) all respondents; (ii) men and women; and (iii) households with children under age 18 and those without children.

Row (1) in Table 3 shows the effect of hours worked on time spent preparing food-cooked-at-home. Time spent preparing food-cooked-at-home is inversely related to hours worked, especially when the latter exceeds four hours per day. For those (except households without children) who work up to four hours per day, time spent preparing food-cooked-at-home falls by 7-10 minutes and the marginal effect is 1-3 minutes. Working more than four hours per day reduced time spent on this activity for all respondents by 23-35 minutes and the marginal effect is 8-15 minutes. These results indicate that a high opportunity cost of time reduces time spent preparing food at home, which is consistent with our Proposition. The effects were more

prominent for women and households with children, who face a higher opportunity cost of time, than for men.

Row (2) in Table 3 shows that an hour per day of family care increases food preparation time at home by 11-25 minutes and the marginal effect is 6-9 minutes. When family care time exceeds one hour per day, food preparation time increases to 23-34 minutes and the marginal effect is 12-13 minutes. These results suggest that time spent on family care, a proxy for family size and possibly for the presence of children and/or other dependents, has a positive effect on food preparation at home (Mancino and Newman, 2007; Nayga, 1996). Additionally, some families may have hopes of acquiring economies of scale from home food production (Floro and Miles, 2003). It also suggests that concern with the health and nutrition of family members encourages food preparation at home (Binkley, 2006; Stewart et al., 2005), which is in line with our Proposition.

Row (3) in Table 3 shows interesting results regarding the effect of leisure on time spent preparing food-cooked-at-home. Up to two hours per day spent on leisure increases food preparation time at home for all specifications by 14-25 minutes, and the marginal effect is 5-10 minutes. As leisure time increases to more than two hours per day, women and households with children face a reduction in time spent preparing food-cooked-at-home (the Tobit estimates: 12 minutes (from 18 minutes) for women and 9 minutes (from 14 minutes) for households with children; the marginal effects: 6 minutes (from 9 minutes) for women and 4 minutes (from 6 minutes) for households with children), indicating that a time-constrained individual trades off time spent on preparing food at home for leisure. These results are consistent with our Proposition. On the other hand, men and households without children show a reverse trend.

The effect of family income on preparing food at home varies depending on socio-economic characteristics and family structure, as shown in Row (4) in Table 3. Women and households without children earning more than $60,000 per year reduce their food preparation time at home (the Tobit estimates: 7-12 minutes and 6-8 minutes, respectively; the marginal effects: 3-6 minutes and 2-3 minutes, respectively). These results support the existing inverse relationship between family income and time spent preparing food-cooked-at-home (Mancino and Newman, 2007). Time spent on this activity among men and households with children, on the other hand, are not affected by family income.

Row (5) in Table 3 confirms that younger people are less likely than older people to spend time on food preparation at home. Those aged 18-25 and 26-45 reduce their time spent on this activity by 27-46 minutes and by 6-12 minutes, respectively, relative to those older than 45, and the marginal effects are 10-18 minutes and 2-6 minutes, respectively. These results also support the existing evidence that families with older wives spend more time on food-cooked-at-home than do others, *ceteris paribus* (Stewart and Yen, 2004; Nayga, 1996). Findings are consistent with our Proposition in which older people, who are concerned about their health, are likely to engage more in cooking at home. Further, the effects are more prominent among women and households with children, and the effects of socio-demographic characteristics on time spent preparing food at home vary significantly by age.

The compelling finding is that the level of education has different effects on respondents' time spent preparing food-cooked-at-home, particularly when gender is considered. Row (6) in Table 3 shows women and households with children spend less time preparing food-cooked-at-home as their level of education increases, reflecting their high opportunity cost of time (Prochaska and Schrimper, 1973; Becker, 1965). This result suggests that their high

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value of time outweighs nutrition consciousness, leading to a reduction in time spent preparing food-cooked-at-home among women and households with children. By contrast, highly educated men, in comparison to other groups, spend more time (the Tobit estimates: 10-22 minutes; the marginal effects: 3-8 minutes) on food preparation at home relative to those who have a high school education but no diploma. This result indicates that the value of nutrition dominates the opportunity cost of time, leading to an increase in time spent preparing food-cooked-at-home among men.

