Juggling Priorities: Women's Labor Market Opportunities and Household Consumption*

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Abstract

How do women's relative labor market opportunities affect household consumption for married couples? While higher potential wages can enhance women's bargaining power, shifting consumption toward their preferences, they may increase work hours, altering time constraints and spending. Using exogenous gender-specific wages and scanner data, we find higher female relative wages increase spending on convenience foods and decrease spending on fresh produce, contributing to higher obesity rates. This is primarily driven by women's time reallocation given their disproportionate domestic responsibilities. Our findings suggest that the impacts of earned female income may differ from those of unearned income found in previous studies.

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1 Introduction

Women's labor market opportunities have improved significantly in many developed countries over the past century, thereby enhancing women's economic roles within households (Blau and Kahn, 2017). These shifts in women's relative economic positions have potentially reshaped household consumption. Understanding how these changes affect household consumption is important, as they have far-reaching implications for both women's welfare and broader household outcomes such as investments in children and family nutrition. Previous literature has shown that higher economic resources controlled by women is linked to greater investment in children and improved family nutrition.[1] However, existing evidence primarily explores variations in unearned income (e.g., cash transfers) but overlooks the impact of improved labor market opportunities for women, which affect a broader segment of the population and may lead to different household outcomes.

It is theoretically ambiguous how women's labor market opportunities affect consumption for married couples. One possibility is that better labor market conditions could enhance women's bargaining power, shifting household spending toward their preferences. Another possibility is that improved labor market opportunities could lead to longer work hours, introducing new time constraints that alter inputs for home production, which could also affect spending patterns (Becker, 1965; Gronau, 1977). While one might expect that better labor market conditions for women would lead to better outcomes for children and overall household health – since women are known to prioritize these areas (Lundberg and Pollak, 1993; Duflo, 2012) – the literature in the US context suggests a more complex picture. Existing studies have found that better labor market conditions for women lead to worse child health outcomes, often due to mothers having less time for their children because of increased labor supply (e.g., Lindo et al., 2018; Page et al., 2019).[2] This raises questions about how gender-specific labor market conditions affect household consumption, given that women frequently handle tasks such as grocery shopping and meal preparation.[3]

In this paper, we study how gender-specific labor market conditions influence household consumption among married couples in the United States, leveraging detailed consumption

[1] See e.g., Thomas (1990); Duflo (2003); Attanasio and Lechene (2002); Armand et al. (2020); Kim (2023).

[2] Lindo et al. (2018) focus on substantiated children maltreatment cases in California as their outcome, while Page et al. (2019) investigate children's health conditions, including asthma, ear infections, severe emotional difficulties, and injuries. Both studies suggest that differential time use is a key channel for explaining their results.

[3] According to the 2014-2016 American Time Use Survey, Pew Research Center (2019) reports that 80% of women in married or cohabiting couples are primarily responsible for preparing meals and grocery shopping. D'Acunto et al. (2021) reports a similar gender gap in grocery shopping using a customized survey on NielsenIQ households.

data and exogenous variation in gender-specific labor demand. We also explore how the effects on household consumption relate to time use between spouses and household health outcomes, shedding light on the interplay between women's relative labor market opportunities, consumption patterns, and broader household well-being.

Our primary dataset for studying consumption outcomes is the NielsenIQ Homescan household data spanning 2004 to 2017. This dataset provides detailed records of grocery-related purchases from each shopping trip made by participating households. Its comprehensive nature enables us to examine how gender-relative labor market demand impacts the composition of household consumption, particularly regarding food items. To enrich our analysis and explore underlying mechanisms, we complement the NielsenIQ data with several other datasets: the Panel Study of Income Dynamics (PSID) for examining eating-out behavior, the American Time Use Survey (ATUS) for time use patterns, and the Behavioral Risk Factor Surveillance System (BRFSS) for health outcomes.

To overcome empirical challenges associated with unobserved consumption preference heterogeneity of households, we leverage plausibly exogenous commuting zone (CZ)-level variations in gender-specific labor market conditions. This Bartik-style approach exploits historical differences in industry concentration by gender and national-level industry-specific labor market shocks. This allows us to separate the effects of demand-driven changes in relative wages and underlying worker characteristics in each CZ that might correlate with consumption patterns. Our analysis is based on the "exogenous share" argument (Goldsmith-Pinkham et al., 2020), and to support this identifying assumption, we demonstrate that industry shares are generally not correlated with consumption changes in the past periods, and past outcomes are not predictive of future gender-specific labor market conditions.

Our findings are summarized as follows. We find that an increase in female relative potential wages significantly changes the composition of food expenditures for married couples. Specifically, higher female relative wages lead to increased consumption of frozen foods and reduced spending on fresh produce: a one-standard-deviation increase in female relative wages leads to a 1.42% increase in the expenditure shares for frozen food and a 3% decrease in the expenditure shares for fresh produce. Additional analyses reveal that the rise in relative female wages increases expenditure on pre-prepared entrees. We further examine eating-out outcomes using the PSID data and find that eating-out & food delivery expenditure shares increase significantly. Taken together, these results point to a broader substitution of market-based food services for home production.

Our food results are most consistent with the labor supply explanation: as women's relative wage rises, they increase work hours and reduce time available for food preparation, leading households to reallocate spending toward convenient and ready-to-eat foods as a time-saving

substitute. Time-use data show that wives increase time spent on market work by about 9.5% (for a one–standard-deviation increase in relative wages) while reducing time devoted to home production, particularly food and drink preparation, by about 7.1%. In contrast, husbands' time spent on market work and household production remains largely unchanged. It is unlikely that these results are solely driven by gender-specific preferences and shifts in bargaining power. Such preferences are more readily inferred from the spending patterns of single adults, compared to married households where decisions are jointly made. Our data indicate that single women spend less on frozen food and more on fresh produce than single men—suggesting that the observed shift in married households is not the result of women's inherent preferences. Moreover, if increased women's bargaining power were the driving factor, we would expect the opposite shift in food composition.

We also provide suggestive evidence that better labor market opportunities for women contribute to worse health outcomes for adult household members. Pre-prepared foods often contain higher levels of sodium and added sugar compared to home-prepared foods, potentially contributing to negative health outcomes among household members (Cutler et al., 2003; Baldridge et al., 2019). Using the BRFSS data, we find evidence supporting this claim: an increase in women's relative wages is associated with higher probabilities of overweight or obesity among both men and women. While data limitations prevent us from directly estimating effects on children, we contribute to the literature on maternal labor supply and childhood obesity by providing causal evidence of diet changes driven by shifts in time use—a channel where previous studies have primarily relied on correlational evidence (e.g., Datar et al., 2014; Cawley and Liu, 2012).

We contribute to the following literatures. First, our study contributes to the literature on women's labor market opportunities and household resource allocation and family welfare. To our knowledge, this is the first study to document the impacts of women's labor market opportunities on household consumption patterns and time allocations exploiting plausibly exogenous gender-specific labor market conditions, with important health implications. It has been widely documented that heterosexual wives undertake the majority of domestic chores, including childcare, food preparation, and cleaning, even when they earn more than their husbands (Bertrand et al., 2015; Siminski and Yetsenga, 2022; Hancock et al., 2024). In this context of disproportionate domestic responsibilities falling upon women, several studies have found that increased labor market opportunities for women lead to adverse health outcomes for household members, mostly focusing on children (Page et al., 2019; Lindo et al., 2018).[4]

[4]For example, using gender-specific labor market shocks in the US setting, Page et al. (2019) shows that mothers' employment opportunities adversely affect children's health, whereas fathers' employment opportunities have a positive impact. See also Gennetian et al. (2010); Morrill (2011); Liu and Zhao (2014); Schaller and Zerpa (2019). Furthermore, a body of research (e.g., Anderson et al. (2003); Cawley (2011)) shows that

We provide a new potential explanation for the negative health impacts for children in the US context: mothers replace home-cooked meals with less nutritious diets due to their increased work demand.[5] We further show that the negative health impacts, in particular overweight or obesity, extend to adult household members, not just children. Our findings have important implications for policy, particularly in terms of how to support both women's professional advancement and the well-being of their families.

Second, we show that the impacts of gender-specific income vary depending on the type of income, highlighting that the effects of unearned versus earned female income differ—a distinction that has been overlooked in the previous literature. Although there have been several causal estimates of the impacts of unearned income of women (e.g., cash transfer) on consumption (Thomas, 1990; Attanasio and Lechene, 2014; Armand et al., 2020), evidence regarding women's labor market income is considerably more limited.[6] We find that higher female potential wages lead to an increase in pre-prepared food and a decrease in fresh produce. This contrasts with existing studies that exploit variations in unearned income in developing countries, which show that higher income controlled by women leads to a more nutritious diet.[7] This divergence suggests that for consumption that relates to time-intensive tasks in the US, the labor supply channel is crucial when women's relative labor market income rises.

More generally, our paper adds to the growing body of evidence showing that gender-relative labor market shocks affect family outcomes, such as domestic violence (Aizer, 2010; Bergvall, Forthcoming), marriage or fertility (Bertrand et al., 2015; Autor et al., 2019; Shenhav, 2021), child health (Page et al., 2019), child maltreatment (Lindo et al., 2018), child's socio-emotional skill development (Hufe, 2024), women's autonomy (Majlesi, 2016), and charitable giving (Ahn and Ren, 2025). In contrast to previous studies that mostly focus on relatively rare, high-stakes events, we focus on daily consumption decisions that affect a much broader range of populations.

maternal employment is associated with childhood overweight or obesity.

[5] Kohara and Kamiya (2016) and Etilé and Plessz (2018) show that maternal employment is associated with the decline of home cooking in the context of Japan and France, respectively.

[6] Prior studies, mostly in developing countries setting, have shown that higher unearned income controlled by women leads to higher spending on female goods, healthier consumption, and more investment in children through an increase in female bargaining power. In developed countries, Lundberg et al. (1997) and Ward-Batts (2008) examine consumption outcomes exploiting the UK's policy reform that changed the gender of benefit recipients. Kim (2023) investigated how improvements in women's access to credits affect household consumption for couples in the US. More recently, Gihleb et al. (2023) constructed a "femaleness" index of household consumption baskets using a machine learning approach. They study how robot exposure and fracking booms in the US affect the degree of "femaleness" of consumption baskets of households.

[7] Using a survey data from Brazil, Thomas (1990) find that the effect of maternal income on nutrient demand for protein is between four and seven times larger than paternal income. Armand et al. (2020) examines a gender-based cash transfer program in Macedonia and shows that targeting women with cash transfers leads to a shift toward a more nutritious diet, specifically moving away from salt and sugars and towards meat, fish, and dairy.

The remainder of this paper is organized as follows. In Section 2, we present a conceptual framework outlining the expected effects of higher female relative potential wages on household consumption for married couples. Section 3 describes the data sources used in our empirical analyses. Section 4 introduces our empirical strategy. Section 5 presents the results, and Section 6 explores the mechanisms underlying these findings. Section 7 discusses the health implications of our results. Section 8 concludes by summarizing the main findings and discussing their broader implications.

2 Conceptual Framework

It is theoretically unclear how women's relative potential wages in the labor market can impact household consumption patterns. The dynamics between male and female wages within households are complex and can lead to varied economic outcomes due to multiple channels through which relative female wages affect consumption. In this section, we outline predictions through various channels within the framework of the collective model.[8]

Suppose that there are two members of the household, h (husband) and w (wife). Each member i's preferences are represented by a utility function $U^i(1-h^h, \mathbf{c}^h, 1-h^w, \mathbf{c}^w, \mathbf{C}, \mathbf{s})$ where h^i and $\mathbf{c}^i$ denote member i's labor supply (with $0 \leq h^i \leq 1$) and a vector of private goods, respectively. $\mathbf{C}$ denotes a vector of public goods. To simplify our analysis, we normalize prices to 1. $\mathbf{s}$ is a vector of preference factors, such as the age and education of each member.

Let w_h, w_w, and y denote the husband's and wife's wage rates and household nonlabor income. $\mathbf{z}$ denotes a vector of distribution factors, which are defined as variables that potentially affect the intrahousehold decision-making process without having an impact on individual preferences or the joint consumption set.

For any given (w_h, w_w, y, $\mathbf{z}$, $\mathbf{s}$), households solve the following program:

$$\max_{h^h, h^w, \mathbf{c}^h, \mathbf{c}^w, \mathbf{C}} (1-\mu)U^h + \mu U^w$$

subject to $\mathbf{c}^h + \mathbf{c}^w + \mathbf{C} \leq y + w_h h^h + w_w h^w$ and $0 \leq h^i \leq 1$, $i = h, w$. μ (w_h, w_w, y, $\mathbf{z}$, $\mathbf{s}$) is a Pareto weight between 0 and 1 and we assume that μ is continuously differentiable in its

[8]The collective model approach, as opposed to the unitary model approach, makes a more realistic assumption that multiple agents within households may have different preferences (Browning et al., 2014). It assumes that household bargaining leads to Pareto-efficient allocations—meaning that no other feasible choice would have been preferred by every household member. This cooperative model assumption is likely to hold for married couples who know each other's preferences well and interact on a regular basis. There is another class of household decision models based on non-cooperative assumptions. Refer to Lundberg and Pollak (1993) for "separate spheres" models. For these models, allocations within marriage are characterized by a non-cooperative Nash equilibrium.

arguments. Pareto weight can be interpreted as the relative power of wife within the household.

To understand the impacts of potential relative wages, let $\hat{w}_h$ and $\hat{w}_w$ denote potential wages for men and women in the local labor market. We are interested in understanding the effects of changing relative female potential wages; thus, our variable of interest is the impacts of $\frac{\hat{w}_w}{\hat{w}_h}$. Within this collective model framework, there are several ways through which these potential wages affect consumption allocations, which we will outline below.

First, potential wages for men and women may have direct impacts on the budget constraints of households by affecting the actual wages of husbands and wives. When the changes in actual wages do not affect labor supply, then households enjoy a higher total income when actual wages for either sex increase. This change in total income results in different optimal consumption allocations of households. We call this the *total income effect*.

When the changes in actual wages affect the labor supplies of households, then the optimal household allocation vectors ($\mathbf{c}^h$, $\mathbf{c}^w$, $\mathbf{C}$, h^h, h^w) may change because the optimal consumption associated with new labor supplies may differ from the original allocations. For instance, it may be optimal to spend more on professional clothing if people spend more time at work. Similarly, tighter time constraints may reduce time available for home production, leading households to reallocate spending toward time-saving substitutes such as pre-prepared foods or food delivery. We refer to this as the *labor supply effect* for simplicity, though it more precisely captures the reallocation of consumption induced by changes in labor supply. This effect may exist even without any change in total income (e.g., when female wages and male wages move in opposite directions while total income remains constant).

Next, relative female potential wages ($\frac{\hat{w}_w}{\hat{w}_h}$) can affect the optimal allocations of households as a distribution factor, shifting μ. An increase in women's actual wages or labor supply raises the wife's share of household income, which may in turn strengthen her bargaining position within the household. Even when actual income shares are not affected, changes in potential wages can still alter household allocations by shifting the outside options available to men and women in the labor market. Existing studies suggest that potential market conditions are important in determining intrahousehold allocations because they change the bargaining positions of spouses by altering outside options.[9] We call this the *household bargaining effect*.

While these mechanisms may coexist and are difficult to fully disentangle, we attempt to identify the primary channel in the empirical analysis. It is also possible that the dominant mechanism may vary across domains (e.g., foods or gender-specific goods).

[9]For instance, Voena (2015) shows that divorce laws affect the saving and labor market outcomes of currently married couples. Ahn (2025) similarly provides evidence that marriage market conditions affect currently married couples' consumption.

3 Data

3.1 Data on relative wages

To construct a Bartik-style measure of potential relative wages, we use two data sources, (i) the US 5% population census (2000), which is used to construct industry shares, and (ii) Quarterly Census of Employment and Wages (QCEW) 2004-2017, which is used to construct industry-specific wages.[10] QCEW reports quarterly employment and wages reported by employers, covering more than 95% of US jobs. The data are available by industry at the county level, which allows us to construct measures at the CZ level.[11] We use the annual version of QCEW data to construct annual wage levels.

