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Resistant to the Recession: US adults maintain cooking and away-from-home eating patterns during times of economic turbulence

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Abstract

Objectives—We examined the effect of state-level unemployment across the recessionary period on patterns of home food preparation and away-from-home (AFH) eating amongst the low-income and minorities.

Methods—We analyzed pooled cross-sectional data on 118,635 adults age 18 and older from the American Time Use Study (ATUS) from 2003 to 2011. Multinomial logistic regression models stratified by gender were used to evaluate the association between state-level unemployment, low-income, and race/ethnicity on time spent cooking and log binomial regression for whether the respondent ate AFH, controlling for age, education, respondent employment status, household structure, and whether the diary day was a holiday.

Results—High state-level unemployment was associated with only trivial shifts in increased cooking and virtually no change in patterns of eating AFH, with no differential effect for low-income or minority groups.

Conclusion—Even during a major economic downturn, US adults are resistant to food-related behavior change. More work is needed to understand whether this reluctance to change is due to time limits, lack of knowledge or skill, or access to fresh produce and raw ingredients.

I. Introduction

The obesity epidemic in the US shows a steep social gradient by socioeconomic status (SES) and race,^{1–4} with the poor, Hispanics, and non-Hispanic blacks bearing a disproportionate burden of overweight and obesity.^{5, 6} This disparity stems in part from substantial barriers to achieving a healthful diet, including food insufficiency, food deserts, and the preponderance of cheap, high energy foods.^{7–10} However, a growing body of evidence indicates that time scarcity, not money, poses the highest barrier to achieving the nutritional targets set by

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LPS was responsible for study design, data analysis, interpretation of results, and writing the manuscript. SWN and BMP were responsible for study design, interpretation of results, and editing the manuscript. All authors reviewed drafts of the article.

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This study uses de-identified publicly available data and was exempt from institutional review board approval.

nutrition allotment programs like The Thrifty Food Plan, which typically necessitate cooking from scratch to meet financial constraints.^{11–14} For many resource-scarce households, the struggle to manage the competing demands of work, transportation, social services and childcare limits the time available to prepare healthy meals^{15–19} and prompts the purchase of quick convenient foods^{20–23} such as away-from-home (AFH) foods or processed foods, which tend to be energy-dense and nutrient-poor.^{9, 10, 24–26} In fact, the Institute of Medicine recently recognized the importance of time limitations, calling for the USDA to incorporate the value of time in calculating adequate nutrition program allotments.²⁷

Despite the growing recognition of time as a major limitation to home food preparation, it is less clear how food preparation and consumption patterns have been influenced by recent economic downswings. The Great Recession of 2008 was characterized by an increase in the national unemployment rate from 5.0% in December of 2007 to 9.5% in June of 2009.²⁸ Historically, low-SES adults are more likely to suffer recession-related effects including layoffs, earnings reductions, and human capital losses,^{29, 30} which was also true during the Great Recession as younger, less educated, and minority workers experienced steeper increases in unemployment.^{31, 32}

Previous economic downturns have been linked to shifts in food preparation patterns and diet. For example, during Russia's economic collapse in 1998, low income households increased home preparation of foods from basic ingredients as a strategy to decrease the cost per calorie of food and preserve a diet comparable to the pre-crisis diet.³³ In fact, recent studies have shown that in developed countries, recessionary periods are associated with better health behaviors, including increases in physical activity and increased fruit and vegetable intake, as well as decreases in obesity.^{34–39} These effects occur outside of individual employment status, as increases in aggregate unemployment rates change the way people in the affected area make decisions about money and time. For one, wage rate increases are dampened during economic downturns, affecting household income and consequently food shopping and preparation. Similarly, volatility in the job market⁴⁰ decreases the opportunity cost of time, making it less costly to undertake health-promoting activities like exercise or cooking. Persistent elevated stress about the increased likelihood of unemployment can also affect the amount and healthfulness of food that people buy and consume.^{41, 42}

However, previous work on recessions and health has neglected to consider the impact on socio-demographic groups who were most impacted by the recession, including the low-SES and minorities. One possibility is that these groups might save money by reverting to cooking from basic ingredients, similar to Russia in 1998. Alternately, households struggling to find and maintain resources in an economically precarious environment might choose to save time and spend money by purchasing more convenience or AFH foods.