Our empirical results show that the value of time has a significant effect on food preparation, and confirm that individuals with high market wages, who face a high opportunity cost of time, reduce time spent preparing food-cooked-at-home and increase prepared-food consumption. This is more prominent for educated women with a high value of time, who may neglect nutritional concerns (even when nutrition preference is present) and feel less of an imperative to cook at home (acknowledging changing gender roles), and who thus reduce time spent preparing food-cooked-at-home and increase time spent purchasing prepared-food.

Our findings also confirm the impact of nutritional concerns on food choice (Cutler et al., 2003) and support the existing findings in which educated individuals are more nutrition conscious, and in which education has a significant effect on nutritional intake (Ramezani and Roeder, 1995; Horton and Campbell, 1991). In general, men who follow traditional gender roles still prefer food-cooked-at-home by women. This is most pronounced with higher income men having a stay-at-home wife or a maid. Further, more educated men prefer to eat food prepared at home for health reasons. Accordingly, men with high education and income, who place a high value on nutrition, are likely to prefer consuming food-cooked-at-home and to reduce prepared-food consumption.

These results confirm that there is a gender difference in food choice that is influenced by both nutritional preference and by the value of time in accordance with the traditional gender roles.

VII. CONCLUSIONS

This paper examines how individuals allocate time to food preparation and how socio-demographic characteristics, the value of time, and nutritional preference affect those time use decisions about food preparation. A time allocation model is developed and empirically tested with a Tobit model using the 2005 American Time Use Survey data to analyze the allocation of non-market hours to food preparation choices – food-cooked-at-home and prepared-food – with particular attention to gender differences.

The results of this study confirm that hours worked and family income are negatively associated with time spent preparing food-cooked-at-home, an expected result for time-constrained individuals with higher opportunity costs of time. On the other hand, as education and time spent on family care and leisure increases, in general, time spent on this activity increases. Further, the presence of children, age, and employment status also had significant and varied effects on time spent preparing food-cooked-at-home.

The results of this study also find the importance of the value of time and nutritional consciousness in accordance with traditional gender roles that affect one's time allocation on food choice by gender. Educated men, who are more nutrition conscious and who are less likely to adhere to traditional gender roles, increase their time spent preparing food-cooked-at-home. On the other hand, educated women with a high market wage, who face a high opportunity cost of time, may neglect nutritional concerns, thereby reducing food-cooked-at-home consumption.

In this paper, we find that socio-demographic characteristics, the value of time, and nutritional preference affect individuals' time use decisions about food preparation. We also argue that gender differences in food choice are influenced not only by the value of time and nutrition consciousness but also by traditional gender roles. Educated women and households with children and/or other dependents, who face a higher opportunity cost of time, are likely to allocate less time to food-cooked-at-home, while men and older people, who place a high value on nutrition, are likely to spend more time on food preparation at home.

The findings of this study have a few important implications. First, time spent on food preparation is driven not only by differences in socio-demographic characteristics and family structure, but also by the value of time. Second, nutritional preferences and the importance of taste also have significant and varied effects on food preparation choice. Third, gender differences in food choice are not only influenced by the value of time and nutrition consciousness but also by traditional gender roles. Finally, analyses of time allocation decisions by individuals provide a better understanding of food consumption behavior, and thus could offer insights to consumers, food manufacturers and retailers regarding food selection, diets and health.

Further research should analyze time spent on food-away-from-home and its relation to food-cooked-at-home and prepared-food. It would provide further insights into a time-constrained household's food consumption patterns and its time allocation decisions, thereby offering a richer understanding of changes in eating habits.