3.2 Data on consumption

3.2.1 NielsenIQ Consumer Panel Data

For household consumption outcomes, we use NielsenIQ Consumer Panel Data that spans from 2004 to 2017, made available by the Kilts Center of Marketing at the University of Chicago Booth School of Business.[12] There are 40,000-65,000 households participating in the sample each year. The sample is balanced on demographic characteristics to reflect the universe of households in the US.

This dataset is suitable for our analysis due to the detailed nature of recorded consumption, especially regarding food items, and large sample size. The NielsenIQ dataset records all household purchases of barcode-level products in 10 NielsenIQ food and nonfood departments, which are (1) Health and Beauty Aids, (2) Dry Grocery, (3) Frozen Food, (4) Dairy, (5) Deli, (6) Packaged Meat, (7) Fresh Produce, (8) Nonfood Grocery, (9) Alcohol, and (10) General Merchandise. Appendix Table A1 provides a further description of what items are included in each of these departments. As long as purchased products are within these department categories, purchases from all retail outlets (including department stores, grocery stores, convenience stores, and online stores) must be recorded by the household with at-home scanners. Products that are outside these department categories are not recorded in the scanner.[13] In addition to departments, purchases are categorized into approximately 100 product groups and approximately 1,000 product modules.

[10] We follow 3-digit NAICS industry classifications.

[11] For the Census data, where Public Use Microdata Areas (PUMAs) represent the lowest level of geographic detail, we use the CZ crosswalk developed by Autor and Dorn (2013) to map PUMAs to CZs.

[12] For more discussion about scanner data, see Dubois et al. (2022).

[13] Hence, note that this dataset does not capture total household consumption. These data represent household consumption on frequently purchased, grocery-related items that are brought into the home.

For our analyses, we work with aggregated goods—specifically departments and clusters of product groups and product modules. Although barcode-level data (UPC) are available for all purchases and allow us to identify exactly what each household bought, this level of detail is too granular for our purposes, with most households recording zero purchases for any given UPC. It should be noted that, as documented by NielsenIQ, product modules have been added and removed over time. To avoid results being driven by these changes, we restrict our attention to consumption for product modules that are present in all years. Finally, we focus on annual consumption, defined as the total NielsenIQ-tracked purchases made within each calendar year.

The NielsenIQ Consumer Panel provides demographic information, including age and education, for both wives and husbands in married-couple households.[14] The availability of this information at the individual level allows us to examine and control for spouse-level characteristics in our analyses. Other demographic characteristics, such as race, household size, number of children, place of residence, and household income[15], are reported at the household level.

Sample selection: Our primary sample consists of married couples with both wives and husbands aged 25-64 in the 2004-2017 NielsenIQ Consumer Panel.[16] We focus on the working-age population, as they are most likely to be influenced by labor market conditions.[17] We do not consider cohabitating unmarried couples from our analysis, as the NielsenIQ data does not include information on cohabitation status.

We also exclude households that are outliers in terms of total annual expenditure on NielsenIQ-tracked items. As shown in the first row of Appendix Table A2, total expenditure exhibits outliers, ranging from a minimum of \$1.70 to a maximum of \$34,684.40. To alleviate the outlier problem, we drop the couples with annual total expenditure values below the 1st percentile and above the 99th percentile from the married couple sample. The second row of Table A2 shows the summary statistics of the trimmed sample based on total expenditure. The mean annual expenditure of NielsenIQ-tracked items is \$4,175.8 and the median is \$3,876.4 for the final sample.

Appendix Table A3 shows summary statistics of our final married couple sample. The average household income is approximately \$72,540.86 in 2010 USD. The average household has 3.16 members, including 1.05 children. The average age of our sample is 49.9 for husbands

[14] We do not focus on same-sex couples in our analysis, as they cannot be identified in the NielsenIQ data.

[15] Household incomes represent the combined total annual income of the household as of the end of the previous calendar year, resulting in a two-year lag relative to the timing of consumption. In the dataset, household incomes are reported in 20 categorical bins.

[16] Our sample selection is different from Lin (2023), who studies how food demands are affected by couples' bargaining power for older couples using the NielsenIQ Consumer Panel. She focuses on samples who are age 55 or above.

[17] Labor market participation drops sharply for individuals aged 65 and older (Bureau of Labor Statistics, 2024).

and 48.1 for wives. Years of education are 14.38 and 14.58 for husbands and wives on average, respectively. The unemployment rates of wives are more than twice as high as those of husbands. Appendix Table A4 shows that more than half (55.42%) of unique households in our final sample stay in the panel for only one or two years, while a relatively smaller fraction of households stay over a long period.

3.3 Supplemental datasets

To obtain information not available in our main dataset, we also use the PSID, ACS, ATUS, and BRFSS datasets for additional analyses. Below, we describe the corresponding data sources and sample selection criteria.

3.3.1 Data on broader food expenditures

In addition to the NielsenIQ Consumer Panel Data, we use the Panel Study of Income Dynamics (PSID; Survey Research Center (2025)) to supplement our food consumption analysis. While the NielsenIQ Consumer Panel is a scanner dataset that provides detailed information on household purchases of food for at-home consumption, it does not capture spending on food away from home (e.g., restaurants). The PSID complements this by including a broader range of household food expenditures, such as food at home and food away from home. The PSID is a nationally representative survey of U.S. individuals and families that began in 1968, was conducted annually until 1997, and has been conducted biennially since 1999. It collects both demographic characteristics and economic activity information at the household and individual levels. For analyses comparable to those based on the NielsenIQ Consumer Panel, we use data from 2005 to 2017. Additionally, we use data from 1999 to 2003 for our pre-trend analysis.[18] We use the restricted version of the PSID, which provides county identifiers necessary for constructing CZs.

Sample selection: Following the sample selection criteria used in the NielsenIQ Consumer Panel, we restrict our sample to married couples in the PSID for whom information on both the head and the spouse is available, and both are aged 25–64.

[18]While the PSID has collected information on the amount spent on food at home and food away from home since the beginning of the survey, it expanded and changed its expenditure questions in 1999. To ensure consistency across variables, we focus on data from 1999 onward. Since our main analysis begins in 2004, we use 1999–2003 as the relevant pre-period.

3.3.2 Data on working hours and time use

To understand mechanisms, we investigate annual working hours and daily time use using the American Community Survey (ACS) and the American Time Use Survey (ATUS).[19] The ACS is a nationally representative annual survey of U.S. households with detailed demographic and economic information.[20] It allows us to construct household-level measures of women's relative income—information that is not available in the NielsenIQ Consumer Panel Data—as well as annual working hours for household members.[21] The ATUS provides nationally representative estimates of how Americans spend their time, offering insights into daily time allocation. The ATUS sample is drawn from households that responded to the Current Population Survey (CPS), with one individual randomly selected from each household to serve as the designated respondent. This dataset is particularly valuable for understanding how men and women adjust their time allocation in response to changes in working hours. Specifically, the ATUS provides detailed information on daily time allocation, namely the number of minutes spent on each activity such as work-related tasks and household chores, reported for the day prior to the interview. Additionally, the ATUS provides location codes for each activity and indicates who was present with the respondent during the activity. We use this information to examine changes in eating behavior in response to improved labor market opportunities for women. We use ACS data from 2006 to 2017 and ATUS data from 2004 to 2017.[22] Because the ATUS does not include county identifiers for the majority of observations, our time-use analysis is conducted at the state level.

Sample selection: For the ACS and ATUS, we focus on married household heads and their spouses, where both the wife and husband are aged 25–64. Since our analysis focuses on working hours, we exclude individuals who are enrolled in school.[23]

3.3.3 Data on health outcomes

We also explore health outcomes as a downstream effect of changes in household consumption behavior. For this analysis, we use the Behavioral Risk Factor Surveillance System (BRFSS),

[19] We do not use the NielsenIQ data for labor supply analyses, as work hours are reported only in three broad categories—(1) under 30 hours, (2) 30–34 hours, and (3) 35+ hours. Furthermore, these measures may not capture hours worked at the time of consumption, since they most closely reflect work hours during the last quarter of the previous year (October–December).

[20] In line with the approach used for the Census data, we apply the CZ crosswalk developed by Autor and Dorn (2013) to map PUMAs to CZs.

[21] We construct annual working hours using usual hours worked per week and the number of weeks worked per year.

[22] The ACS began full implementation in 2005; however, CZ information cannot be constructed for that year, so we begin our analysis with 2006.

[23] Individuals who are enrolled in school comprise approximately 4% of the sample.

a nationally representative, repeated cross-sectional survey of U.S. adults conducted by state health departments in collaboration with the CDC. The BRFSS includes detailed information on individuals' demographics and health status, including indicators such as overweight and obesity, as well as self-reported measures of physical and mental health—specifically, the number of days in the past month when physical health was poor and when mental health was not good. In contrast to the other datasets we use—which are household-based or drawn from household samples—the BRFSS is a purely individual-level survey, and thus does not include spousal information. We use BRFSS data from 2004 to 2012, the period during which county-level identifiers are publicly available.

Sample selection: In line with the broader sample selection criteria, our analysis focuses on married men and women between the ages of 25 and 64.

4 Empirical Strategy

Our main objective is to estimate the impact of women's relative labor market opportunities on household consumption decisions; to do so, we examine the role of gender-specific potential wages for several reasons. First, existing studies suggest that potential market conditions—such as labor market opportunities and marriage market opportunities—play a crucial role in determining intrahousehold allocations (Bertrand et al., 2015; Voena, 2015; Ahn, 2025). Second, although household-level relative female income may be the most straightforward measure of women's relative earning power, realized income is endogenous to household consumption decisions due to unobserved preferences and characteristics of household members.[24] These unobservable factors make it difficult to identify the causal impact of women's relative earning power using observed female relative income. Therefore, we focus on examining the impact of women's relative labor market opportunities, rather than their observed relative wages within households, using measures that reflect exogenous shifts in local labor market demand. Specifically, we construct potential wages based on local industry composition interacted with national industry wage growth, a Bartik-style approach. In the next subsection, we describe the construction of Bartik-style potential wages. In the subsequent sections, we present our empirical specification and discuss the identifying assumptions.

[24]For example, many married women adjust their labor supply in response to child-rearing responsibilities, which not only affects their income share within the household but could also be correlated with their consumption preferences. Similarly, unobserved health conditions of household members may simultaneously influence labor supply decisions and grocery shopping patterns. In addition, shifts in grocery spending—such as moving toward higher-quality or more expensive foods—may themselves induce adjustments in women's labor supply, raising concerns about reverse causality.

4.1 Construction of Potential Wages by Gender

To overcome aforementioned endogeneity concerns and capture potential labor market opportunities, we construct a potential market (CZ)-level relative wage using a Bartik-style approach, exploiting historical demographic segregation by industry (Bartik, 1991; Blanchard et al., 1992; Aizer, 2010; Bertrand et al., 2015; Shenhav, 2021).[25] Specifically, average annual wages are calculated by gender, education, and race in each CZ as follows:

$$\bar{w}_{grecy} = \sum_{j} \gamma_{grecj} w_{-cyj} \tag{1}$$

where g, r, e, c, y, and j indicate gender, race, education (less than college or college+), CZ, year and industry, respectively. γ_{grecj} is the proportion of female (or male) workers of a given race and education working in industry j in CZ c and fixed at year 2000 levels to account for sorting through wages.[26] To capture labor demand shocks uncorrelated with CZ-specific characteristics, we construct w_{-cyj} as the yearly nationwide annual wage in industry j except for CZ c.[27] Taking out the focal CZ from the national annual wage rules out the cases where the characteristics of men and women in a particular market are affected by consumption, which is our outcome variable. For example, households in CZ c that consume more unhealthy food may be less productive, which may affect wages in CZ c. Our measure of average annual wages in CZ c removes this type of possibility by taking the national-average wage except for CZ c.

Our measure of the gender wage ratio is the ratio of female to male annual wages constructed according to the above formula. Specifically, we match the Bartik-based gender-specific wage measures to each spouse in our sample of married couples by year, race, education, and CZ. The resulting gender wage ratio for each household is given by:

[25] Table A5 shows different industry distributions for men and women.

[26] We use the year 2000 as the base year for constructing the Bartik-style wages to ensure that industry shares are measured prior to the start of our study period (2004–2017). The 2000 Census 5% sample provides a large sample size, allowing us to estimate local industry composition with less noise than would be possible using smaller datasets. This choice balances the need for pre-determined exposure with the relevance of recent local economic structure. Importantly, our QCEW industry classification relies on the North American Industry Classification System (NAICS), which was developed and adopted in 1997 and is therefore not available in the 1990 Census. Using the 2000 Census ensures alignment between our base-year industry definitions and the national industry wage trends used to construct the Bartik-style wages.

[27] Alternatively, potential wages can be constructed using gender-specific national annual wages. Using gender-specific variation in national industry wages can better capture gendered wage impacts, particularly when wage trajectories differ substantially by gender within an industry. However, this approach implicitly treats men and women as being subject to separate national demand shocks. Conceptually, it is often more natural to assume that broad national shocks—such as trade or technological change—affect industries as a whole, with local gender composition determining how those shocks translate into relative male and female wages. Nevertheless, results based on gender-specific national wage variation are qualitatively very similar and are available upon request.

$$GenderWageRatio_{re_he_wcy} = \frac{\bar{w}_{female,re_wcy}}{\bar{w}_{male,re_hcy}}$$

where c indexes CZ, y year, r race/ethnicity, e_h husband's education, and e_w wife's education. When matched to the married couple sample in the consumption data, the mean gender wage ratio is 0.92 and the standard deviation is 0.10. To facilitate interpretation of the results, we normalize the gender wage ratio to have a mean of 0 and a standard deviation of 1.

This Bartik-style gender wage ratio measure is highly correlated with the actual relative female income within households. Table 1 shows that the share of income attributed to wives within households increases by 0.01 percentage points (2.8 percent) when Bartik-style relative female wages increase by one-standard-deviation, conditional on demographic characteristics of husbands and wives as well as CZ and year fixed effects. This provides evidence that our constructed Bartik relative wage measures are meaningfully related to actual household economic conditions.[28] Columns (2) indicates that women's shares within households positively change with increases in potential female wages, but decrease when labor market conditions for men improve.

Figure 1 depicts changes in log relative wage by education groups over 2004-2017. Wage changes favorable for men are portrayed in blue, while those favorable for women are portrayed in pink. There is substantial variation in the evolution of the gender wage gap across CZ and over time. Notable changes include positive female relative wage growth during 2007-2010, consistent with prior evidence that the Great Recession disproportionately harmed male-dominated industries while having a smaller impact on female-dominated industries (Wall, 2009; Alon et al., 2022). Our analysis leverages all positive and negative relative wage growth over the 2004-2017 period and across local labor markets.

[28]This is similar to the "first-stage" relationship, but given that we use reduced-form approaches, we do not use the term first-stage here. It is important to note that potential labor market conditions may influence household consumption decisions through multiple channels beyond actual income share (e.g., time allocation).

Table 1: Effects of Relative Potential Wages on Women's Income Share within Households

	(1) Female Actual Income Share b/se	(2) Female Actual Income Share b/se
1 SD ↑ in female relative wage	0.0102***	
	(0.0018)	
Male Bartik Wages (1,000 USD)		-0.0029***
		(0.0005)
Female Bartik Wages (1,000 USD)		0.0031***
		(0.0005)
Observations	3650830	3650830
Controls	Yes	Yes
CZ FE	Yes	Yes
Year FE	Yes	Yes
Mean Dep. Var.	0.359	0.359

Note: ACS 2006-2017. Sample consists of married couples aged between 25-64. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

4.2 Empirical Specification

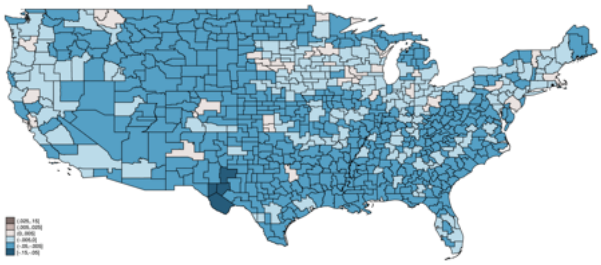
To estimate the impact of the women's relative potential wages on household consumption for married couples, the following model is estimated using the matched consumption and wage data for the period 2004 to 2017:

$$\begin{aligned} y_{hy} &= \alpha + \beta GenderWageRatio_{re_he_wcy} + \lambda TotalPot.Wages_{re_he_wcy} \\ &\quad + \gamma \mathbf{X}_{hy} + \theta_c + \pi_y + \rho_c \times y + \phi_r \times y + \eta_{e_h} \times \eta_{e_w} \times y + \varepsilon_{hy} \end{aligned} \tag{2}$$

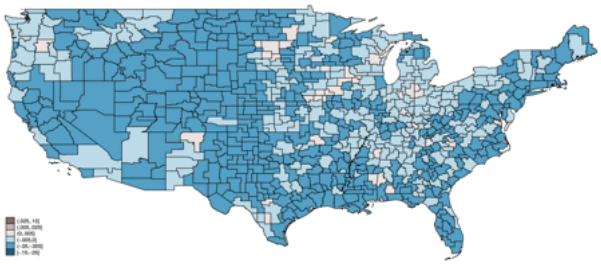
where y is our outcome variable for each household h in each year y. The primary outcome variable is the expenditure share, defined as expenditure on each aggregate good divided by the total expenditure on NielsenIQ-recorded goods for each household in each year. In estimating β, we control for the husband's and wife's total potential wages $TotalPot.Wages$, defined as $\bar{w}_{male,re_hcy}+\bar{w}_{female,re_wcy}$, to account for general labor market conditions that affect both genders, rather than gender-specific effects, in a similar spirit to Shenhav (2021) and Hufe (2024).