Thus, key questions are whether US households have increased home cooking and decreased AFH eating in association with the Great Recession, and whether low-income and racial/ethnic minorities were disproportionately affected. To answer these questions, this study uses nationally representative time use data from the American Time Use Study (ATUS) to examine patterns of food preparation and consumption in both non-recessionary and

recessionary periods, using state-level differences in the employment market to parallel recession effects. First, we look to understand how temporal and recession-related effects are associated with changes in home cooking, as well as whether these effects vary across key demographic groups who were disproportionately affected by changes in the labor market, including the low-income and minorities. We then examine how temporal trends and the recession are associated with patterns of away-from-home eating in order to answer the question of how people choose to maximize the time-cost tradeoff: by cooking more and spending less, or by spending more and cooking less.

II. Methods

Data

The methodological details of the American Time Use Survey (ATUS) have been published previously.⁴³ Briefly, ATUS began in 2003 to develop nationally representative estimates of time use in the US. ATUS includes free-living residents of households in all 50 states and the District of Columbia that are aged 15 or more years, except for active military personnel. From each selected household, one individual is randomly selected to participate in ATUS. Computer-assisted telephone interviews are used to interview respondents about their time use for a 24-hour period including activity and location. Data from 2003 to 2011 for all adults age 18 and older were pooled for this analysis for a final sample of 118,635.

Outcome Measures

Time Spent Cooking—Cooking includes any time spent in food preparation as well as meal-related cleaning. In this sample, cooking participation and the distribution of time spent cooking per day varied significantly between men and women, with 68% of women reporting cooking but only 40% of men cooking. In order to reflect differential gender distributions and capture the inherent differences between not cooking at all, cooking a short time, and cooking extensively, time spent cooking was defined as a 3-level categorical variable with separate cut points for males and females. For men, respondents were designated as not cooking (60%), cooking between 1 and 39 minutes/day (23%) or cooking 40 minutes/day (17%). For women, respondents were designated as not cooking (32%), cooking 1 to 59 minutes (35%), and 60 minutes (33%) (Appendix Table 1).

Away from home (AFH) eating: A respondent was designated as having eaten AFH if he or she reported any time spent eating at a bar or restaurant (including full-service and fast food) anytime during the diary day.

Explanatory Measures

Age—Respondents were assigned into one of four age groups: 18 to 29y, 30 to 44y, 45 to 64y, and 65y and older to reflect progression through early and middle adulthood and retirement age.

Race/ethnicity—Self-reported race/ethnicity was defined as non-Hispanic White, non-Hispanic Black, Hispanic, and non-Hispanic Other.

Education—Education reflects the highest degree the respondent completed and is defined as less than a high school degree, high school degree or GED, some college, bachelor's degree, or graduate degree.

Household Type—Household type reflects the household composition and is defined as living alone, with a spouse, with other non-spousal adult(s), with a child/children (single parent), and with a child/children and other adult(s).

Individual Employment status—Individual employment status was initially defined as not in labor force, unemployed, part-time employment (<35 hours/week at all jobs combined), and full-time employment (>35 hours/week). However, the unemployed accounted for only 6.4 % of the sample and were not significantly different from those not in labor force for any estimates. Subsequently, employment status was re-coded as not in labor force (including the unemployed), part-time, and full-time.

Recessionary period—Time was classified into pre- (2003–2007) and post- (2008–2011) recessionary periods to reflect the beginning of the economic downswing in December 2007.