TABLE 1

Selected Characteristics of Individual Respondents

Selected Variables	All Sample		Men		Women		Households w Children		Households wo Children	
	No.	% of total	No.	% of total	No.	% of total	No.	% of total	No.	% of total
Age										
18-25	1081	0.104	464	0.102	617	0.105	618	0.107	463	0.100
26-45	5297	0.508	2317	0.509	2980	0.508	3957	0.683	1,340	0.289
46-65	4039	0.388	1770	0.389	2269	0.387	1213	0.210	2826	0.610
Total	10417	1.000	4551	1.000	5866	1.000	5788	1.000	4629	1.000
Education										
Less than HS diploma	1142	0.110	516	0.113	626	0.107	676	0.117	466	0.101
High School diploma plus some College	5859	0.562	2,462	0.541	3397	0.579	3231	0.558	2,628	0.568
Bachelor's degree	2215	0.213	1,018	0.224	1197	0.204	1240	0.214	975	0.211
Advanced degree	1201	0.115	555	0.122	646	0.110	641	0.111	560	0.121
Total	10417	1.000	4551	1.000	5866	1.000	5788	1.000	4629	1.000
Marital Status										
Married	6031	0.579	2791	0.613	3240	0.552	4079	0.705	1952	0.422
Unmarried	4386	0.421	1760	0.387	2626	0.448	1709	0.295	2677	0.578
Total	10417	1.000	4551	1.000	5866	1.000	5788	1.000	4629	1.000
Metropolitan Living Status										
Metropolitan Living	8392	0.806	3669	0.806	4723	0.805	4666	0.806	3726	0.805
Non-Metropolitan Living	2025	0.194	882	0.194	1143	0.195	1122	0.194	903	0.195
Total	10417	1.000	4551	1.000	5866	1.000	5788	1.000	4629	1.000
Region										
Northeast	1903	0.183	871	0.191	1032	0.176	1103	0.191	800	0.173
Midwest	2744	0.263	1214	0.267	1530	0.261	1571	0.271	1173	0.253
South	3550	0.341	1462	0.321	2088	0.356	1876	0.324	1674	0.362
West	2220	0.183	1004	0.221	1216	0.207	1238	0.214	982	0.212
Total	10417	0.970	4551	1.000	5866	1.000	5788	1.000	4629	1.000

TABLE 2

Preparing Food-Cooked-at-Home, Hours Worked, Family care, and Leisure

Data Sample	Obs (n)	(1) Minutes Spent Preparing Food* (includes travel time related to grocery shopping)			(2) Minutes Worked (including Saturday & Sunday) (main job and other job)		
		Weighted Average	Mean	SD	Weighted Average	Mean	SD
All respondents	10,417	33.9	38.7	55.2	241.1	191.6	252.1
Men	4,551	18.1	22.0	40.2	285.7	237.7	271.4
Women	5,866	49.3	51.6	61.4	199.1	155.9	229.9
Households w children<18	5,788	40.5	44.4	57.9	232.9	188.0	248.6
Households w/o children<18	4,629	28.6	31.5	50.7	248.5	196.2	256.5

Data Sample	Obs (n)	(3) Family Care			(4) Socializing, Relaxing, and Leisure		
		Weighted Average	Mean	SD	Weighted Average	Mean	SD
All respondents	10,417	32.6	43.1	89.3	248.5	258.0	190.9
Men	4,551	9.6	28.0	72.1	261.7	274.1	202.7
Women	5,866	23.1	54.8	99.1	236.2	245.5	180.3
Households w children<18	5,788	31.5	76.3	108.0	220.9	228.1	173.0
Households w/o children<18	4,629	1.1	1.6	16.3	272.2	295.4	205.2

*Preparing food includes: (1) Food & Drink preparation; (2) Food presentation; and (3) Kitchen & Food clean-up.