While the Bartik-style wages we construct help address endogeneity concerns, we also include a set of flexible controls to further mitigate the possibility of capturing a spurious relationship between the gender wage ratio and consumption outcomes. The household-level control

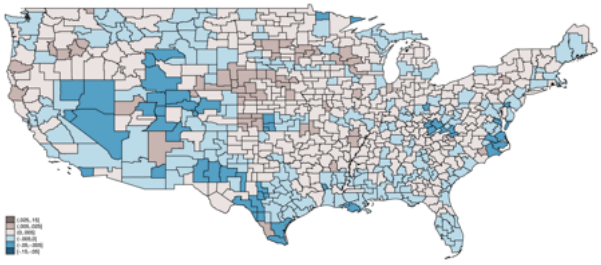
Figure 1: Changes in Log(Female Annual Wage/Male Annual Wage)



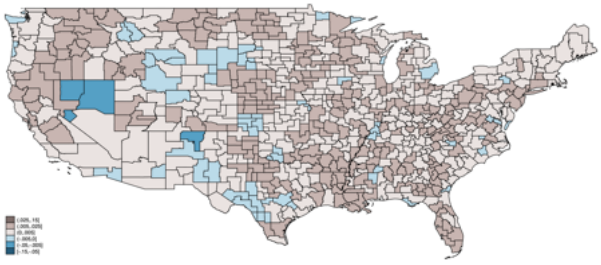
(a) 2004-2007: **No College**



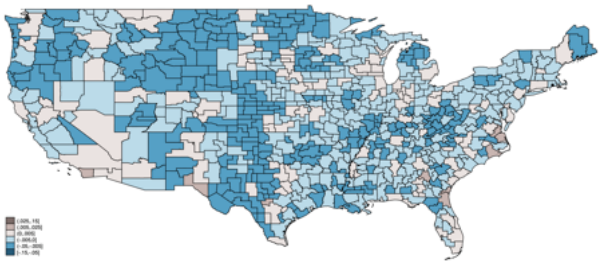
(b) 2004-2007: **College+**



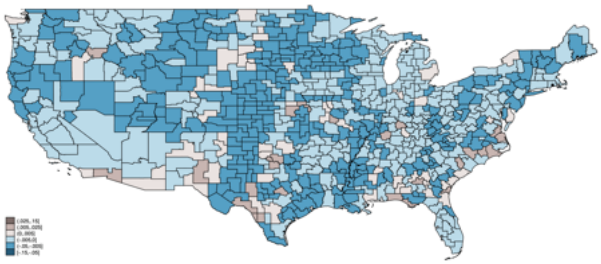
(c) 2007-2010: **No College**



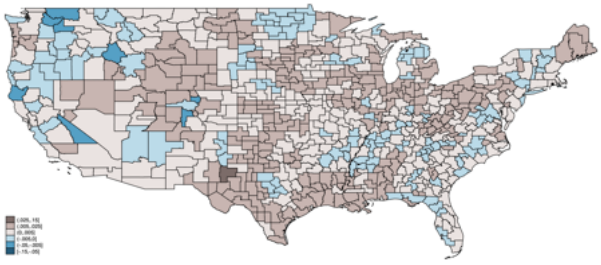
(d) 2007-2010: **College+**



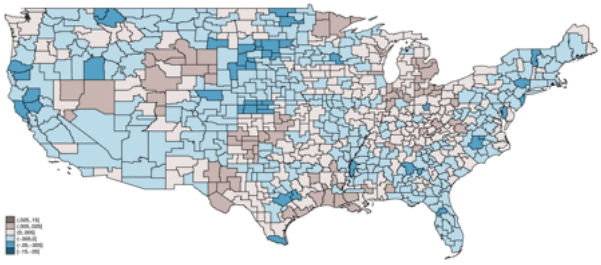
(e) 2010-2013: **No College**



(f) 2010-2013: **College+**



(g) 2013-2017: **No College**



(h) 2013-2017: **College+**

Note: This figure shows changes in the gender gap in potential wage from 2004 to 2017 in four different time intervals. Potential wage is calculated according to Equation 1. "No College" refers to the gender wage gap among men and women without a college education. "College+" refers to the gender wage gap among men and women with a college education or more. For brevity, these figures are generated based on White men and women. To facilitate the comparison across maps, we set the same coloring scheme for all maps.

set $\mathbf{X}$ includes race indicators,[29] ages of male and female heads and their squared values, and education for male and female heads, and interactions between their education levels. We include interactions between the education levels of male and female household heads to account for the possibility that consumption decisions may be influenced by the joint educational composition of the couple, rather than by each individual's education alone. These controls capture systematic differences in consumption patterns attributable to demographic characteristics.[30]

To further isolate the effect of gender wage ratios, we include a comprehensive set of fixed effects and trends. Year fixed effects (π_y) control for nationwide time shocks, such as macroeconomic conditions or policy changes that affect all households. CZ fixed effects (θ_c) account for time-invariant regional characteristics, while CZ-specific time trends ($\rho_c \times y$) capture time effects specific to each CZ. Race-specific time trends ($\phi_r \times y$) and education-specific time trends ($\eta_{e_h} \times \eta_{e_w} \times y$) allow for differential trends in consumption patterns across racial and educational groups over time. Together, these controls help mitigate confounding from unobserved factors correlated with both gender wage ratios and consumption behavior. Therefore, we exploit variation in the gender wage gap within CZs and within demographic groups, leveraging both cross-sectional and temporal variation, while accounting for year effects and flexibly controlling for demographic and regional trends.[31]

We use the constructed gender wage ratio in the reduced form rather than as an instrumental variable. This approach allows for different mechanisms through which the gender wage gap affects consumption patterns, as outlined in Section 2. Our Bartik-style wage measures can be better interpreted with the exogenous shares arguments from Goldsmith-Pinkham et al. (2020) than with the exogenous shocks arguments from Borusyak et al. (2022) because wages (shocks) are an equilibrium object.[32] Under this exogenous share framework, our key identifying assumption is that the initial industry composition in 2000 does not predict innovations in consumption. We further discuss the validity of the identifying assumption in the next section.

[29] We have 5 categories of race/ethnicity: non-Hispanic White, non-Hispanic Black, non-Hispanic Asian, Hispanic, and other race.

[30] In our preferred specification, we do not include controls for household income and number of children due to concerns about endogeneity. Specifically, household income can be influenced by gender-relative labor market conditions and may simultaneously affect household consumption. Furthermore, number of children can also be affected by female relative potential wages, as shown in Schaller (2016) and Autor et al. (2019). Nevertheless, the results remain consistent when household income and number of children are included as controls.

[31] It is ideal to include interactions between race, husband education, wife education and CZ, but empirically we do not have sufficient variation to include these interactions. Our identifying variation therefore comes from two sources after absorbing common year effects: (i) within demographic group, within CZ changes over time; and (ii) within CZ, across demographic group changes over time after controlling for demographic characteristics fixed effects. To assess the possibility of fixed unobserved heterogeneity across geographic × demographic groups, we include race × husband education × wife education × State fixed effects as a robustness check and find that our results remain robust.

[32] This setting is similar to the canonical setting in Bartik (1991).

4.3 Discussions of Identifying Assumptions

To produce unbiased estimates of the impacts of potential relative female wages using our Bartik-style wage measures, these measures must be plausibly exogenous to consumption decisions of households. Following the interpretation of Bartik-style measures in Goldsmith-Pinkham et al. (2020), the key identifying assumption is that our initial industry shares are uncorrelated with changes in consumption.

To better understand our identifying variation, we conduct the decomposition analysis in Goldsmith-Pinkham et al. (2020), which reveals which industries drive the variations in the constructed Bartik-style wages. This exercise allows us to quantify the contribution of each industry to the variation, thereby clarifying what comparisons we are making.[33]

Appendix Table A6 reports the decomposition results for female potential wages and male potential wages.[34] In Part I of each panel, we show the proportion of positive and negative Rotemberg weights for each industry. Both panels show that the share of negative weights is very small, which means that our Bartik estimates have a LATE-like interpretation as weighted averages of treatment effects, as explained in Goldsmith-Pinkham et al. (2020). In Part II of each panel, we show the top 3 industries for each gender's potential wage. Our analysis shows that the top 3 industries that contribute to the variation in female potential wages are "Insurance carriers and related activities," "Food services and drinking places," and "Professional and technical services." For male potential wages, the top 3 industries with the highest Rotemberg weights are "Food services and drinking places," "Professional and technical services," and "Computer and electronic product manufacturing." Overall, however, Rotemberg weights are widely dispersed across industries for both female and male potential wages, as illustrated in Appendix Figure A1. This demonstrates that no single industry drives the majority of the identifying variation in potential wages.

Recall that the Bartik approach exploits the variation in the pre-existing industry shares across local labor markets. One might be concerned that the initial industry shares may be correlated with unobserved trends in consumption preferences, which may confound our estimates of relative potential wage effects. While the inclusion of a rich set of demographic controls, fixed effects, and time trends would absorb many potential sources of unobserved variation, the residual variation in the potential wage could still be correlated with unobserved factors that may affect consumption. This could be particularly concerning for industries with high Rotemberg weights, because they contribute the most to the identifying variation in potential

[33] We describe the detailed estimation procedure for the Rotemberg weights in Appendix A.3.

[34] Because our measure of the female-to-male potential wage ratio is constructed in a way that cannot be decomposed into a combination of industries, we instead decompose the estimators for female potential wage and male potential wage, respectively.

wages.

To test our identifying assumptions, we conduct two pre-trend tests (Borusyak et al., 2024). For these tests, we use the PSID data because NielsenIQ does not have data on pre-periods. First, we conduct a placebo test examining whether future potential relative wages (from 2004 to 2017)—our constructed Bartik wage measures—are predictive of past outcomes using the PSID data on food expenditures in 1999 and 2003. The results are reported in Table A7. The coefficients are all relatively small and statistically insignificant, consistent with our identifying assumption. Second, we conduct the pre-trend tests using top 3 industry shares for men and women. Specifically, we test whether the changes in food expenditure shares between 1999 and 2003 are correlated with these industry shares conditional on demographic characteristics and CZ fixed effects. Appendix Tables A8 and A9 report the correlation between changes in consumption patterns in the pre-periods and initial industry shares for female employment and male employment, respectively. Overall, pre-existing industry shares and consumption changes do not exhibit statistically significant correlations, indicating limited evidence of pre-trends.[35]

5 Results

In this section, we present the results on how female relative potential wages affect household expenditure shares across various categories. For the NielsenIQ data, total expenditure includes all NielsenIQ-tracked items, while for the PSID it refers to overall household spending. The tables also report the sample mean for each outcome, which serves as the basis for understanding the magnitude of effects relative to the sample outcome mean.

5.1 Overall consumption

We begin by presenting the results for overall spending and expenditure shares at the broad department level using NielsenIQ data. Table 2 reports the effect of changes in women's relative potential wages on total NielsenIQ expenditure (Column (1)) and on the distribution of expenditure shares across five major categories (Column (2)-(6)): health and beauty, all food, non-food grocery, alcohol, and general merchandise. The estimated effects of a one-standard deviation increase in female relative potential wages on total expenditure and on expenditure shares across the five broad departmental categories are small and statistically insignificant.

[35]One exception is the "computer and electronic product manufacturing" industry for male industry shares, which exhibits a marginally significant relationship with pre-period changes in food-at-home consumption In the "Robustness" section (Section 5.5) of this paper, we investigate the sensitivity of our results with respect to this industry. Our findings indicate that excluding this industry in the construction of Bartik wages does not meaningfully alter our results.

These results suggest that rising female relative wages do not induce meaningful shifts in total spending or reallocation across broad types of goods. In the next section, we turn to food categories—which represent the largest share of household spending in the NielsenIQ dataset (67.8%, as shown in the table)—and show that changes in female relative potential wages meaningfully influence the composition of food expenditures.

Table 2: Effects of Relative Potential Wages on Total Expenditure and Expenditure Share, Department-level

		Expenditure Share				
	(1)	(2)	(3)	(4)	(5)	(6)
	Total Exp.	Health & Beauty	All Food	Non-Food Grocery	Alcohol	General Merchandise
1 SD ↑ in female relative wages	25.355	-0.076	0.106	-0.031	0.014	-0.013
	(20.551)	(0.054)	(0.117)	(0.064)	(0.046)	(0.052)
Observations	333883	333883	333883	333883	333883	333883
Controls	✓	✓	✓	✓	✓	✓
CZ FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
CZ-Specific Time Trend	✓	✓	✓	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓	✓	✓	✓
Mean Total Exp. (2010 USD)	4171.458					
Mean Expenditure Share (%)		9.741	67.803	12.272	2.827	7.357

Note: Sample consists of married couples from the 2004–2017 NielsenIQ Consumer Panel, where both spouses are aged 25–64. Each column reports the estimated β from Equation 2 for the corresponding outcome. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, and total potential wages of male and female heads. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

5.2 Food consumption

We now present the results on the composition of food spending using NielsenIQ data. Understanding how changes in food spending composition respond to shifts in women's relative economic opportunities is important, as these patterns may have implications for nutritional quality and long-term health outcomes. As women's potential wages rise, households appear to respond by shifting toward time-saving food choices—perhaps reflecting tighter time constraints or changing opportunity costs of food preparation.

Table 3 reports the estimated effects on expenditure shares across NielsenIQ food departments. As female relative potential wages increase, households allocate a higher share of their expenditure to more convenient food options, such as frozen food and deli, and a lower share to fresh produce. Specifically, a one-standard-deviation increase in female relative wages leads to a 0.126 percentage point increase in the share of spending on frozen food, which corresponds

to an increase of 1.42% compared to the mean and is statistically significant at the 1 percent level. Meanwhile, the share spent on fresh produce decreases by 0.093 percentage points (3.00% relative to the mean), which is statistically significant at the 1 percent level. The expenditure share spent on deli items increases by 0.033 percentage points (1.59% relative to the mean), and this effect is statistically significant at the 5 percent level.