High Unemployment—Respondent's state of residence and survey year were linked to state-level unemployment rates from the Bureau of Labor Statistics. High unemployment was defined as a binary variable with high unemployment including the top quintile for unemployment rate (≥ 8.2%).

Poverty—Respondents were categorized as “below poverty” if reported family income was less than the weighted average federal poverty threshold for family size for the relevant year as reported by the United States Census Bureau. Multiple imputation (described below) was used to impute low-income.

Statistical analysis—All statistical analyses were performed using STATA, version 12 (Stata Corporation, College Station, Texas).

To account for missing data on household income for 16,282 respondents (13.7%), we imputed low-income (above or below poverty threshold) using multiple imputation (MI) with 5 imputations.⁴⁴ The imputation model included all covariates used in analysis along with additional variables associated with family income, including type of housing, industry and occupation, number of children under 18y, household size, and spouse employment status and education. Because a power correlation revealed that family income was associated with the missingness of income, we conducted a sensitivity analysis comparing the results with and without imputed income and found very little change in magnitude of effect and no reversal of direction for any covariate. Only one covariate, high unemployment for males cooking 0 to 39 min, shifted from non-significance to statistical significance ($p < 0.05$) when the model included imputed income, suggesting these results are generally robust to any bias induced by the non-random structure of missing income data.

Multinomial logistic regression was used to evaluate the association between below poverty, high state-level unemployment, recessionary period, age group, education, race/ethnicity, household structure, and respondent employment status, and time spent cooking and whether the participant ate AFH. All models controlled for whether the diary day was a holiday. A Wald “chunk” test for interaction of gender with all covariates was significant, justifying the stratification of subsequent models by gender. To assess whether the recession differentially affected key socio-demographic groups, interactions between recessionary period and poverty, high unemployment and poverty, and high unemployment and race/ethnicity were tested. Log binomial regression was used to examine the association between aforementioned covariates and the likelihood of AFH eating. Results are presented as average marginal effects to show how distributions of home food preparation and AFH change in relation to the recession and socio-demographic covariates.

The ATUS final probability weight was used to account for distribution of the sample over days of the week and for differential response rates across demographic groups and to adjust the sample to be nationally representative. Replicate weights were not used to calculate standard errors due to the inability to apply successive difference weights to multiple imputation models in STATA. However, a sensitivity analysis conducted without multiple imputation, and with and without the replicate weights showed very little difference in standard errors and did not alter effect sizes or statistical significance for any covariates.

III. Results

Time spent cooking

Descriptive characteristics for the sample population by percent who participated in cooking are presented in Appendix Table 1. Those who cooked are more likely to be female, older, more educated, not in the labor force, and have a household income below the poverty threshold.

For men, being below poverty was not associated with likelihood of cooking. However, there was a significant interaction between recessionary period and income: low-income men increased cooking more than higher income men, with 6% more men below poverty reporting some or extensive cooking in 2008–2011, compared to a 2% increase in some or extensive cooking amongst higher income men (Figure 1)($p < 0.01$). High unemployment rates increased the likelihood of cooking but only slightly, and there were no significant findings in the interactions of high unemployment by income or race/ethnicity (Appendix Table 2).

For women, those below poverty were more likely to cook than higher income women (Appendix Table 2). Women living in areas with high state-level unemployment were more likely to cook for longer than women living in areas with low unemployment, but these shifts were minor: only 2% additional women below poverty reported cooking and 3% additional women above poverty reported cooking compared to women of the same income group living in areas with lower unemployment, and there was no differential effect of state-level unemployment by income status (Figure 2) There was no effect of recessionary period or interaction between recessionary period and income (Appendix Table 2).

