Household Labor Supply and Nutrition: A Time-Use and Food-Intake Analysis

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Abstract
This study explores the mechanisms through which household labor supply affects the combination of time and money used in the production of food and the resulting quality of food-intake of family members. I find that female labor-force participation is negatively associated with time spent shopping for and preparing food and positively associated with the share of household food expenditure spent on food prepared away from home. In married-couple families, I find that the quality of food-intake is generally higher for members of families where the wife does not participate in the labor-force, compared to families where the wife works part-time or full-time. However, in single-mother families the quality of food-intake is sometimes higher when the mother works part-time or full-time, compared to when she does not participate in the labor-force.

Background
- In order to produce commodities, households must utilize limited resources of time and goods (market products). Families with different values for time will use different combinations of time and goods in household production.
- In practice, using more goods relative to time in the production of food means that a larger portion of household food is obtained from fast-food, carry-out, and other restaurants, relative to food prepared at home which is relatively more time-intensive.
- Away-from-home foods, compared to food prepared at home, have higher levels of total fat and saturated fat together with lower levels of important nutrients such as Dietary Fiber, Calcium and Iron (Lin, Guthrie, and Frazao 1999, Guthrie, Lin, and Frazao 2002).

Research Questions
1) What is the association between household labor supply, time spent shopping for and preparing food, and the share of household food expenditure spent on away-from-home food?
2) What is the relationship between female labor-force participation and the quality of food intake of family members?
3) Is there a difference in the relationship between labor supply and diet quality between married-couple families and single-mother families?

Data
The American Time Use Survey (ATUS) 2003-2005
- Time diary data for one day, 24 hrs
- Analysis sample: 12,157 married-couple households (where husband works full-time), 3,342 households headed by single mothers

The Continuing Survey of Food Intake of Individuals (CSFII) 1994-1996 and 1998
- Dietary intake is measured for 2 non-consecutive days
- Analysis sample: 5,811 married-couple households (where husband works full-time) 1,133 households headed by single mothers

Variable Definitions
Food Time: Average minutes per day spent on food preparation, grocery shopping, and related travel.
Away-From-Home Share: Proportion of monthly household food expenditure spent on fast-food, carry-out food, and other food eaten at restaurants.
The Healthy Eating Index (HEI 1995): A measure of diet quality to assess conformance of individual food-intake to federal dietary guidance. The HEI is Comprised of 10 different components each worth up to 10 points. Maximum possible score is 100 points.

Graphical Analysis
- In both married-couple and single-mother families, increased female labor-force participation is associated with a decrease in time spent shopping for and preparing food (Figures A1 and B1) and an increase in the share of food expenditure spent on away-from-home food (Figures A2 and B2).
- In married-couple families, mean HEI falls with female labor-force participation for all gender-age groups (Figure A3).
- In single-mother families, females ages 12 to 17 and 21 to 55 have higher average HEI scores if the mother works part-time or full-time, compared to when she does not participate in the labor force (Figure B3).
- For members of married-couple families, HEI scores are lower by about 1 to 4 percent if the wife works part-time and by about 3 to 5 percent if the wife works full-time, compared to when she does not participate in the labor force (Figure A4).
- For females in single-mother families, HEI scores are between 2 to 8 percent higher if the mother works part-time or full-time, compared to when she does not work (Figure B4).

Conclusions
In both married-couple and single-mother families, increased female labor-force participation is negatively associated with time spent on food preparation and positively associated with the share of food expenditure spent on away-from-home foods. The results suggest that this substitution of money for time in household food production may have a negative effect on the quality of food intake of both children and adults in married-couple families, but not in single-mother families.

Estimated Log Deviations
Married-Couple Families

Single-Mother Families

Regression Analysis
I regress logs of the HEI and the nutrient density (per 1,000Kcal) of five important nutrients (Fat, Vitamin B6, Iron, Fiber and Folate) on female labor-force participation status, income, and demographic controls. Regressions were run separately for married-couple and single-mother families. Families where the wife/mother does not participate in the labor force provide the comparison group in each case. Results suggest that the diet quality of members of married-couple families where the wife works part-time or full-time is consistently less nutritious than that of members of single-earner families.