Table 3: Effect of Relative Potential Wage on Expenditure Share (%), Food

	(1) Dry Grocery b/se	(2) Frozen Food b/se	(3) Dairy b/se	(4) Deli b/se	(5) Packaged Meat b/se	(6) Fresh Produce b/se
1 SD ↑ in female relative wages	0.0380	0.1259***	-0.0211	0.0331**	0.0223	-0.0925***
	(0.0701)	(0.0419)	(0.0445)	(0.0142)	(0.0237)	(0.0224)
Observations	333883	333883	333883	333883	333883	333883
Sharpened Q-Values	0.467	0.008	0.467	0.028	0.352	0.001
Controls	✓	✓	✓	✓	✓	✓
CZ FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
CZ-Specific Time Trend	✓	✓	✓	✓	✓	✓
Race-Specific Trend	✓	✓	✓	✓	✓	✓
Edu-Specific Trend	✓	✓	✓	✓	✓	✓
Mean Expenditure Share (%)	40.234	8.893	9.832	2.079	3.679	3.086

Note: Sample consists of married couples from the 2004–2017 NielsenIQ Consumer Panel, where both spouses are aged 25–64. Each column reports the estimated β from Equation 2 for the corresponding outcome. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, and total potential wages of male and female heads. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

To better assess how relative gender potential wages influence household diet quality and the time intensity of meal preparation, we classify food items into Thrifty Food Plan (TFP) groups as defined by the U.S. Department of Agriculture (USDA) (U.S. Department of Agriculture, 2021). NielsenIQ department-level categories aggregate products with heterogeneous characteristics. For example, the "frozen food" department contains both ready-to-eat items, such as frozen pizzas, and cooking ingredients, such as frozen meats or vegetables. We reassign each item to a nutritional group (e.g., vegetables, fruits, protein food, pre-prepared entrees, etc.) based on its product group and module descriptions. This reclassification allows us to capture within-department variation in nutritional properties. Appendix A.4 provides a detailed description of this mapping.

Table 4 reports the estimated effects of female relative potential wages on USDA food categories. Notably, a one-standard-deviation increase in female relative wages leads to a 0.153 percentage point increase (1.38% relative to the mean) in the expenditure share of pre-prepared entrees, significant at the 1 percent level. This pattern indicates that households are not merely substituting raw ingredients with frozen ingredients for cooking, but are shifting expenditures

toward ready-to-eat prepared foods. Additionally, the results show that as female relative wages rise, households spend less on fruit, less on fats and oils, and more on coffee and tea, and these effects are statistically significant at the 1, 5 and 5 percent levels, respectively.

We examine multiple food expenditure categories, which naturally involves testing many hypotheses and raises the risk of false discoveries (type I errors). To address this concern, we report sharpened False Discovery Rate (FDR) q-values following Anderson (2008) in Table 3 and Table 4. The results remain largely consistent after accounting for multiple hypothesis testing.

Tables A10 and A11 present regression results using expenditure levels rather than expenditure shares. The findings are highly consistent with the share-based specifications: frozen food expenditures increase by approximately \$6 (1.6%), and pre-prepared entrée expenditures increase by about \$7.30 (1.6%) in response to a one-standard-deviation increase in the gender wage ratio. While the dollar impact may seem modest, percentage changes of 1.5–3% in key outcomes are meaningful, given that food composition is largely stable.[36]

This shift towards more convenience-oriented food choices appear to stand in contrast to the previous literature, which suggests that higher income controlled by women improves diet quality in developing countries (Thomas, 1990; Duflo, 2003; Armand et al., 2020).[37] A key distinction from the prior literature is that our setting examines changes in women's potential relative earnings in the labor market, rather than large, direct income transfers. As a result, women's potential wages may affect food consumption through different channels (e.g., time constraints), with effects that could differ in magnitude and direction from those found in studies of large cash transfers to women. In Section 6, we show that the food results are driven primarily by time use mechanisms rather than by income or bargaining channels.

[36] Prior evidence indicates that food composition is generally stable (Attanasio and Lechene, 2014; Martins and Monteiro, 2016). For example, Attanasio and Lechene (2014) show that even a large cash transfer to women—equivalent to about 20% of beneficiaries' income—shifted food expenditure shares by no more than 2–3 percentage points. Specifically, PROGRESA cash transfers had the largest effects on expenditure shares for starches (-2.3 percentage points) and for meat, fish, and dairy (+2.54 percentage points).

[37] Thomas (1990) shows that, in Brazil, higher unearned income for mothers relative to fathers increases household members' caloric and protein intake, thereby improving child health. Duflo (2003) shows that the expansion of social pension benefits received by women in South Africa improved children's nutritional status. Armand et al. (2020) show that targeting cash transfers to mothers rather than fathers shifts household diets toward more nutritious options, among households with low food expenditure levels in Macedonia.

Table 4: Effects of Relative Potential Wages on Expenditure Shares, USDA Food Categories

	(1) Vegetables	(2) Fruit	(3) Grains	(4) Diary	(5) Protein Food	(6) Pre-Prepared Entrees	(7) Sauce/Cond/Jam/ Honey/Sugar	(8) Fats & Oil	(9) Coffee & Tea	(10) Other Foods & Beverages	(11) Other Miscellaneous
1 SD ↑ in female relative wages	-0.018	-0.076***	-0.015	-0.015	0.012	0.153***	0.008	-0.019**	0.038**	-0.013	0.009
	(0.021)	(0.017)	(0.025)	(0.045)	(0.029)	(0.050)	(0.018)	(0.008)	(0.016)	(0.051)	(0.007)
Observations	333841	333841	333841	333841	333841	333841	333841	333841	333841	333841	333841
Sharpened Q-Values	0.847	0.001	0.998	0.998	0.998	0.011	0.998	0.033	0.033	0.998	0.466
Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CZ FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CZ-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mean Expenditure Share (%)	4.079	2.323	5.940	8.271	6.621	11.091	4.367	1.249	1.764	17.691	1.026

Note: Sample consists of married couples from the 2004–2017 NielsenIQ Consumer Panel, where both spouses are aged 25–64. Each column reports the estimated β from Equation 2 for the corresponding outcome. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, and total potential wages of male and female heads. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

5.3 Food Away from Home

To provide a more comprehensive understanding of the effects on household food consumption, we complement our analysis with data from the PSID. Although the NielsenIQ data provides granular information on food consumption, one limitation of the dataset is that it does not capture eating out, as it is primarily focused on items purchased in grocery stores. To address this limitation, we supplement the analysis with the PSID data, which includes information on expenditures for food at home, food away from home, and food delivered. Given the low share of the food delivery category, we combine food away from home and food delivered into a single category, eating out and delivery. We construct expenditure shares by dividing the amount spent in each category by total household expenditures.

The results of this analysis are presented in Table 5. Column (1) shows that a one-standard-deviation increase in the female relative wage results in a 0.41 percentage point reduction (or 3.3%) in expenditures on food consumed at home, although the estimate is not statistically significant.[38] Column (2) shows a 0.27 percentage point (or 5.7%) increase in the share of spending on eating out and food delivery, and this effect is statistically significant. This shift toward eating out and delivery reflects a broader substitution of market-based food services for home production. By incorporating expenditures on eating out and delivery—categories not captured by the NielsenIQ data—this analysis provides a more comprehensive view of household food consumption and accounts for changes in both at-home and outside-the-home eating behavior. As will be discussed later in the paper, this pattern aligns with a significant decline in the time women spend eating at home.

[38]The food at home category in the PSID appears similar to total food expenditures in the NielsenIQ data, but they are not identical. The PSID specifically asks about "food that you use at home," whereas the NielsenIQ data may include items consumed outside the home, such as pre-prepared entrées.

Table 5: Effect of Relative Potential Wage on Expenditure Share (%), Food (PSID)

	(1) Food At Home b/se	(2) Eating Out & Delivery b/se
1 SD ↑ in female relative wages	-0.4123	0.2705***
	(0.2752)	(0.1110)
Observations	21168	21168
Controls	✓	✓
CZ FE	✓	✓
Year FE	✓	✓
CZ-Specific Time Trends	✓	✓
Race-Specific Trends	✓	✓
Edu-Specific Trends	✓	✓
Mean Expenditure Share (%)	12.511	4.780

Note: 2005-2017 PSID. Sample consists of married couples aged between 25-64. Expenditure shares are calculated as the food expenditure out of total household expenditure. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, and total potential wages of male and female heads. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

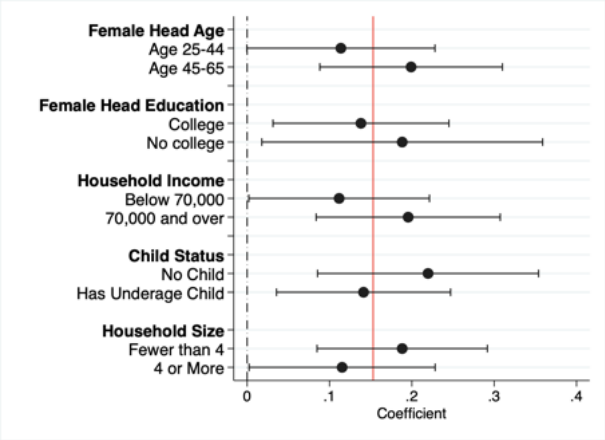
5.4 Heterogeneity

We examine whether the effects of relative female wages vary across demographic groups. To do so, we estimate a version of Equation 2 that interacts the gender potential wage ratio with indicators for selected characteristics of the female head and the household, thereby allowing the effect of relative female wages to differ across subgroups. Estimation is conducted separately for each characteristic. Figure 2 presents heterogeneity estimates for two key outcomes—pre-prepared entrees and fresh produce—by age, education, household income,[39] child status, and household size. Overall, the estimated differences across groups are not statistically significant, providing limited evidence of systematic heterogeneity.[40]

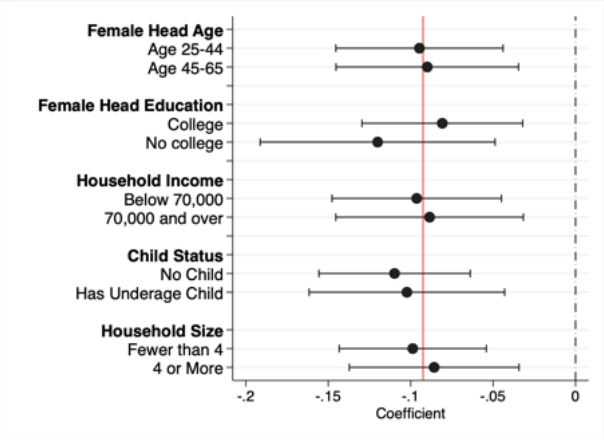
[39]Note that in NielsenIQ the household income variable is available only in categories and is reported with a two-year lag. We divide household income into (i) below 70,000 USD and (ii) 70,000 USD and over based on this categorical variable, which leads to roughly even split of our sample.

[40]The only case in which coefficients differ across subgroups at the 10% level is pre-prepared entrees by household income.

Figure 2: Heterogeneous Effects of Female Relative Potential Wages



(a) Pre-prepared entrees



(b) Fresh produce

Note: This figure shows the effects of a one–standard-deviation increase in female relative potential wages on the corresponding outcomes, allowing the effects to vary by individual and household characteristics. For each characteristic, we estimate Equation 2 with $GenderWageRatio_{re_he_wcy}$ interacted with the indicators for characteristic values. Estimation is conducted separately for each characteristic, indicated in bold. Error bars indicate 95% confidence intervals, with standard errors clustered at the CZ level. The red vertical line marks the baseline estimate reported in Table 4 for Panel (a) and Table 3 for Panel (b).

5.5 Robustness Checks

In this section, we examine the robustness of our main findings to alternative specifications and sample definitions. First, we investigate whether our results remain robust when excluding couples whose marital status changed during the observed period. Changes in women's relative wages can influence family formation and dissolution.[41] Our results may be subject to selection bias because our study focuses on married couples, and marital status could potentially be influenced by women's relative wages. To address this concern, we repeat the analysis focusing on couples who never experienced marital status change during their observed period, using households who stayed in the panel for at least two years. Tables A12 and A13 show that all our main results remain consistent when limiting to stable couples.[42]

Second, we test whether our results are robust to excluding couples who moved across

[41] Prior studies have shown that higher earning potential for wives decreases the likelihood of marriage and increases the likelihood of divorce (Bertrand et al., 2015; Shenhav, 2021; Autor et al., 2019; Ahn and Ren, 2025).

[42] Table A14 show that marital status is not significantly affected by changes in female relative potential wages, although the direction of the estimates is consistent with the existing literature (Autor et al., 2019; Shenhav, 2021). This indicates that our findings are unlikely to be driven by compositional shifts from changes in marital status.

CZs during the observation period. Changes in relative female wages could affect relocation decisions, and consumption may be shaped by location (Hinnosaar and Liu, 2022) rather than by wage changes alone. To address this, we restrict the sample to couples who never moved across CZs, focusing on those observed for at least two years. Appendix Tables A15 and A16 show that our main results are largely consistent.

Third, we exclude the "Computer and electronic product manufacturing" industry from the construction of gender potential wages. As discussed in Section 4.3, this industry has a high Rotemberg weight and shows a marginally statistically significant correlation with the pre-trends in consumption. Reassuringly, Tables A17 and A18 confirm that our results remain similar with this industry excluded.

Finally, food consumption patterns may be affected by the expansion of restaurants and food-related sectors within CZs. To account for this, we add CZ-year–level employment in food-related industries as an additional covariate control.[43] Tables A19 and A20 confirm that our results are consistent under this specification.

6 Mechanisms

Household consumption decisions in response to changes in women's relative potential wages may reflect several interconnected forces. While we organize our discussion by emphasizing the labor supply and time use, bargaining, and income channels for clarity, we view these mechanisms as jointly shaping household choices through a unified household decision process. In particular, collective household models suggest that preferences, time and income constraints, and bargaining positions all contribute to observed behavior. Overall, our results point to labor supply–driven time reallocation as the main mechanism behind changes in food consumption.

6.1 Labor Supply and Time Use Channel

One of the central mechanisms operates through adjustments in labor supply and time allocation in response to changes in gender-specific labor market conditions, which alter the relative prices of home production and leisure for men and women (Gronau, 1977). To examine this channel, we first use ACS data to assess whether annual working hours respond to shifts in women's relative potential wages. The results presented in Table 6 show that a one-standard-deviation increase in female relative wages leads to a statistically significant rise in women's working hours—approximately 36 additional hours per year, or about 1.1 hours per week—while men's

[43] These are industry 722 "Food services and drinking places" and industry 445 "Food and beverage stores."

working hours remain largely unchanged, although the coefficient is slightly negative.[44]

We further investigate time use using the ATUS, which provides detailed information on daily activity allocations. The model is the same as the main specification, but we additionally control for the day of the week to account for differences between weekdays and weekends, as well as variation across individual days. Because the ATUS does not include county- or commuting-zone identifiers for the majority of observations, our time-use analysis relies on state-level variation.[45] The first two columns of Table 7 present the effects of female relative wages on two key categories: housework activities and work- or work-related activities. Consistent with the ACS findings, we detect no statistically meaningful changes in men's time use in either category. By contrast, women increase their time spent on work or work-related activities: a one-standard-deviation increase in female relative wages results in an additional 19 minutes of work per day, or roughly a 9.5% rise relative to the baseline mean. This increase comes at the expense of other activities, particularly household production, which declines significantly in line with greater time constraints. Results for all seven major categories, reported in the appendix (Table A22), show that men's time allocation does not change significantly across any activity, while women show no significant shifts in the remaining five categories.[46]

The third to sixth columns of Table 7 report results for a more detailed breakdown of household activities. Within household production, time devoted to interior cleaning and to food and drink preparation declines significantly, with the latter closely paralleling shifts in consumption patterns. A one-standard-deviation increase in female relative wages reduces women's food and drink preparation time by 3.1 minutes per day (7.1 percent). Men increase their time in this activity by 1.2 minutes (7.2 percent), but this effect is not statistically significant and, despite being comparable in percentage terms, does not offset women's decline given men's much lower

[44]For women, the average number of weeks worked in a year is 33.9. In Table A21, we examine both the extensive margin (employment status) and the intensive margin (hours worked conditional on employment) responses. Increases in the female relative wage significantly raise both the likelihood of women's employment and the number of hours worked among those employed.

[45]Our main consumption results are qualitatively consistent when we use state-level variation.

[46]Composition changes from marital status may bias our estimates; because the ATUS is a cross-section, we cannot implement the robustness checks used with the NielsenIQ data. We find that more egalitarian women—those predicted (from observables) to spend more time on work—are less likely to be married when relative female wages rise, making our estimates conservative. Regarding fertility as a channel, results are qualitatively similar when controlling for the number of children.

baseline level of food and drink preparation time.[47][48][49]

Moreover, changes extend beyond food preparation to the context of eating. As shown in Table 8, women become less likely to eat or drink at home and more likely to do so at work. They are also less likely to eat in the presence of a spouse or children, indicating a reduction in family meal time; in particular, time spent eating with children declines by 14 percent, a statistically significant effect. Husbands are significantly more likely to eat alone, and although the effects on eating with a spouse or children are not statistically significant, their directions are consistent with wives' eating patterns. These results show that women's relative wages are linked to changes in meal location and family meal frequency—and, more broadly, to the social context of eating—in line with the observed consumption patterns.