TABLE 3

Time Spent Preparing Food-Cooked-at-Home: Tobit Model – Parameter Estimates and Marginal Effects

	Independent Variables	All Sample (n=10,417)		Men (n=4,551)		Women (n=5,866)		Households w Children (n=5,788)		Households w/o Children (n=4,629)	
		Estimated Coefficient	Marginal Effect	Estimated Coefficient	Marginal Effect	Estimated Coefficient	Marginal Effect	Estimated Coefficient	Marginal Effect	Estimated Coefficient	Marginal Effect
	Intercept	42.49	-	-5.55	-	46.50	-	52.14	-	29.07	-
		(7.889)	-	(11.969)	-	(10.166)	-	(10.322)	-	(12.405)	-
	Work: 1-240 minutes (yes=1)	-6.56**	-2.64***	-10.01**	-3.14***	-2.650	-1.29***	-7.79**	-3.33**	-4.799	-1.781
		(2.889)	(1.135)	(4.279)	(1.293)	(3.794)	(1.828)	(3.838)	(1.601)	(4.371)	(1.595)
(1)	Work: > 240 minutes (yes=1)	-30.27***	-12.04***	-24.68***	-7.91***	-32.70***	-15.29***	-35.02***	-14.82***	-24.39***	-8.97***
		(1.860)	(0.718)	(2.702)	(0.855)	(2.485)	(1.112)	(2.508)	(1.026)	(2.771)	(0.995)
	Family Care: 1-60 minutes (yes=1)	18.25***	7.89***	25.22***	8.88***	11.04***	5.56***	19.17***	8.75***	14.68***	5.85**
		(2.491)	(1.130)	(3.724)	(1.414)	(3.284)	(1.700)	(2.769)	(1.308)	(5.552)	(2.336)
(2)	Family Care: > 61 minutes (yes=1)	29.72***	13.07***	33.80***	12.23***	22.96***	11.71***	29.10***	13.13***	-	-
		(2.441)	(1.145)	(3.860)	(1.542)	(3.147)	(1.666)	(2.608)	(1.205)		
	Leisure: 1-120 minutes (yes=1)	17.35***	7.40***	15.45**	5.22**	18.37***	9.33***	13.50***	6.08***	24.57***	9.90***
		(4.007)	(1.774)	(6.426)	(2.256)	(5.031)	(2.645)	(4.937)	(2.277)	(6.869)	(2.949)
(3)	Leisure: > 121 minutes (yes=1)	15.35***	6.14**	22.49***	6.99***	11.93**	5.74**	8.99*	3.90*	26.69***	9.48***
		(3.816)	(1.486)	(6.091)	(1.807)	(4.808)	(2.271)	(4.754)	(2.039)	(6.434)	(2.151)
	Family Income: 40,000-59,999 (yes=1)	-2.667	-1.088	0.956	0.311	-4.433	-2.149	-2.776	-1.211	-1.984	-0.744
		(2.235)	(0.905)	(3.447)	(1.126)	(2.862)	(1.372)	(3.027)	(1.311)	(3.321)	(1.239)
(4)	Family Income: 60,000-99,999 (yes=1)	-4.18*	-1.70*	-1.359	-0.440	-6.85**	-3.31**	-2.713	-1.185	-6.05*	-2.25*
		(2.197)	(0.885)	(3.268)	(1.055)	(2.880)	(1.369)	(2.888)	(1.255)	(3.409)	(1.247)
	Family Income: >100,000 (yes=1)	-5.75**	-2.32**	-0.582	-0.189	-12.15***	-5.75***	-4.684	-2.032	-8.03*	-2.95*
		(2.667)	(1.059)	(3.813)	(1.234)	(3.611)	(1.649)	(3.436)	(1.472)	(4.275)	(1.532)
	Age: 18-25	-40.43***	-14.62***	-45.56***	-12.70***	-40.90***	-17.72***	-41.39***	-16.00***	-41.72***	-13.76***
		(3.061)	(0.967)	(4.978)	(1.180)	(3.845)	(1.462)	(4.256)	(1.437)	(4.546)	(1.302)
(5)	Age: 26-45	-7.25***	-2.98***	-5.55**	-1.80**	-11.61***	-5.69***	-9.06***	-4.03***	-6.66**	-2.48**
		(1.859)	(0.764)	(2.716)	(0.883)	(2.508)	(1.232)	(2.610)	(1.178)	(2.817)	(1.038)
	High School with Diploma (yes=1)	-10.01***	-4.13***	6.253	2.027	-21.63***	-10.75***	-11.48**	-5.07***	-8.84**	-3.35**
		(2.638)	(1.096)	(4.101)	(1.326)	(3.396)	(1.712)	(3.467)	(1.541)	(4.084)	(1.557)
(6)	Bachelor's Degree (yes=1)	-10.49***	-4.21***	10.06**	3.35***	-24.20***	-11.23***	-12.08***	-5.17***	-9.08*	-3.35**
		(3.094)	(1.211)	(4.727)	(1.613)	(4.029)	(1.771)	(4.145)	(1.724)	(4.711)	(1.703)
	Advanced Degree (yes=1)	-9.71***	-3.87***	22.21***	7.78***	-31.21***	-13.94***	-13.12***	-5.53***	-5.946	-2.201
		(3.552)	(1.373)	(5.371)	(2.022)	(4.645)	(1.885)	(4.796)	(1.942)	(5.342)	(1.942)
	Log likelihood	-38721.889	-	-13065.720	-	-25535.667	-	-22627.650	-	-16067.460	-