Minorities were significantly less likely to cook than white Non-Hispanic males: 58% of non-Hispanic white males reported no cooking compared to 62% non-Hispanic blacks, 66% Hispanics, and 62% non-Hispanic “others” (Figure 3). For women, blacks were significantly less likely to cook than were whites for any amount of time, with 39% percent reporting no cooking at all compared to 32% of non-Hispanic whites, 28% of Hispanics, and 30% of non-Hispanic “others”. Hispanics and “others” were more likely to cook for longer amounts of time, with 42% of Hispanics and non-Hispanic “others” reporting extensive cooking compared to 28% of non-Hispanic whites and 26% of non-Hispanic blacks. There were no significant interactions of race/ethnicity with state-level unemployment (Appendix Table 2).

Away from Home (AFH) eating

Both men and women were much less likely to eat AFH if they were below poverty or older and much more likely to eat out if they were well educated (Appendix Table 3). For men, eating out did not appear to be affected by the recessionary period or high state-level unemployment. For women, high state-level unemployment was associated with a 2% decrease in the likelihood of eating AFH amongst women below poverty, and no change amongst women above poverty, but this interaction was not statistically significant (Figure 4). Similarly, women appeared less likely to eat out in 2008–2011 compared to 2003–2007 ($p < 0.01$), but this effect resulted in only a 2% and 1% decrease in eating AFH for women below and above poverty respectively, and the interaction of recessionary period and income was not statistically significant (Appendix Figure 1). For both men and women, non-Hispanic whites were most likely to eat out, with 21% of males and 19% of White females eating AFH, and non-Hispanic blacks the least likely to eat AFH, with 13% of non-Hispanic males and 10% of non-Hispanic females eating AFH (Appendix Figure 2), but there was no interaction of state unemployment with race/ethnicity (Appendix Table 3).

IV. Discussion

Recession effects

The key finding of this study is that the recession, as measured by state-level unemployment, had little effect on food preparation and AFH consumption patterns of US adults. Although high state level unemployment is linked to a shift towards increased likelihood of cooking for both men and women, this association produced only minor increases in time spent cooking, and virtually no effect on the likelihood of eating AFH.

This lack of an effect is somewhat surprising, considering that global food prices skyrocketed in 2007 and 2008,⁴⁵ and overall food expenditures decreased.⁴⁶ We expected to see consumers moving away from processed items like ready-to-heat and ready-to-eat meals which are typically more expensive (by volume) and less time consuming, to the use of raw, unprocessed ingredients to assemble meals from scratch.

Similarly, US adults did not change AFH eating patterns. These results are consistent with food expenditure data showing that while the recession shifted the relative share of food dollars from away-from-home to at-home foods by approximately 3 to 5%, the decline in

AFH spending represents a switch from higher-end sit-down restaurants to cheaper options like fast food and casual dining restaurants rather than increased home food preparation.⁴⁶

The present findings are consistent with time use studies which show that during economic downturns, people spend more time on leisure and personal care activities like television watching and sleeping compared to relatively small increases in domestic production activities such as cooking.^{47, 48} Stability of unemployment also matters: while fluctuating unemployment rates appear to increase home production, long-term elevated unemployment similar to what the US has experienced during the Great Recession has little effect.⁴⁸ In fact, recent work by Tekin et al found that the link between higher state-level unemployment and improved health and health behaviors has all but disappeared during the Great Recession, suggesting that the counter-cyclical relationship between economic downturns and health has diminished.⁴⁹

Finally, the propensity to cook is influenced by whether a person has the skill or knowledge to do so. The tremendous decline in home cooking that occurred in the late 1900's, coupled with the decline of home economics, precludes the intergenerational transmission of cooking knowledge and skill.⁵⁰ Without personal experience cooking, the current generation of working-age adults who might have increased cooking to save money might not have been able to do so even if they had wanted to.