In sum, these results indicate that changes in working hours and the associated reallocation of time in household production are key mechanisms underlying the observed shifts in consumption.

6.2 Income Channel

Higher relative potential wages could change total household resources, potentially leading to shifts in consumption via standard income effects. We rely on the ACS to test the income mechanism, as the NielsenIQ data have important limitations in measuring income. Household income is reported only in categorical ranges rather than exact amounts, and male and female incomes are not separately recorded. Using the ACS data, the third column of Table 6 shows that a one–standard-deviation increase in women's relative potential wage leads to a small 0.7% decline in total household income, an effect that is statistically insignificant. The fifth column shows that female actual income rises in response to higher relative female wages in the labor market, consistent with both increased wage levels and greater working hours among women. In contrast, the fourth column shows that male actual income declines. Because men's working

[47] Several factors could explain men's limited adjustment in food preparation time. These include a lack of cooking skills or established habits, weaker preferences for home cooking, and social norms that discourage men from reallocating time toward cooking.

[48] Figure A2 presents the heterogeneity analysis results for women's time use. Overall, the magnitude of the coefficients does not vary substantially across demographic characteristics. However, the estimated effects on working hours are larger for women aged 25–44, while the estimated effects on food and drink preparation are larger for households with underage children. Across other dimensions, the differences in impacts are not statistically significant. Note that, unlike the NielsenIQ heterogeneity analysis, we do not include a household income dimension because the ATUS income variables have a high nonresponse rate. The ATUS documentation emphasizes that income is a sensitive question with substantial missing data and recommends caution in using this variable.

[49] Table A23 reports the results on time use for other related activities. Time spent on travel related to work increases significantly for women, consistent with their increased time spent on market work. However, we do not find evidence of changes in time spent on grocery shopping or on sports, exercise, or recreation for either men or women.

hours remain unchanged, this decline is likely driven by lower wage levels. These opposing shifts in individual incomes largely offset one another, consistent with the finding that household total income does not change. Overall, we find limited evidence that changes in household income drive our main results.

6.3 Bargaining Channel

As discussed in Section 2, changes in potential wages may also affect intrahousehold resource allocation by altering spouses' relative bargaining positions. If so, we might expect consumption to shift toward the preferences of the spouse with increasing labor market potential.

In the context of food, our results provide little support for the bargaining channel. Empirical evidence indicates that single (unmarried) women—who presumably reveal their preferences through individual consumption choices—tend to spend less on convenience foods and more on fresh produce than single men, controlling for income and demographic characteristics (Appendix Figure A3).[50] Thus, if increased bargaining power for women were primarily driving food decisions, we would expect movement *away* from frozen meals and *toward* fresh produce, which is the opposite of what we observe.

Our food-related results are primarily driven by time reallocation rather than bargaining channel. However, for consumption categories that are not closely tied to time use, such as gender-specific items or goods for children, which prior work has linked to bargaining power, shifts in female relative potential wages may lead to consumption patterns that more closely reflect women's preferences.[51] In Appendix A.5, we investigate how women's relative potential wages affect spending on gender- and child-goods. Although we observe some directionally consistent patterns, such as an increase in spending on women's beauty goods and a decrease in spending on men's beauty goods, we find statistically insignificant effects overall, providing limited empirical support for the bargaining channel in our context.[52]

[50] Appendix Figure A3 shows that these gender differences hold across comparisons between single (unmarried) men living alone with different subgroups of single women: (a) single women living alone, (b) single women living with children, and (c) single women living alone and working full-time. In all cases, unmarried women allocate more to fresh produce and less to frozen food than unmarried men, conditional on demographics and time and location fixed effects. These patterns suggest that gender differences in food consumption are not primarily driven by differences in time constraints.

[51] Prior studies have shown that when women control a greater share of household income, consumption rises for female-exclusive goods (Browning et al., 1994; Lundberg et al., 1997; Kim, 2023) and for child-related spending (Lundberg et al., 1997; Duflo, 2003; Ward-Batts, 2008; Majlesi, 2016; Calvi, 2020).

[52] The NielsenIQ dataset does not capture spending on categories such as women's or children's clothing, which prior studies have shown to be responsive to shifts in women's bargaining power (Lundberg et al., 1997).

Table 6: Effects of Relative Potential Wages on Yearly Working Hours and Income

	Yearly Working Hours		**Income**		
	(1) Male working hours	(2) Female working hours	(3) Ln(Total income)	(4) Ln(Male income)	(5) Ln(Female income)
1 SD ↑ in female relative wages	-4.957	36.087***	-0.007	-0.037**	0.163***
	(3.658)	(8.503)	(0.010)	(0.015)	(0.039)
Observations	3650830	3650830	3649003	3645726	3646757
Controls	✓	✓	✓	✓	✓
CZ FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
CZ-Specific Time Trend	✓	✓	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓	✓	✓
Mean Dep. Var.	1965.491	1279.590	10.841	9.853	7.479

Note: ACS 2006-2017. Total income refers to the sum of male and female income. Income measures correspond to earned income. Sample consists of married couples aged between 25-64. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, and total potential wages of male and female heads. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

Table 7: Effects of Relative Potential Wages on Time Use

	Major Categories		**Household Activities - Detailed Breakdown**			
	(1)	(2)	(3)	(4)	(5)	(6)
Unit: minutes per day	Housework Activities	Work & Work-Related Activities	Interior Cleaning	Laundry	Food & Drink Preparation	Kitchen & Food Clean-up
Panel A: Husband						
1 SD ↑ in female relative wages	-3.075	5.337	1.171	-0.243	1.192	-0.113
	(3.218)	(4.613)	(0.815)	(0.492)	(1.289)	(0.326)
Observations	30230	30230	30230	30230	30230	30230
Controls	✓	✓	✓	✓	✓	✓
State FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
State-Specific Time Trend	✓	✓	✓	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓	✓	✓	✓
Dep. Var. Mean (minutes)	88.617	318.399	10.569	3.307	16.523	3.537
Panel B: Wife						
1 SD ↑ in female relative wages	-9.520**	19.032***	-4.214**	-1.705	-3.138**	-0.073
	(4.062)	(4.877)	(1.661)	(1.417)	(1.245)	(0.729)
Observations	32684	32684	32684	32684	32684	32684
Controls	✓	✓	✓	✓	✓	✓
State FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
State-Specific Time Trend	✓	✓	✓	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓	✓	✓	✓
Dep. Var. Mean (minutes)	157.905	200.465	38.431	21.118	43.910	14.240

Note: ATUS 2004-2017. Sample consists of married men and women aged between 25-64. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, days of the week, and total potential wages of male and female heads. Standard errors are clustered at the state level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

Table 8: Effects of Relative Potential Wages on Time Use on Eating and Drinking Activities

	Location				**Presence of Others**		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Unit: minutes per day	At Home	At Work	At Restaurant	At Other Places	Alone	With Spouse	With Children
Panel A: Husband							
1 SD ↑ in female relative wages	-0.491	-0.569	0.626	-0.148	1.222**	-0.678	-3.300
	(0.936)	(0.626)	(0.618)	(0.521)	(0.583)	(1.029)	(2.011)
Observations	29265	29265	29265	29265	30230	30230	30230
Controls	✓	✓	✓	✓	✓	✓	✓
State FE	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓
State-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓
Mean Dep. Var. (minutes)	43.966	11.021	12.827	5.359	15.615	41.652	42.014
Panel B: Wife							
1 SD ↑ in female relative wages	-2.129**	0.810*	1.008	-0.577	0.623	-1.241	-6.640***
	(0.979)	(0.476)	(0.646)	(0.416)	(0.589)	(0.887)	(1.936)
Observations	31635	31635	31635	31635	32684	32684	32684
Controls	✓	✓	✓	✓	✓	✓	✓
State FE	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓
State-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓
Mean Dep. Var. (minutes)	43.285	6.959	12.656	5.487	10.437	38.889	48.809

Note: ATUS 2004-2017. Sample consists of married men and women aged between 25-64. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, days of the week, and total potential wages of male and female heads. Standard errors are clustered at the state level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

In summary, while multiple channels may coexist, the labor supply channel appears to be the primary driver behind our findings on food consumption. The food result can be linked to previous studies showing that wives spend much more time on household chores than husbands at every point of the relative wage distribution (Siminski and Yetsenga, 2022; Hancock et al., 2024). In this context of uneven distribution of domestic labor, our findings suggest that an increase in female relative wages leads households to re-optimize along the labor–consumption margin, shifting diets toward more pre-prepared foods and less fresh produce, as increased female labor supply reduces time for food preparation, with limited substitution by their husbands. In the next section, we explore the health implications of our food results.

7 Health Implications

In the preceding sections, we showed that an increase in female relative wages leads to greater consumption of convenience foods and a reduction in the consumption of fresh foods. This change appears to be primarily driven by shifts in time allocation, with higher female relative wages resulting in more time spent working and less time devoted to household tasks. These dietary shifts may have health consequences, as convenience foods are often higher in calories, sodium, and processed ingredients, whereas fresh foods typically offer more essential nutrients and dietary fiber. In this section, we discuss the potential health implications of improved labor market conditions for women, focusing first on the health of adult household members and then turning to the health of children.

Improved labor market opportunities for women may affect the health of adult household members through several channels. First, as women allocate more time to market work and reduce time spent on household production, diet quality may deteriorate, potentially shifting toward greater consumption of convenience foods over home-cooked meals. In particular, we find that men do not increase their time spent on household tasks as much as women decrease theirs, and the likelihood of consuming pre-prepared meals rises. These changes suggest an increased risk of overweight or obesity.[53] Second, shifts in the division of labor and time use within the household may also contribute to higher stress levels, particularly for women, which are known to influence body weight and overall health (Baker et al., 2008; Offer and Schneider, 2011; Bauer et al., 2012; Barigozzi et al., 2025).

Prior research highlights the gendered nature of these effects. Stolzenberg (2001) find that wives' long work hours negatively affect husbands' health, while husbands' hours have no such effect on wives. Similarly, Schafer et al. (1999) show that wives play a greater role in shaping

[53] Cutler et al. (2003) argued that increased consumption of preserved packaged ready-to-eat foods has contributed to the rise in obesity among Americans.

their husbands' diets than husbands do in shaping theirs, underscoring the dominant role of women in family food selection and preparation. When women reduce time spent on these activities, the resulting shifts in dietary patterns may have broader health implications for other household members.

We examine whether relative potential female wages influence the health outcomes of adult family members—specifically husbands and wives—using data on married couples from the BRFSS. As previously noted, the BRFSS is an individual-level survey that does not include spousal information. Therefore, we use relative female wages within the individual's education group.[54] The results are reported in Table 9. We find that the probability of being overweight or obese increases significantly for both men and women. Specifically, a one-standard-deviation increase in the relative female wage is associated with a 1.4% increase in the likelihood of being overweight or obese for men, and a 1.5% increase for women. To our knowledge, this is the first evidence documenting the impact of improved labor market conditions for women on spousal health. As such, direct comparisons to prior studies are limited. However, the magnitude of the effect we estimate is broadly consistent with existing findings on childhood obesity.[55] These findings provide suggestive evidence that improvements in women's labor market conditions may affect family health, particularly in terms of weight, possibly due to reduced cooking time and dietary changes. However, we do not find evidence that self-reported physical or mental health is affected by relative female wages, suggesting that a stress-related mechanism is less likely.[56]

Next, we turn to the question of children's overweight or obesity. A substantial body of research has documented that both maternal employment and greater work intensity are associated with an increased risk of childhood overweight.[57] This relationship is thought to operate through several channels, including reduced time for home-cooked meals, lower parental supervision of children's eating and activity, increased reliance on non-parental childcare, and greater parental stress. These factors can contribute to less nutritious diets, more sedentary behaviors, and disrupted daily routines, such as irregular meal and sleep schedules. These mechanisms

[54] Approximately 77% of married couples share the same education group.

[55] The literature finds that a 10-hour increase in maternal labor supply leads to a 1.2–1.5 percentage point increase (approximately 11–14%) in the probability of being overweight among U.S. children (Anderson et al., 2003). Evidence from the Canadian context shows similar effect sizes (Phipps and Burton, 1998; Chia, 2008). In our setting, a one standard deviation increase in relative female wages increases women's weekly working hours by approximately 1.1 hour, which is associated with a 1.4% and 1.5% increase in the probability of being overweight for men and women, respectively.

[56] Another potential factor contributing to the higher rates of overweight or obesity is changes in exercise time. However, as shown in Appendix Table A23, we do not find statistically significant changes in time spent on sports, exercise, or recreational activities.

[57] See Anderson et al. (2003); Phipps et al. (2006); Ruhm (2008); Chia (2008); von Hinke Kessler Scholder (2008); Liu et al. (2009); Fertig et al. (2009); Cawley (2010); Brown et al. (2010); Morrissey et al. (2011); Herbst and Tekin (2011).

are closely linked to changes in parental time allocation—particularly among mothers—as increased work hours reduce the time available for household tasks, meal preparation, and direct engagement with children's daily activities, all of which play a critical role in shaping children's health behaviors and outcomes. Unfortunately, due to data limitations, we are unable to directly test the impact of relative potential female wages on children's weight outcomes. However, we contribute to the literature by providing evidence on dietary changes induced by the time-use mechanism, an area where prior studies have primarily documented correlations rather than causal pathways (Datar et al., 2014; Fertig et al., 2009; Cawley and Liu, 2012).

Table 9: Effect of Relative Potential Wage on Health

	(1) Overweight or Obese	(2) Number of Days Physical Health Not Good	(3) Number of Days Mental Health Not Good
Panel A: Husband			
1 SD ↑ in female relative wages	0.011***	-0.074	0.038
	(0.003)	(0.065)	(0.054)
Observations	524640	525648	525528
Controls	✓	✓	✓
CZ FE	✓	✓	✓
Year FE	✓	✓	✓
CZ-Specific Time Trend	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓
Mean Dep. Var.	0.769	2.723	2.453
Panel B: Wife			
1 SD ↑ in female relative wages	0.008**	-0.039	0.065
	(0.003)	(0.049)	(0.055)
Observations	712065	755667	755801
Controls	✓	✓	✓
CZ FE	✓	✓	✓
Year FE	✓	✓	✓
CZ-Specific Time Trend	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓
Mean Dep. Var.	0.547	3.180	3.524

Note: BRFSS 2004-2012. Sample consists of married men and women aged between 25-64. Controls include race, education, age category, and the month of interview fixed effects. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

8 Conclusion

This paper studies the effects of the relative potential wages of women on household consumption in the US. Despite the evolving economic positions of women within households, there is limited understanding of how women's relative labor market conditions influence household consumption, an essential outcome for the well-being of household members. We also examine how the effects on household consumption are linked to time use between spouses and household

health outcomes.

Using detailed consumption data of US households recorded by scanner and exploiting exogenous gender-specific variations in potential wages, we find that the higher female relative wages shift the composition of food expenditures for married couples, resulting in increased consumption of pre-prepared food and reduced consumption of fresh produce. Furthermore, we find that higher female relative wages increase expenditure shares on eating out and food delivery. This contrasts with prior evidence showing that increases in women's unearned income generally result in a more nutritious household diets. In terms of changes in women's labor market potential wages in the US setting, our study shows that the labor supply channel drives the changes in food composition. Additionally, we show that this shift in food composition is linked to increased overweight and obesity among household members.

While the potential benefits of improved labor market opportunities for women are widely recognized, their possible costs are less often discussed. Our study contributes to the literature by showing that, in contexts where women continue to shoulder the majority of domestic responsibilities, higher female relative wages can lead to negative outcomes such as increased consumption of less nutritious foods and poorer health outcomes for household members. These findings underscore the importance of understanding the broader consequences of labor market shifts on family welfare. By highlighting these dynamics, our study informs policy discussions aimed at balancing the promotion of professional opportunities for women with the well-being of families, particularly in terms of health and time use.