Notes: Standard errors are shown in parentheses.   ***, **, * indicate significant at the 1%, 5% and 10% level, respectively.

TABLE 3 - Continued

Time Spent Preparing Food-Cooked-at-Home: Tobit Model – Parameter Estimates and Marginal Effects

	Independent Variables	All Sample (n=10,417)		Men (n=4,551)		Women (n=5,866)		Households w Children (n=5,788)		Households w/o Children (n=4,629)	
		Estimated Coefficient	Marginal Effect	Estimated Coefficient	Marginal Effect	Estimated Coefficient	Marginal Effect	Estimated Coefficient	Marginal Effect	Estimated Coefficient	Marginal Effect
	Intercept	42.49	-	-5.55	-	46.50	-	52.14	-	29.07	-
		(7.889)	-	(11.969)	-	(10.166)	-	(10.322)	-	(12.405)	-
(7)	Hourly Earnings (trernhly)	-0.002**	-0.001**	-0.001	-0.002**	-0.003**	-0.001**	-0.003***	-0.002**	-0.001	-0.001
		(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
(8)	Gender: Female (yes=1)	-40.98***	-16.54***	-	-	-	-	-47.68***	-20.34***	-33.23***	-12.46***
		(1.709)	(0.677)					(2.501)	(1.038)	(2.421)	(0.902)
	Employment: Both=Full-time	-6.54***	-2.66***	-1.998	-0.648	-4.109	-1.998	-4.70*	-2.06*	-5.157	-1.922
		(2.186)	(0.880)	(3.733)	(1.208)	(2.744)	(1.324)	(2.790)	(1.215)	(3.639)	(1.340)
(9)	Employment: Respondent=Full- & Spouse=Part-time	-20.76***	-7.96***	-14.70***	-4.58***	-10.52*	-4.97*	-16.05***	-6.71***	-21.94***	-7.65***
		(3.259)	(1.166)	(4.395)	(1.312)	(5.879)	(2.670)	(4.162)	(1.657)	(5.528)	(1.779)
	Race: White (yes=1)	-9.214	-3.878	-18.15**	-6.24*	-3.577	-1.768	-6.495	-2.906	-11.880	-4.617
		(6.262)	(2.700)	(9.242)	(3.356)	(8.183)	(4.080)	(8.151)	(3.721)	(9.748)	(3.903)
(10)	Race: Black (yes=1)	-13.91**	-5.47**	-27.77***	-8.20***	-5.041	-2.436	-8.499	-3.633	-18.47*	-6.61*
		(6.636)	(2.500)	(9.975)	(2.670)	(8.594)	(4.094)	(8.769)	(3.654)	(10.191)	(3.458)
	Race: Asian (yes=1)	-1.397	-0.571	-18.66*	-5.63*	9.361	4.741	0.130	0.057	-2.871	-1.071
		(7.331)	(2.979)	(10.875)	(3.039)	(9.575)	(5.009)	(9.428)	(4.147)	(11.655)	(4.300)
(11)	Household with Children less than 18 (yes=1)	1.701	0.698	-3.753	-1.220	11.68***	5.69***	-	-	-	-
		(2.196)	(0.900)	(3.196)	(1.040)	(3.010)	(1.455)				
(12)	Marital Status: Married (yes=1)	15.80***	6.43***	-8.78**	-2.88**	27.87***	13.52***	13.43***	5.77***	19.40***	7.42***
		(2.058)	(0.830)	(3.625)	(1.199)	(2.505)	(1.207)	(2.778)	(1.170)	(3.162)	(1.227)
(13)	Metropolitan Living (yes=1)	0.629	0.258	3.318	1.068	-0.826	-0.406	1.992	0.871	-0.884	-0.334
		(2.007)	(0.822)	(3.087)	(0.985)	(2.576)	(1.267)	(2.674)	(1.164)	(3.041)	(1.152)
	Region: Northeast (yes=1)	5.60**	2.33**	7.04*	2.33*	5.260	2.612	5.71*	2.55*	5.704	2.185
		(2.467)	(1.043)	(3.661)	(1.236)	(3.234)	(1.627)	(3.244)	(1.466)	(3.800)	(1.478)
(14)	Region: Midwest (yes=1)	-2.650	-1.083	1.367	0.445	-4.515	-2.195	-0.816	-0.358	-4.897	-1.829
		(2.280)	(0.927)	(3.424)	(1.119)	(2.963)	(1.429)	(3.013)	(1.320)	(3.492)	(1.291)
	Region: South (yes=1)	-0.227	-0.093	1.839	0.599	-1.237	-0.61*	1.752	0.772	-2.679	-1.007
		(2.187)	(0.898)	(3.335)	(1.090)	(2.818)	(1.378)	(2.917)	(1.288)	(3.304)	(1.239)
	Log likelihood	-38721.889	-	-13065.720	-	-25535.667	-	-22627.650	-	-16067.460	-

