Time in Eating and Food Preparation for Single-Headed Households

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Overview

THE TIME PATTERNS of eating and food preparation in the United States are undergoing substantial changes. In comparison to a few decades ago, today individuals more often eat away from home, do less food preparation, and more frequently engage in eating as a secondary (rather than primary) activity. **Secondary eating** occurs when an individual is simultaneously engaged in some other, primary or "main" activity (e.g., the individual eats while watching TV). Our research investigates time in eating jointly with time in food preparation. We differentiate between eating at home vs. away from home and between primary vs. secondary eating. The main objective is to better understand food choices, namely:

1. What factors are associated with the amount of time in primary eating at home and away from home?
2. What factors are associated with the amount of time in secondary eating at home and away from home?
3. Does income affect the amount of time in food preparation?
4. Do socio-demographic characteristics affect the amount of time in food preparation?

Economic Model

THE THEORETICAL MODEL is based on the household production approach (Becker, 1965). An individual maximizes utility:

$$\max U(FH, FA, Z, L; \tau)$$

subject to:

Production function constraints:

$$FH = F(XH, PH, SH, S; \mu_1)$$
$$FA = G(XA, PA, SA; \mu_2)$$

Time use constraints:

$$H + L + PH + PA + S = T$$
$$SH + SA \leq H + L + S$$

Budget constraint:

$$P_{XH} \cdot XH + P_{XA} \cdot XA + Z = W \cdot H + V$$

FH	commodity "food at home"
FA	commodity "food away from home"
Z	composite "non-food" commodity
L	leisure time
τ	individual characteristics affecting utility
XH	market goods to produce food at home (e.g., groceries)
PH	time in primary eating at home
SH	time in secondary eating at home
S	time in food preparation
XA	market goods to produce food away from home (e.g., restaurant meals)
PA	time in primary eating away from home
SA	time in secondary eating away from home
μ_1, μ_2	individual characteristics affecting production efficiency
H	work time,
W	wage rate,
P_{XH}	price of XH
P_{XA}	price of XA
V	non-labor income

Empirical Analysis

Data

- American Time Use Survey (ATUS), matched with Eating and Health (EH) Module;
- We pool survey years 2006, 2007, and 2008;
- Socio-demographic characteristics come from CPS matched to ATUS;
- Food-at-home prices come from Quarterly Food-at-Home Price Database (QFAHPD);
- Fast food price index (Chou et al., 2004) is constructed using ACCRA data;
- Sample includes 11,070 individuals.

Table 1 provides selected characteristics of the sample. Table 2 reports sample means for the time in eating and food preparation (in minutes per day). Figure 1 presents the distribution of reported time in eating and food preparation in the sample.

Table 1. Selected Sample Characteristics

Characteristic	Mean	SE
Demographic characteristics		
Age (years)	52.21	0.240
Male	0.42	0.006
Female	0.58	0.006
White	0.78	0.005
Black	0.18	0.005
Other race	0.04	0.002
Hispanic origin	0.08	0.003
US born	0.91	0.004
Log of real family income	8.53	0.047
Income < 130% poverty	0.26	0.005
Income 130–185% poverty	0.13	0.004
Home owner	0.55	0.006
Presence of children		
0-5 years	0.05	0.002
6–15 years	0.10	0.003

Table 2. Time in Eating and Food Preparation (Minutes/Day)

	Primary Eating		Secondary Eating		
	At Home	Away from Home	At Home	Away from Home	Food Preparation
Full sample	36.9 (0.47)	28.8 (0.54)	29.3 (1.08)	29.8 (1.20)	38.8 (0.64)
Fraction of cases with time = 0	22.4%	52.0%	64.7%	69.3%	38.1%
Gender					
Male	33.3 (0.76)	33.1 (0.88)	26.9 (1.46)	31.2 (2.08)	29.1 (0.79)
Female	39.4 (0.57)	25.7 (0.68)	30.9 (1.49)	28.8 (1.57)	45.7 (0.92)

Note: Standard errors of mean estimates are in parentheses.