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A Appendix

A.1 Additional Tables

Table A1: Description of NielsenIQ Departments

Department	**Description**
Health and Beauty Aids	e.g. baby care, cosmetics, cough & cold remedies, deodorant, hair care, oral hygiene, pain remedies, skin care, fragrances, shaving products
Dry Grocery	e.g. baking mixes, bottle water, candy, carbonated beverages, cereal, coffee, condiments, crackers, pet food, prepared foods, snacks, soup, canned vegetables
Frozen Food	e.g. ice cream, frozen pizza, frozen vegetables
Dairy	e.g. cheese, eggs, yogurt
Deli	
Packaged Meat	
Fresh Produce	
Non-Food Grocery	e.g. detergent, diapers, fresheners/deodorizers, household cleaners, laundry supplies, pet care
Alcohol	e.g. beer, wine, liquor, coolers
General Merchandise	e.g. batteries/flashlights, candles, computer/electronic, cookware, film/cameras, insecticides, lawn & garden, motor vehicle, office supplies

Note: This table provides examples of items in each NielsenIQ department.

Table A2: Statistics on Total Annual Expenditure, Married Couples

	# of Obs	Mean	Min	p1	p25	p50	p75	p99	Max
Toal Expenditure (Untrimmed)	340738	4223.2	1.7	949.8	2712.3	3876.4	5326.3	10711.2	34684.4
Toal Expenditure (Trimmed)	333924	4175.8	949.8	1195.5	2736.0	3876.4	5289.5	9615.9	10711.2

Notes: NielsenIQ Consumer Panel 2004-2017. The sample is limited to married couples whose both husband and wife are aged 25-64. Dollars are inflation-adjusted and based on 2010 dollars.

Table A3: Demographic Characteristics of Married Couples

	(1) Married
Household Income	72540.86 (33754.8)
Household Size	3.16 (1.266)
Number of children in the household	1.05 (1.178)
Black	0.08 (0.266)
Hispanic	0.08 (0.271)
Asian	0.04 (0.200)
Age, Male Head	49.89 (9.248)
Years of Education, Male Head	14.38 (2.141)
Unemployed, Male Head	0.14 (0.349)
Age, Female Head	48.08 (9.254)
Years of Education, Female Head	14.58 (2.011)
Unemployed, Female Head	0.33 (0.469)
Observations	333924

Notes: NielsenIQ Consumer Panel 2004-2017. Sample is limited to couples where both female and male heads are between age 25-64. Dollars are inflation-adjusted and are based on 2010 USD. Standard deviations are in parentheses. Household income in the NielsenIQ data is reported in 20 categorical bins with a two-year lag. In this table, we use the midpoint of each reported bin by the household to compute average household income.

Table A4: Length of Stay in the NielsenIQ Consumer Panel, Married Couple Sample

# of Years	# of Unique Households	Percent
1	36,230	37.18
2	17,772	18.24
3	10,654	10.93
4	7,455	7.65
5	5,441	5.58
6	4,258	4.37
7	3,875	3.98
8	2,844	2.92
9	2,164	2.22
10	1,869	1.92
11	2,099	2.15
12	760	0.78
13	791	0.81
14	1,220	1.25

Notes: This table shows how long each household in our final sample stays in the NielsenIQ Consumer Panel. Our final sample is couples where both female and male heads are between age 25-64.

Table A5: Industry Composition by Gender (%)

Industry	Men	Women
Construction	12.07	1.49
Professional, Scientific, and Technical Services	5.51	5.50
Food Services and Drinking Places	5.09	6.68
Educational Services	4.72	11.96
Administrative and Support Services	3.61	3.41
Transportation Equipment Manufacturing	2.65	1.00
Repair and Maintenance	2.62	0.43
Merchant Wholesalers, Durable Goods	2.46	1.13
Food and Beverage Stores	2.35	2.89
Justice, Public Order, and Safety Activities	2.29	1.30
Truck Transportation	2.14	0.40
Broadcasting (Except Internet), Telecommunications, Data Processing, Hosting, and Related Services, Other Information Services	2.05	1.91
Motor Vehicle and Parts Dealers	1.93	0.57
Merchant Wholesalers, Nondurable Goods, Wholesale Electronic Markets and Agents and Brokers	1.88	1.06
Hospitals	1.79	6.27
Computer and Electronic Product Manufacturing	1.71	1.15
Fabricated Metal Product Manufacturing	1.70	0.54
National Security and International Affairs	1.53	0.53
Machinery Manufacturing	1.52	0.51
Ambulatory Health Care Services	1.44	5.68
Amusement, Gambling, and Recreation Industries	1.38	1.28
Food Manufacturing	1.35	0.99
Monetary Authorities-Central Bank, Credit Intermediation and Related Activities	1.32	3.19
Utilities	1.30	0.43
Real Estate	1.28	1.54
Insurance Carriers and Related Activities	1.21	2.45
General Merchandise Stores	1.19	2.85
Building Material and Garden Equipment and Supplies Dealers	1.16	0.57
Crop Production	1.16	0.40
Chemical Manufacturing	1.07	0.63
Religious, Grantmaking, Civic, Professional, and Similar Organizations	1.05	1.66
Executive, Legislative, and Other General Government Support	0.99	1.33
Accommodation	0.94	1.48
Primary Metal Manufacturing	0.86	0.17
Securities, Commodities, Funds, Trusts, and Other Financial Investments	0.86	0.71
Electronics and Appliance Stores	0.85	0.46
Plastics and Rubber Products Manufacturing	0.83	0.49
Miscellaneous Manufacturing	0.82	0.75
Printing and Related Support Activities	0.78	0.52
Postal Service	0.76	0.58
Personal and Laundry Services	0.73	2.10
Textile Mills, Textile Product Mills, Apparel Manufacturing	0.73	1.22
Furniture and Related Product Manufacturing	0.70	0.33
Miscellaneous Store Retailers	0.68	1.24
Publishing Industries (Except Internet)	0.68	0.81
Wood Product Manufacturing	0.67	0.18
Support Activities for Transportation	0.64	0.26
Paper Manufacturing	0.64	0.25
Animal Production	0.63	0.20
Transit and Ground Passenger Transportation	0.63	0.32
Nonmetallic Mineral Product Manufacturing	0.58	0.20
Sporting Goods, Hobby, Book, and Music Stores	0.56	0.64
Air Transportation	0.55	0.44
Electrical Equipment, Appliance, and Component Manufacturing	0.53	0.36
Nursing and Residential Care Facilities	0.51	2.91
Couriers and Messengers	0.51	0.17
Furniture and Home Furnishings Stores	0.50	0.43
Performing Arts, Spectator Sports, and Related Industries	0.49	0.42
Clothing and Clothing Accessories Stores	0.48	1.26
Social Assistance	0.48	3.68
Rental and Leasing Services	0.44	0.30
Health and Personal Care Stores	0.43	1.01
Nonstore Retailers	0.42	0.58
Waste Management and Remediation Services	0.41	0.09
Administration Of Economic Programs and Space Research	0.41	0.46
Rail Transportation	0.37	0.04
Gasoline Stations	0.34	0.37
Motion Picture and Sound Recording Industries	0.34	0.23
Mining (Except Oil and Gas)	0.31	0.03
Warehousing and Storage	0.30	0.14

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Industry	Men	Women
Support Activities for Mining	0.27	0.06
Administration Of Human Resource Programs	0.26	0.75
Beverage and Tobacco Product Manufacturing	0.25	0.09
Forestry and Logging	0.22	0.03
Administration Of Environmental Quality and Housing Programs	0.20	0.14
Petroleum and Coal Products Manufacturing	0.19	0.05
Support Activities for Agriculture and Forestry	0.12	0.06
Museums, Art Galleries, Historical Sites, and Similar Institutions	0.11	0.15
Fishing, Hunting, and Trapping	0.09	0.01
Private Households	0.08	0.91
Oil and Gas Extraction	0.07	0.02
Water Transportation	0.06	0.02
Leather and Allied Product Manufacturing	0.06	0.08
Management of Companies and Enterprises	0.04	0.06
Pipeline Transportation	0.04	0.01
Scenic and Sightseeing Transportation	0.03	0.02
Total	100.00	100.00

Source: Ahn and Ren (2025). Notes: The share of men and women in each industry is calculated using the sample of employed individuals in the 2000 US Census. We follow 3-digit NAICS industry classifications. Shares are weighted by Census population weights.

Table A6: Summary of Rotemberg Weight for Potential Gender Wages

Panel A: Decomposition for Female Potential Wage

I. Negative and positive weights

	Sum	Mean	Share
Negative	-0.018	-0.001	0.017
Positive	1.018	0.016	0.983

II. Top 3 Rotemberg weight industries

	$\hat{\alpha}_k$	Ind Share
Insurance carriers and related activities	0.205	2.778
Food services and drinking places	0.141	4.088
Professional and technical services	0.077	5.797

Panel B: Decomposition for Male Potential Wage

I. Negative and positive weights

	Sum	Mean	Share
Negative	-0.038	-0.002	0.035
Positive	1.038	0.016	0.965

II. Top 3 Rotemberg weight industries

	$\hat{\alpha}_k$	Ind Share
Food services and drinking places	0.184	2.981
Professional and technical services	0.172	5.657
Computer and electronic product manufacturing	0.127	1.898

Note: This table reports statistics about the Rotemberg weights for industry shares. The sample used to generate this table is couples where both husband and wife are aged 25-64 in 2004-2017 NielsenIQ Consumer Panel. Panel A decomposes female potential wage, and Panel B decomposes male potential wage. Following Goldsmith-Pinkham et al. (2020), we report the aggregated weights, where we aggregate a given industry across years. Part I. for each panel reports the share and sum of negative weights. Part II. for each panel reports the top three industries according to the Rotemberg weights ($\hat{\alpha}_k$). Ind Share is the industry share. Appendix A.3 documents estimation procedure in detail.

Table A7: Effect of Future Relative Potential Wage on Past Expenditure Share (%) (Pre-trend Analysis)

	(1) Food At Home in 1999 and 2003 b/se	(2) Eating Out & Delivery in 1999 and 2003 b/se
1 SD ↑ in female relative wages	0.0320 (0.4978)	0.0593 (0.1858)
Observations	5441	5441
Controls	✓	✓
CZ FE	✓	✓
Year FE	✓	✓
CZ-Specific Time Trend	✓	✓
Race-Specific Trend	✓	✓
Edu-Specific Trend	✓	✓
Mean Expenditure Share (%)	16.444	6.368

Note: 1999-2003 PSID. Sample consists of married couples aged between 25-64. Expenditure shares are calculated as the food expenditure out of total household expenditure. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, and total potential wages of male and female heads. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

Table A8: Correlation between Top-3 Rotemberg Weight Female Industry Shares in 2000 and Consumption Changes (1999-2003)

Panel A: Female Industry Share - Insurance carriers and related activities		
	(1) Food At Home	(2) Eating Out & Delivery
Female industry share	45.088	21.309
	(42.323)	(22.697)
Panel B: Female Industry Share - Food services and drinking places		
	(1) Food At Home	(2) Eating Out & Delivery
Female industry share	-21.073	-27.367
	(25.303)	(16.854)
Panel C: Female Industry Share - Professional, Scientific, and Technical Services		
	(1) Food At Home	(2) Eating Out & Delivery
Female industry share	15.768	-15.674
	(21.804)	(9.953)
Regression Specification		
Controls	✓	✓
CZ FE	✓	✓

Note: 1999-2003 PSID. This table reports the coefficients from regressing household budget share of each good on female industry share as specified in each panel. Sample consists of married couples aged between 25-64. Expenditure shares are calculated as the food expenditure out of total household expenditure. The unit of analysis is CZ-race-husband education-wife education cells. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, and the interaction between their education levels. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

Table A9: Correlation between Top-3 Rotemberg Weight Male Industry Shares in 2000 and Consumption Changes (1999-2003)

Panel A: Male Industry Share - Food services and drinking places		
	(1) Food At Home	(2) Eating Out & Delivery
Male industry share	-18.911	-7.138
	(25.425)	(13.425)
Panel B: Male Industry Share - Professional and technical services		
	(1) Food At Home	(2) Eating Out & Delivery
Male industry share	11.541	-9.146
	(12.116)	(8.420)
Panel C: Male Industry Share - Computer and electronic product manufacturing		
	(1) Food At Home	(2) Eating Out & Delivery
Male industry share	48.896*	-20.799
	(24.803)	(16.254)
Regression Specification		
Controls	✓	✓
CZ FE	✓	✓

Note: 1999-2003 PSID. This table reports the coefficients from regressing household budget share of each good on male industry share as specified in each panel. Sample consists of married couples aged between 25-64. Expenditure shares are calculated as the food expenditure out of total household expenditure. The unit of analysis is CZ-race-husband education-wife education cells. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, and the interaction between their education levels. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

Table A10: Effect of Relative Potential Wage on Expenditure (in 2010 USD), Food Departments

	(1) Dry Grocery b/se	(2) Frozen Food b/se	(3) Dairy b/se	(4) Deli b/se	(5) Packaged Meat b/se	(6) Fresh Produce b/se
1 SD ↑ in female relative wages	12.1967	6.0059**	0.4616	1.6457**	2.1323*	-3.0738***
	(7.9997)	(2.4787)	(2.0274)	(0.7072)	(1.1739)	(1.0198)
Observations	333883	333883	333883	333883	333883	333883
Controls	✓	✓	✓	✓	✓	✓
CZ FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
CZ-Specific Time Trend	✓	✓	✓	✓	✓	✓
Race-Specific Trend	✓	✓	✓	✓	✓	✓
Edu-Interaction-Specific Trend	✓	✓	✓	✓	✓	✓
Mean Expenditure (2010 USD)	1666.882	371.404	401.778	87.534	150.989	126.756

Note: Sample consists of married couples from the 2004–2017 NielsenIQ Consumer Panel, where both spouses are aged 25–64. Each column reports the estimated β from Equation 2 for the corresponding outcome. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, and total potential wages of male and female heads. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

Table A11: Effect of Relative Potential Wage on Expenditure (in 2010 USD), USDA Food Categories

	(1) Vegetables	(2) Fruit	(3) Grains	(4) Diary	(5) Protein Food	(6) Pre-Prepared Entrees	(7) Sauce/Cond/Jam/ Honey/Sugar	(8) Fats & Oil	(9) Coffee & Tea	(10) Other Foods & Beverages	(11) Other Miscellaneous
1 SD ↑ in female relative wages	0.070	-2.714***	0.491	0.761	2.200	7.370***	1.664	-0.252	2.118**	3.293	0.665*
	(1.191)	(0.729)	(1.259)	(1.806)	(1.853)	(2.808)	(1.030)	(0.365)	(0.824)	(3.978)	(0.339)
Observations	333841	333841	333841	333841	333841	333841	333841	333841	333841	333841	333841
Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CZ FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CZ-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mean Expenditure Share (%)	167.046	95.490	242.714	338.665	271.406	461.804	177.918	50.734	73.474	737.611	42.190

Note: Sample consists of married couples from the 2004–2017 NielsenIQ Consumer Panel, where both spouses are aged 25–64. Each column reports the estimated β from Equation 2 for the corresponding outcome. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, and total potential wages of male and female heads. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

Table A12: Effect of Relative Potential Wage on Expenditure Share (%), Food, Exclude Ever-Divorced Couples

	(1) Dry Grocery b/se	(2) Frozen Food b/se	(3) Dairy b/se	(4) Deli b/se	(5) Packaged Meat b/se	(6) Fresh Produce b/se
1 SD ↑ in female relative wages	0.0407	0.1345***	-0.0264	0.0274*	0.0251	-0.1097***
	(0.0842)	(0.0514)	(0.0479)	(0.0164)	(0.0256)	(0.0295)
Observations	293775	293775	293775	293775	293775	293775
Controls	✓	✓	✓	✓	✓	✓
CZ FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
CZ-Specific Time Trend	✓	✓	✓	✓	✓	✓
Race-Specific Trend	✓	✓	✓	✓	✓	✓
Edu-Specific Trend	✓	✓	✓	✓	✓	✓
Mean Expenditure Share (%)	40.186	8.866	9.790	2.071	3.657	3.122

Note: Sample consists of married couples from the 2004–2017 NielsenIQ Consumer Panel, where both spouses are aged 25–64. Furthermore, we only focus on couples who never experienced divorce during their observed period, using households who stayed in the panel for at least two years. Each column reports the estimated β from Equation 2 for the corresponding outcome. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, and total potential wages of male and female heads. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