Notes: Standard errors are shown in parentheses. ***, **, * indicate significant at the 1%, 5% and 10% level, respectively.

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NOTES

1. This simplification would save algebra, but not alter our main results.
2. In the full sample, 44.4 percent (or 4,629 out of 10,417) of respondents has no children, 43.8 percent (or 4,565) of respondents has one or two children, and 11.8 percent (or 1,223) of respondents has more than two children.
3. The weighted average daily time spent on purchasing prepared-food in the full sample is 3.8 minutes.
4. The Lagrangian function is given by $L = l + \beta n^{\alpha} m^{1-\alpha} + \lambda_1(wl_w - pn - p^* m) + \lambda_2(T - l - l_w - t_n z)$, where we obtain $\lambda_1 = 1/w$ and $\lambda_2 = 1$.
5. Time use categories include personal care (01), household activities (02), caring for and helping household and non-household members (03, 04), working and work-related activities (05), education (06), consumer purchase (07), professional and personal care services (08), household services (09), government services and civic obligations (10), eating and drinking (11), socializing, relaxing and leisure (12), sports, exercise, and recreation (13), religious and spiritual activities (14), volunteer activities (15), telephone calls (16), and traveling (18).
6. In the ATUS-CPS file, 3,482 respondents (out of a total 13,038 respondents) were interviewed in the 2004 calendar year.
7. Detailed description is available at American Time Use Survey Activity Lexicon 2005.
8. The analyses of time spent purchasing prepared-food are not included in this section because the weighted average daily time spent on purchasing prepared-food is only 3.8 minutes and is thus negligible. The results of the analyses, however, are available from the authors.
9. A discrete distribution at zero (or an observation that contains zero) in the dataset destroys the linearity assumption, and, in turn, the least square estimator is inconsistent; hence, the least square method is inappropriate.
10. The Tobit estimated coefficients measure the effect of the observed explanatory variable (i.e., hours worked) on the dependent variable (time spent preparing food-cooked-at-home), holding all the other explanatory variables constant.

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