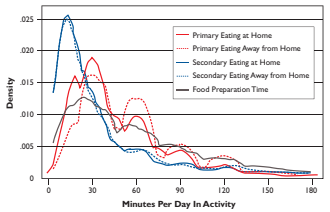

Figure 1. Kernel Densities of Time in Eating and Food Preparation

We estimate a SUR system of **five Tobit equations** to account for:

- Correlations among unobservable factors affecting reported times in eating and food preparation (five activities in total);
- A non-negligible fraction of individuals reporting time = 0, especially in the case of secondary eating (see Table 2).

Tobit approach: observed time in activity j, y_{ij}, is modeled using a latent variable y^*_{ij}:

$$y^*_{ij} = x_i' \cdot \beta_j + \varepsilon_{ij},$$
$$y_{ij} = y^*_{ij} \text{ if } y^*_{ij} > 0,$$
$$y_{ij} = 0 \text{ if } y^*_{ij} \leq 0.$$

We estimate the empirical model using the `cmp` package in `Stata`.

The vector of marginal effects:

$$\frac{\partial}{\partial x_i} E[y_{ij} | x_i] = \beta_j \cdot \Phi(x_i'\beta_j / \sigma_j).$$

An individual marginal effect measures a change in the expected amount of time in activity j (minutes/day) associated with a unit change in an explanatory variable.

Results

Table 3. Time in Eating and Food Preparation (Minutes/Day)

	Time in Eating				
	Primary at Home	Primary AFH	Secondary at Home	Secondary AFH	Food Preparation
Age	0.64***	-0.35***	0.15***	-0.92***	0.55***
Male	-0.28	2.47***	-7.45***	-4.56***	-10.67***
Hispanic origin	-3.91***	1.14	-12.90***	-7.59***	1.94
Foreign-born	4.45***	1.00	-9.39***	-6.82***	6.36***
Child, age 0-5	2.66*	-2.35	0.34	-3.99	15.02***
Child, age 6-15	4.28***	-4.94***	5.64***	0.57	17.69***
< 130% poverty	5.42***	-12.05***	2.86	-8.27***	5.40***
130–185% poverty	2.70**	-3.12**	1.57	-4.60*	2.96*
Log of real income	-2.37***	3.24***	-1.80	5.16***	-1.30*
High school degree	2.11†	3.71***	5.47**	7.87***	-0.92
Some college	2.49**	5.24***	8.19***	10.91***	-0.30
Bachelor's degree	4.86***	6.44***	11.33***	16.00***	-0.35
Holiday	-1.32	5.17	2.98	-6.50	10.34**
Sunday	0.68	-2.69*	10.32***	-13.81***	2.38
Friday	-2.67*	3.01*	3.28	2.15	-3.57*
Saturday	-1.15	0.32	7.23***	-1.12	3.53**
Food-at-home price	40.69	-7.18	-106.33	151.65*	112.24*

Summary of Main Findings

- Average time in each eating activity is ~30 minutes/day;
- Demographic characteristics matter:
  - Older adults spend more time in eating at home, more time in food preparation, and less time in eating away from home;
  - Presence of children adds ~15 minutes/day to food preparation;
  - Males spend more time in primary eating away from home, less time in secondary eating, and less time in food preparation;
- Low income: Individuals below 130% of the federal poverty level spend:
  - 6 min/day more in primary eating at home;
  - 20 min/day less in eating away from home;
  - 5.4 minutes/day more in food preparation;
- Day of the week affects time in eating and food preparation;
- Higher food-at-home prices lead to more time in food preparation.

Discussion and Implications

Lower-income individuals spend more time in eating at home and less time in eating away from home. They also spend more time in food preparation. Time use can impact the effectiveness of food assistance programs.

Adults in single-headed households spend substantial time in secondary eating. Future research should investigate the health implications of the increased incidence of secondary eating as a substitute for primary eating.

Changes in the design of public assistance programs may affect how much individuals rely on food at home as opposed to food away from home as a source of calories.

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