Table A13: Effects of Relative Potential Wages on Expenditure Shares, USDA Food Categories, Exclude Ever-Divorced Couples

	(1) Vegetables	(2) Fruit	(3) Grains	(4) Diary	(5) Protein Food	(6) Pre-Prepared Entrees	(7) Sauce/Cond/Jam/ Honey/Sugar	(8) Fats & Oil	(9) Coffee & Tea	(10) Other Foods & Beverages	(11) Other Miscellaneous
1 SD ↑ in female relative wages	-0.029	-0.086***	-0.025	-0.021	0.015	0.158**	0.013	-0.016*	0.036**	-0.027	0.011
	(0.032)	(0.020)	(0.026)	(0.048)	(0.033)	(0.061)	(0.022)	(0.009)	(0.018)	(0.063)	(0.008)
Observations	293734	293734	293734	293734	293734	293734	293734	293734	293734	293734	293734
Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CZ FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CZ-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mean Expenditure Share (%)	4.088	2.342	5.931	8.227	6.624	11.001	4.334	1.254	1.783	17.709	1.026

Note: Sample consists of married couples from the 2004–2017 NielsenIQ Consumer Panel, where both spouses are aged 25–64. Furthermore, we only focus on couples who never experienced divorce during their observed period, using households who stayed in the panel for at least two years. Each column reports the estimated β from Equation 2 for the corresponding outcome. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, and total potential wages of male and female heads. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

Table A14: Effect of Relative Potential Wage on Marital Status

	(1) Married b/se	(2) Divorced b/se	(3) Single b/se
1 SD ↑ in female relative wages	-0.0076	0.0051	-0.0012
	(0.0059)	(0.0047)	(0.0046)
Observations	548568	548568	548568
Controls	✓	✓	✓
CZ FE	✓	✓	✓
Year FE	✓	✓	✓
CZ-Specific Time Trend	✓	✓	✓
Race-Specific Trend	✓	✓	✓
Edu-Specific Trend	✓	✓	✓
Outcome Mean	0.645	0.162	0.154

Note: Sample consists of all women aged 25-64 from the 2004–2017 NielsenIQ Consumer Panel. Each column reports the estimated β from Equation 2 for the corresponding outcome. Control variables include race indicators, ages (and squared ages), education, and female potential wages. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

Table A15: Effect of Relative Potential Wage on Expenditure Share (%), Food, Exclude Ever-Moved Couples

	(1) Dry Grocery b/se	(2) Frozen Food b/se	(3) Dairy b/se	(4) Deli b/se	(5) Packaged Meat b/se	(6) Fresh Produce b/se
1 SD ↑ in female relative wages	0.0937	0.1263**	-0.0299	0.0238	0.0249	-0.1000***
	(0.0947)	(0.0531)	(0.0537)	(0.0190)	(0.0306)	(0.0290)
Observations	277229	277229	277229	277229	277229	277229
Controls	✓	✓	✓	✓	✓	✓
CZ FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
CZ-Specific Time Trend	✓	✓	✓	✓	✓	✓
Race-Specific Trend	✓	✓	✓	✓	✓	✓
Edu-Specific Trend	✓	✓	✓	✓	✓	✓
Mean Expenditure Share (%)	40.241	8.889	9.751	2.077	3.649	3.095

Note: Sample consists of married couples from the 2004–2017 NielsenIQ Consumer Panel, where both spouses are aged 25–64. Furthermore, we restrict the sample to couples who never moved across CZs, focusing on those observed for at least two years. Each column reports the estimated β from Equation 2 for the corresponding outcome. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, and total potential wages of male and female heads. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

Table A16: Effects of Relative Potential Wages on Expenditure Shares, USDA Food Categories, Exclude Ever-Moved Couples

	(1) Vegetables	(2) Fruit	(3) Grains	(4) Diary	(5) Protein Food	(6) Pre-Prepared Entrees	(7) Sauce/Cond/Jam/ Honey/Sugar	(8) Fats & Oil	(9) Coffee & Tea	(10) Other Foods & Beverages	(11) Other Miscellaneous
1 SD ↑ in female relative wages	-0.024	-0.078***	-0.018	-0.028	0.021	0.141**	0.027	-0.010	0.039*	-0.008	0.015*
	(0.029)	(0.022)	(0.030)	(0.054)	(0.039)	(0.065)	(0.024)	(0.010)	(0.020)	(0.067)	(0.009)
Observations	277193	277193	277193	277193	277193	277193	277193	277193	277193	277193	277193
Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CZ FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CZ-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mean Expenditure Share (%)	4.075	2.323	5.936	8.196	6.612	11.028	4.329	1.249	1.783	17.765	1.022

Note: Sample consists of married couples from the 2004–2017 NielsenIQ Consumer Panel, where both spouses are aged 25–64. Furthermore, we restrict the sample to couples who never moved across CZs, focusing on those observed for at least two years. Each column reports the estimated β from Equation 2 for the corresponding outcome. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, and total potential wages of male and female heads. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

Table A17: Effect of Relative Potential Wage on Expenditure Share (%), Food, Remove Concerning Industry

	(1) Dry Grocery b/se	(2) Frozen Food b/se	(3) Dairy b/se	(4) Deli b/se	(5) Packaged Meat b/se	(6) Fresh Produce b/se
1 SD ↑ in female relative wages	0.0385	0.1088**	-0.0304	0.0306**	0.0273	-0.1120***
	(0.0737)	(0.0431)	(0.0460)	(0.0150)	(0.0251)	(0.0231)
Observations	333878	333878	333878	333878	333878	333878
Controls	✓	✓	✓	✓	✓	✓
CZ FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
CZ-Specific Time Trend	✓	✓	✓	✓	✓	✓
Race-Specific Trend	✓	✓	✓	✓	✓	✓
Edu-Specific Trend	✓	✓	✓	✓	✓	✓
Mean Expenditure Share (%)	40.234	8.893	9.832	2.079	3.679	3.086

Note: Sample consists of married couples from the 2004–2017 NielsenIQ Consumer Panel, where both spouses are aged 25–64. We exclude "Computer and electronic product manufacturing" industry from the construction of gender potential wages. Each column reports the estimated β from Equation 2 for the corresponding outcome. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, and total potential wages of male and female heads. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

Table A18: Effects of Relative Potential Wages on Expenditure Shares, USDA Food Categories, Remove Concerning Industry

	(1) Vegetables	(2) Fruit	(3) Grains	(4) Diary	(5) Protein Food	(6) Pre-Prepared Entrees	(7) Sauce/Cond/Jam/ Honey/Sugar	(8) Fats & Oil	(9) Coffee & Tea	(10) Other Foods & Beverages	(11) Other Miscellaneous
1 SD ↑ in female relative wages	-0.033	-0.089***	-0.013	-0.023	0.013	0.154***	0.007	-0.022***	0.041**	-0.016	0.007
	(0.022)	(0.018)	(0.026)	(0.046)	(0.030)	(0.051)	(0.018)	(0.008)	(0.016)	(0.054)	(0.007)
Observations	333836	333836	333836	333836	333836	333836	333836	333836	333836	333836	333836
Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CZ FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CZ-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mean Expenditure Share (%)	4.079	2.323	5.940	8.271	6.621	11.091	4.367	1.249	1.764	17.691	1.026

Note: Sample consists of married couples from the 2004–2017 NielsenIQ Consumer Panel, where both spouses are aged 25–64. We exclude "Computer and electronic product manufacturing" industry from the construction of gender potential wages. Each column reports the estimated β from Equation 2 for the corresponding outcome. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, and total potential wages of male and female heads. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

Table A19: Effect of Relative Potential Wage on Expenditure Share (%), Controlling for CZ-level Food Sector Employment (Industry 722: Food services and drinking places + 445: Food and beverage stores)

	(1) Dry Grocery b/se	(2) Frozen Food b/se	(3) Dairy b/se	(4) Deli b/se	(5) Packaged Meat b/se	(6) Fresh Produce b/se
1 SD ↑ in relative wage	0.0378	0.1260***	-0.0211	0.0331**	0.0223	-0.0925***
	(0.0700)	(0.0419)	(0.0445)	(0.0142)	(0.0237)	(0.0224)
Observations	333883	333883	333883	333883	333883	333883
Controls	✓	✓	✓	✓	✓	✓
CZ FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
CZ-Specific Time Trend	✓	✓	✓	✓	✓	✓
Race-Specific Trend	✓	✓	✓	✓	✓	✓
Edu-Specific Trend	✓	✓	✓	✓	✓	✓
Mean Expenditure Share (%)	40.234	8.893	9.832	2.079	3.679	3.086

Note: Sample consists of married couples from the 2004–2017 NielsenIQ Consumer Panel, where both spouses are aged 25–64. Each column reports the estimated β from Equation 2 for the corresponding outcome. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, and total potential wages of male and female heads. We also add CZ-year-level food sector employment as an additional control. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

Table A20: Effects of Relative Potential Wages on Expenditure Shares, USDA Food Categories, Controlling for CZ-level Food Sector Employment (Industry 722: Food services and drinking places + 445: Food and beverage stores)

	(1) Vegetables	(2) Fruit	(3) Grains	(4) Diary	(5) Protein Food	(6) Pre-Prepared Entrees	(7) Sauce/Cond/Jam/ Honey/Sugar	(8) Fats & Oil	(9) Coffee & Tea	(10) Other Foods & Beverages	(11) Other Miscellaneous
1 SD ↑ in female relative wages	-0.018	-0.076***	-0.015	-0.015	0.012	0.153***	0.008	-0.019**	0.038**	-0.013	0.009
	(0.021)	(0.017)	(0.025)	(0.045)	(0.029)	(0.050)	(0.018)	(0.008)	(0.016)	(0.051)	(0.007)
Observations	333841	333841	333841	333841	333841	333841	333841	333841	333841	333841	333841
Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CZ FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CZ-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mean Expenditure Share (%)	4.079	2.323	5.940	8.271	6.621	11.091	4.367	1.249	1.764	17.691	1.026

Note: Sample consists of married couples from the 2004–2017 NielsenIQ Consumer Panel, where both spouses are aged 25–64. Each column reports the estimated β from Equation 2 for the corresponding outcome. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, and total potential wages of male and female heads. We also add CZ-year-level food sector employment as an additional control. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

Table A21: Effect of Relative Potential Wage on Employment (Extensive Margin) and Working Hours (Intensive Margin)

	(1) Husband employed b/se	(2) Wife employed b/se	(3) Husband working hours b/se	(4) Wife working hours b/se
1 SD ↑ in relative female wage	-0.0022	0.0147***	-1.6385	11.3843***
	(0.0014)	(0.0035)	(2.4978)	(4.2210)
Observations	3650830	3650830	3148876	2484668
Controls	Yes	Yes	Yes	Yes
CZ FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
CZ-Specific Time Trend	Yes	Yes	Yes	Yes
Race-Specific Trend	Yes	Yes	Yes	Yes
Edu-Interaction-Specific Trend	Yes	Yes	Yes	Yes
Mean Dep. Var.	0.868	0.678	2210.6	1824.2

Note: ACS 2006-2017. Sample consists of married couples aged between 25-64. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, and total potential wages of male and female heads. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

Table A22: Effects of Relative Potential Wages on Time Use in Major Activities

Unit: minutes per day	(1) Personal Care Activities	(2) Household Activities	(3) Caring For & Helping HH Members	(4) Work & Work-Related Activities	(5) Eating & Drinking	(6) Socializing, Relaxing, & Leisure	(7) Traveling
Panel A: Husband							
1 SD ↑ in female relative wages	2.116	-3.075	-0.592	5.337	-0.997	-1.233	-1.139
	(3.244)	(3.218)	(1.333)	(4.613)	(1.318)	(4.440)	(1.937)
Observations	30230	30230	30230	30230	30230	30230	30230
Sharpened q-values	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Controls	✓	✓	✓	✓	✓	✓	✓
State FE	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓
State-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓
Mean Dep. Var. (minutes)	528.840	88.617	31.587	318.399	70.777	242.215	81.107
Panel B: Wife							
1 SD ↑ in female relative wages	-1.380	-9.520**	-3.114	19.032***	-0.796	-1.311	-1.539
	(3.129)	(4.062)	(2.609)	(4.877)	(0.965)	(3.693)	(1.489)
Observations	32684	32684	32684	32684	32684	32684	32684
Sharpened q-values	1.000	0.075	0.620	0.001	0.707	1.000	0.620
Controls	✓	✓	✓	✓	✓	✓	✓
State FE	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓
State-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓	✓	✓	✓	✓
Mean Dep. Var. (minutes)	558.850	157.905	60.848	200.465	66.068	218.442	75.223

Note: ATUS 2004-2017. Sample consists of married men and women aged between 25-64. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, days of the week, and total potential wages of male and female heads. Sharpened q-values are based on sharpened False Discovery Rate (FDR) q-values to adjust for multiple hypothesis testing, following the procedure by Anderson (2008). Standard errors are clustered at the state level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

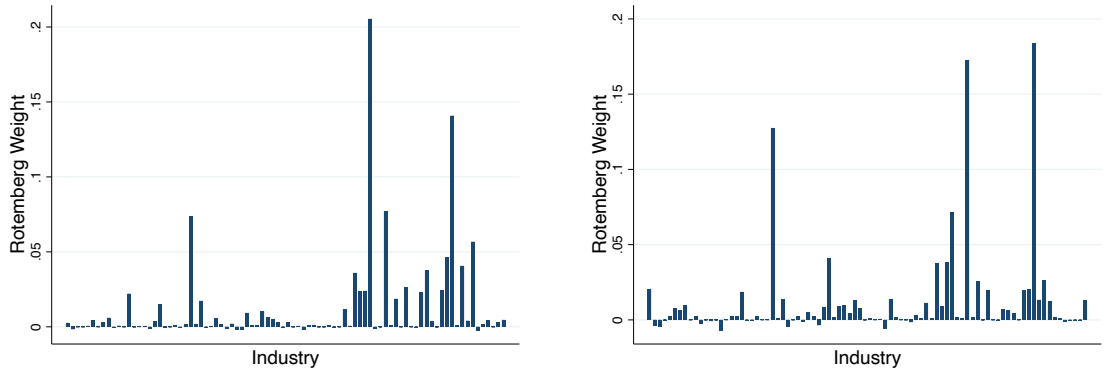
Table A23: Effects of Relative Potential Wages on Time Use in Other Related Activities

Unit: minutes per day	(1) Grocery Shopping	(2) Travel Related to Work	(3) Participating in Sports, Exercise, or Recreation
Panel A: Husband			
1 SD ↑ in female relative wages	-0.056	-1.729	-0.151
	(0.566)	(1.141)	(1.155)
Observations	30230	30230	30230
Controls	✓	✓	✓
State FE	✓	✓	✓
Year FE	✓	✓	✓
State-Specific Time Trend	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓
Dep. Var. Mean (minutes)	7.009	28.945	18.879
Panel B: Wife			
1 SD ↑ in female relative wages	0.828	1.296***	-1.228
	(0.638)	(0.454)	(0.855)
Observations	32684	32684	32684
Controls	✓	✓	✓
State FE	✓	✓	✓
Year FE	✓	✓	✓
State-Specific Time Trend	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓
Dep. Var. Mean (minutes)	13.964	15.211	12.912

Note: ATUS 2004-2017. Sample consists of married men and women aged between 25-64. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, days of the week, and total potential wages of male and female heads. Standard errors are clustered at the state level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

A.2 Additional Figures

Figure A1: Rotemberg Weights by Industry

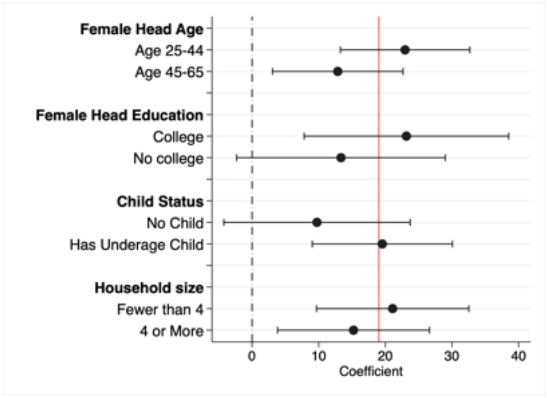


(a) Female Potential Wages

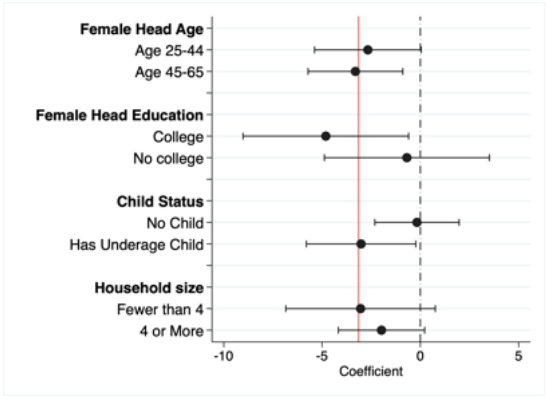
(b) Male Potential Wages

Note: These figure plot the distribution of the Rotemberg weights for female potential wages (Panel (a)) and male potential wages (Panel (b)). Rotemberg weights quantify the contribution of each industry to the identification. These are constructed using the Stata "bartik_weight" command, which is made available by Goldsmith-Pinkham et al. (2020). Appendix A.3 provides further details on the estimation of Rotemberg weights.

Figure A2: Women's Time Use Heterogeneity - Effects of 1 SD ↑ in Female Relative Wage



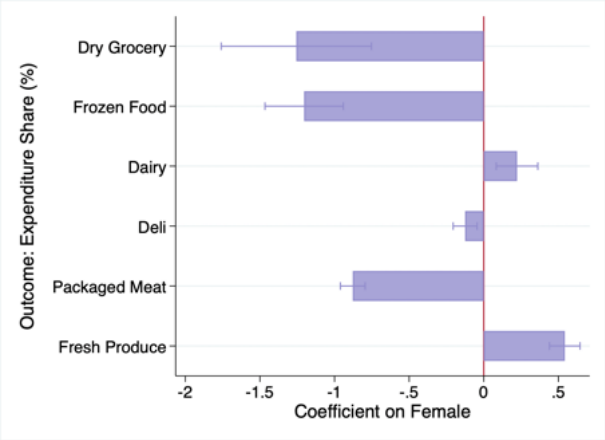
(a) Work & Work-Related Activities



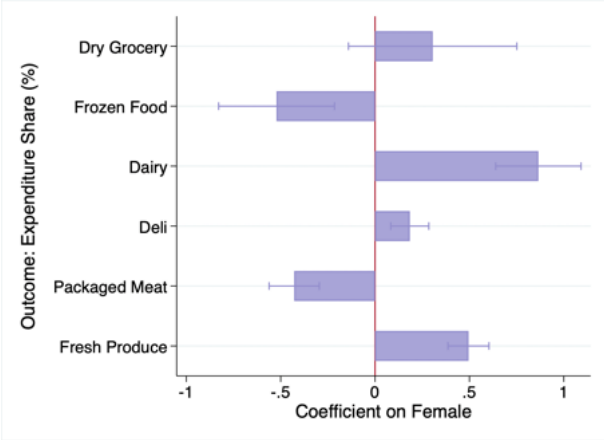
(b) Food & Drink Preparation

Note: This figure shows the effects of a one–standard deviation increase in female relative potential wages on the corresponding outcomes, allowing the effects to vary by individual and household characteristics. For each characteristic, we estimate Equation 2 with $GenderWageRatio_{re_h e_w cy}$ interacted with the characteristic values. Estimation is conducted separately for each characteristic, indicated in bold. Error bars indicate 95% confidence intervals, with standard errors clustered at the CZ level. The red vertical line marks the baseline estimate reported in Table 7.

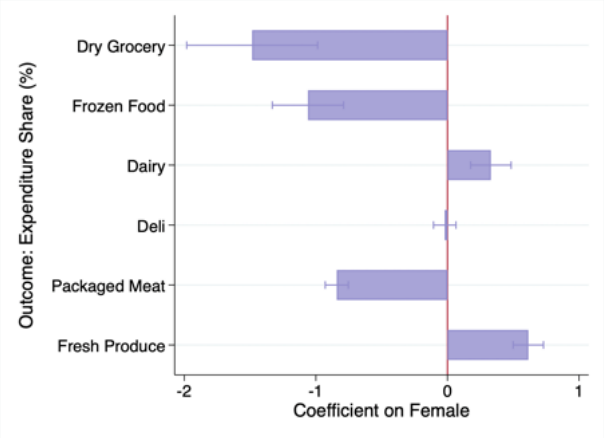
Figure A3: Coefficient on Female Indicator, Singles (Unmarried) Sample



(a) Single women vs. single men



(b) Single women with children vs. single men



(c) Single women working full-time vs. single men

Note: NielsenIQ Consumer Panel, 2004–2017. All three panels compare single (unmarried) men living alone with different subgroups of single women: (a) single women living alone, (b) single women living with children, and (c) single women living alone and working full-time. Full-time work status is defined as reporting 35 or more weekly work hours. The sample is further restricted to singles aged 25–64. Each bar reports the coefficient on the "female" indicator from a regression of the expenditure share for the corresponding aggregate good (y-axis) on the female indicator and a set of controls. Control variables include age, age squared, education, race dummies, household income indicators, year fixed effects, and CZ fixed effects. For Panel (b), we additionally control for household size. Regressions use household weights, and standard errors are clustered at the CZ level. Error bars show 95% confidence intervals.

A.3 Calculating the Rotemberg Weights

Following the general approach of the literature on gender-relative potential wage (Aizer, 2010; Bertrand et al., 2015; Shenhav, 2021), we use the Bartik-style potential wage for each gender as a reduced form measure rather than as an instrument for observed gender wage, which we do not observe in our data. Therefore, we estimate reduced form Bartik Rotemberg weights following the approach outlined in Goldsmith-Pinkham et al. (2020). We describe the estimation procedure below.

As introduced in Section 4.1, our Bartik measure for female potential wage is $\bar{w}_{female,recy} = \sum_j \gamma_{female,recy} w_{-cyj}$, and male potential wage is $\bar{w}_{male,recy} = \sum_j \gamma_{male,resj} w_{-cyj}$. Because it is not possible to decompose the gender wage ratio, we will instead calculate the Rotemberg weight for each industry share for each gender separately using the following Equation:

$$\begin{aligned} Y_{hy} = \quad & \alpha + \beta_m \bar{w}_{male,re_hcy} + \beta_f \bar{w}_{female,re_wcy} + \gamma \mathbf{X}_{hy} + \theta_c + \pi_y \\ & + \rho_c \times y + \phi_r \times y + \eta_{e_h} \times y + \varepsilon_{hy} \end{aligned} \tag{3}$$

For clarity, we will simplify notations here to describe how we calculate the Rotemberg weight for each gender's potential wage. Let's consider the case for female potential wage. Let us rewrite the Equation 3 as the following:

$$Y_{hy} = \beta_f B_{hy} + \mathbf{W}_{hy}\gamma + \varepsilon_{hy}$$

where Y_{hy} is the expenditure share of the specified aggregate good for household h in year y, B_{hy} is the female potential wage matched to wife's race r, education e_w, CZ c and year y, and $\mathbf{W}_{hy}$ are the controls, which include a constant, male potential wage, and all demographic controls and fixed effects as specified in Equation 3.

Goldsmith-Pinkham et al. (2020) have shown that the estimate for β_f can be written as:

$$\hat{\beta}_f = (B'B^{\perp})^{-1}(B'Y^{\perp})$$

where $B^{\perp}$ are residuals from regressing B_{hy} on $\mathbf{W}_{hy}$ and $Y^{\perp}$ are the residuals from regressing Y_{hy} on $\mathbf{W}_{hy}$. They show that as a result, it is possible to rewrite this as:

$$\hat{\beta}_f = \sum_k \hat{\alpha}_k \hat{\beta}_k, \quad \hat{\beta}_k = (\gamma_k^{female'} B^{\perp})^{-1}(\gamma_k^{female'} Y^{\perp})$$

where γ_k^{female} is the female industry share in 2000 for industry k for education level e, race r, CZ c, which is matched to each household. This shows that each β_k can be recovered by

using the industry share for industry k as an instrument for the reduced form Bartik measure of female potential wage.

The Rotemberg weight for each industry k is expressed as the following:

$$\hat{\alpha}_k = \frac{w_k \gamma_k^{female'} B^{\perp}}{\sum_{k'} w_{k'} \gamma_{k'}^{female'} B^{\perp}}$$

where w_k is the national wage of industry k in year y. Rotemberg weights for male potential wage are estimated using a similar procedure as above, using different $\mathbf{W}_{hy}$ that now include female potential wage instead of male potential wage.

A.4 Food Categorization Based on USDA Thrifty Food Plan

The Thrifty Food Plan (TFP) by the U.S. Department of Agriculture provides a categorization of food based on nutrition information (U.S. Department of Agriculture, 2021). The largest categories consist of the following food groups: (1) vegetables, (2) fruits, (3) grains, (4) dairy, (5) protein foods, and (6) miscellaneous. The "miscellaneous" category includes pre-prepared entrees and side dishes, coffee and tea, table fats and oils, sauces, condiments, jams, honey, sugars spices, and other foods and beverages (e.g. soft drinks, fruit drinks, ice cream, pudding, cookies, and candy bars).

We follow the TFP categorization based on product group descriptions provided by NielsenIQ. We decompose food consumption into (1) vegetables, (2) fruits, (3) grains, (4) dairy, (5) protein foods, (6) prepared entrees, (7) other miscellaneous, and (8) uncategorized. There are two adjustments from the original TFP categorization. First, we distinguish prepared food from "miscellaneous" category to better understand the labor market impact on the consumption of prepared food. Second, we have an additional "uncategorized" group for food items that do not belong to the TFP categorization. Uncategorized product groups include baby food and pet food.

Table A24: Mapping of NielsenIQ Product Groups/Modules to USDA Food Categories

USDA Category	**Included Items**
Vegetables	Fresh vegetables, canned vegetables, dried vegetables, frozen vegetables
Fruits	Fresh fruits, canned fruits, dried fruits
Grains	Cereal, flour, pasta (uncooked), bread and baked goods, baked goods – frozen
Dairy	Milk, cheese, cottage cheese, sour cream, yeast, yogurt
Protein Foods	Fresh meat, packaged meats, eggs, unprepared frozen meat/poultry/seafood, nuts, canned seafood
Pre-prepared Entrées and Side Dishes	Ready-to-serve prepared food, frozen prepared food, soup, breakfast food, frozen breakfast foods, frozen pizza, deli-prepared salads and foods
Sauces, Condiments, Jams, Honey, Sugar	Jams, jellies, spreads, condiments, gravies, sauces, pickles, olives, relish, salad dressings, mayonnaise, toppings, spices, seasonings, extracts, sugar, sweeteners, table syrups, molasses
Fats and Oils	Shortening, oil, butter, margarine
Coffee and Tea	Coffee, tea
Other Foods and Beverages	Candy, gum, bottled/canned drinks (including fruit drinks), desserts, gelatins, syrups, carbonated beverages, cookies, crackers, snacks, dairy-based spreads and dips, soft drinks (non-carbonated), dough products
Other Miscellaneous	Baking mixes, baking supplies, ice

Note: This table presents authors' classification of NielsenIQ items into the corresponding categories.

A.5 Women's Relative Potential Wages and Gender- and Child Goods

In this section, we examine how women's relative potential wages affect household spending on gender- and child-specific goods for married couple sample. In our analyses, we focus on NielsenIQ goods with explicit gender or child labels, such as women's beauty products, men's grooming products, and baby food. It should be noted that, because NielsenIQ data primarily focuses on grocery items, it lacks information on gender and child goods commmonly used in the literature, such as women's clothing. Hence, our results rely on a limited set of gender- and child-related products available in the NielsenIQ data.

Table A25 shows how we classify gender- and child- goods using NielsenIQ product group and module descriptions. The only goods with explicit gender association in NielsenIQ data are women's beauty goods and men's beauty goods, which we use for results on gender goods. Child-exclusive goods in the NielsenIQ dataset include baby care products and baby food. Additionally, stationery and school supplies items are potentially related to children, because this category includes goods frequently used by school-aged children (e.g., crayons, pencils, and notepads).

Table A25: Classification of Gender and Child Goods, NielsenIQ Data

Classification	**Included Items**
Women's Beauty	Cosmetics (blushers, lipsticks, nail polish, etc.), women's fragrances, women's hair care products
Men's Beauty	Men's hair products (e.g. spray, coloring), men's toiletries (e.g. shaving products, lotion)
Baby Needs	All items in "Baby needs" product group in NielsenIQ data, which includes baby care products (lotions, powder, oil, ointments, bath, etc), baby bottles & nipples, and baby accessories
Baby Food	All items in "Baby good" product group in NielsenIQ data, which includes baby milk, baby cereal & biscuits, etc.
Stationery, School Supplies	All items in "Stationery, school supplies" group in NielsenIQ data, which includes school and office supplies such as glue, crayons, pens, notepads, etc.

Note: This table presents authors' classification of NielsenIQ items into the corresponding categories.

Table A26 reports the effect of women's relative potential wages on expenditure share of gender goods for the married couple sample. Although one-standard deviation increase in women's potential wage leads to an increase in women's beauty goods and a decrease in men's beauty goods – patterns consistent with bargaining channel – these effects are not statistically significant.

Table A26: Effect of Relative Potential Wage on Expenditure Share (%), Gender Goods

	(1) Women's Beauty b/se	(2) Men's Beauty b/se
1 SD ↑ in female relative wages	0.0161	-0.0012
	(0.0141)	(0.0022)
Observations	333885	333885
Controls	✓	✓
CZ FE	✓	✓
Year FE	✓	✓
CZ-Specific Time Trend	✓	✓
Race-Specific Trend	✓	✓
Edu-Specific Trend	✓	✓
Mean Expenditure Share (%)	1.145	0.086

Note: Sample consists of married couples from the 2004–2017 NielsenIQ Consumer Panel, where both spouses are aged 25–64. Each column reports the estimated β from Equation 2 for the corresponding outcome. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, and total potential wages of male and female heads. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.

For child-related goods, We perform heterogeneity analyses to examine if female relative wages affect child-related consumption for couples with children. For baby-related outcomes, we estimate the effects of female relative wages for the sample of couples with babies (age 0-3) and the sample of couples without children, respectively. For school-aged children outcome, we estimate the effect of female relative wages for the sample of couples with school-aged children (age 5-18) and the sample of couples without children, respectively. All estimation uses the same specification as the main specification (Equation 2).

As shown in Table A27, we find no evidence that increases in women's relative potential wages lead to higher spending on child-related goods among households with children in the corresponding age groups.

Table A27: Effect of Relative Potential Wage on Expenditure Share (%), Child Goods

	Baby (Age 0-3)		School-aged (Age 5-18)
	(1) Baby Needs	(2) Baby Food	(3) Stationery, School Supplies
Panel A: Couples with children (of given age)			
1 SD ↑ in relative wage	-0.005	0.085	0.008
	(0.026)	(0.119)	(0.025)
Observations	23848	23848	128285
Controls	✓	✓	✓
CZ FE	✓	✓	✓
Year FE	✓	✓	✓
CZ-Specific Time Trend	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓
Mean Expenditure Share (%)	0.846	2.112	1.421
Panel B: Couples without any child			
1 SD ↑ in relative wage	-0.008	-0.034	0.020
	(0.012)	(0.028)	(0.022)
Observations	147519	147519	147519
Controls	✓	✓	✓
CZ FE	✓	✓	✓
Year FE	✓	✓	✓
CZ-Specific Time Trend	✓	✓	✓
Race-Specific Time Trend	✓	✓	✓
Edu-Specific Time Trend	✓	✓	✓
Mean Expenditure Share (%)	0.286	0.335	0.990

Note: 2004-2017 NielsenIQ Consumer Panel. Sample consists of married couples aged between 25-64. For Columns (1)-(2) in Panel A, the sample is further limited to couples who have a baby aged 0-3. For Columns (1)-(2) in Panel A, the sample is limited to couples who have school-aged children. For Panel B, the sample only includes couples without any children. Control variables include race indicators, ages (and squared ages) of both spouses, education of both spouses, the interaction between their education levels, and total potential wages of male and female heads. Household weights are applied. Standard errors are clustered at the CZ level. *** Significant at 1% level, **: Significant at 5% level, *: Significant at 10% level.