Income and Race/Ethnicity

Household income below the federal poverty threshold was not associated with increased likelihood of cooking, but for women, being below poverty was associated with a strong and consistent increase in the likelihood of cooking for longer. Education showed a similar effect in women, with more educated women being more likely to cook at all but less educated women being more likely to cook extensively. These results are consistent with what we would expect: low-resource adults in the low-wage job market have lower opportunity costs of time and higher financial incentive to save money by increasing time in non-labor work such as food preparation. Yet, these results also underscore the need for nutrition assistance programs to consider limits on cooking: nearly a third of low-income women reported no cooking at all and additional 37% reported cooking fewer than 60 minutes per day, which translates to roughly 20 minutes or less per meal.

Despite their economic vulnerability, the recession did not disproportionately affect food preparation or consumption patterns in low-income households. This lack of effect could be because the low-income are more likely to be unemployed to begin with, or more likely to work outside of the traditional labor market and therefore less likely to be impacted by increases in overall unemployment. Because the low-income are already operating within a low-wage market, a weaker labor market was less likely to reduce the opportunity cost of time and boost home cooking activities, especially considering that other demands on time remain high or even higher. In addition, social welfare programs such as the Supplementary Nutrition Assistance Program and Women, Infants, and Children can provide a buffer against the effects of economic fluctuation on food-based resources.^{35, 51}

Men who were below poverty increased cooking from 2003–2007 to 2008–2011 more than higher income men. This trend also appears in food expenditures patterns, with low-income groups showing the greatest increase in share of at-home food expenditures during this time period.⁴⁶ These results may reflect the higher proportion of men working in lower-paid, physically-demanding industries like construction and agriculture, which experienced the greatest increases in unemployment during the recession.³⁹

Food preparation and AFH consumption varied significantly by race/ethnicity, but the recession did not appear to affect these patterns. Non-Hispanic black households were less likely to cook and less likely to eat AFH, suggesting high reliance on pre-prepared convenience foods. These results make sense in the context of research showing that predominantly black neighborhoods tend to have fewer supermarkets^{52, 53} and fewer full-service and fast-food restaurants compared to white neighborhoods.⁵⁴ The persistence of these patterns throughout the recession necessitates that programs promoting home cooking consider whether targeted groups have the time availability, skill and food store access to prepare foods from scratch.

Limitations

We did not consider the stability or duration of state-level unemployment rates or community-level unemployment rates, which could have an impact on the degree to which the recession impacted cooking behavior. Our measure of AFH captures only respondents who recorded eating at a restaurant as a primary activity, and thus does not include takeout, delivery, or AFH food eaten while doing something else. Similarly, perceptions of cooking and multitasking limit the precision of the home cooking measure, as those who simply heat up a frozen meal or cook while doing other household activities may not report these activities as cooking, most likely resulting in an inflated number of non-cookers. More importantly, because of the cross-sectional nature of ATUS, we are unable to examine the causal role of the recession on changes in food preparation patterns, nor can we examine how these recessionary effects are linked to changes in diet patterns or health outcomes. Although recent work by Cawley suggests a link between maternal food-related time use and childhood obesity,⁵⁵ longitudinal methods are needed to understand if food preparation patterns are linked to improved diet quality and obesity, and if so, what mechanisms mediate this effect.

Conclusion

Overall, this study shows that the recession, as measured by state-level unemployment and by time period, did not have an overwhelming effect on the cooking patterns or away-from-home food consumption patterns of US adults, nor were low-income groups disproportionately affected. The findings suggest that even during a major economic downturn, US adults are resistant to dietary change and are willing to preserve pre-crisis diets despite rising costs and decreased employment. Although low-income women were more likely to cook than their well-off counterparts, many did not cook at all or cooked for small amounts of time. Black women and minority men were less likely to cook, and these patterns persisted throughout the recessionary period. These findings provide further evidence that nutrition assistance programs promoting home cooking from basic ingredients

must consider whether targeted groups are able to meet these requirements. However, a key question remains as to whether the resistance of households to changing food preparation behaviors is due to time limits, or due to other barriers, such as lack of cooking knowledge and skills,^{56, 57} or access to fresh produce and raw ingredients.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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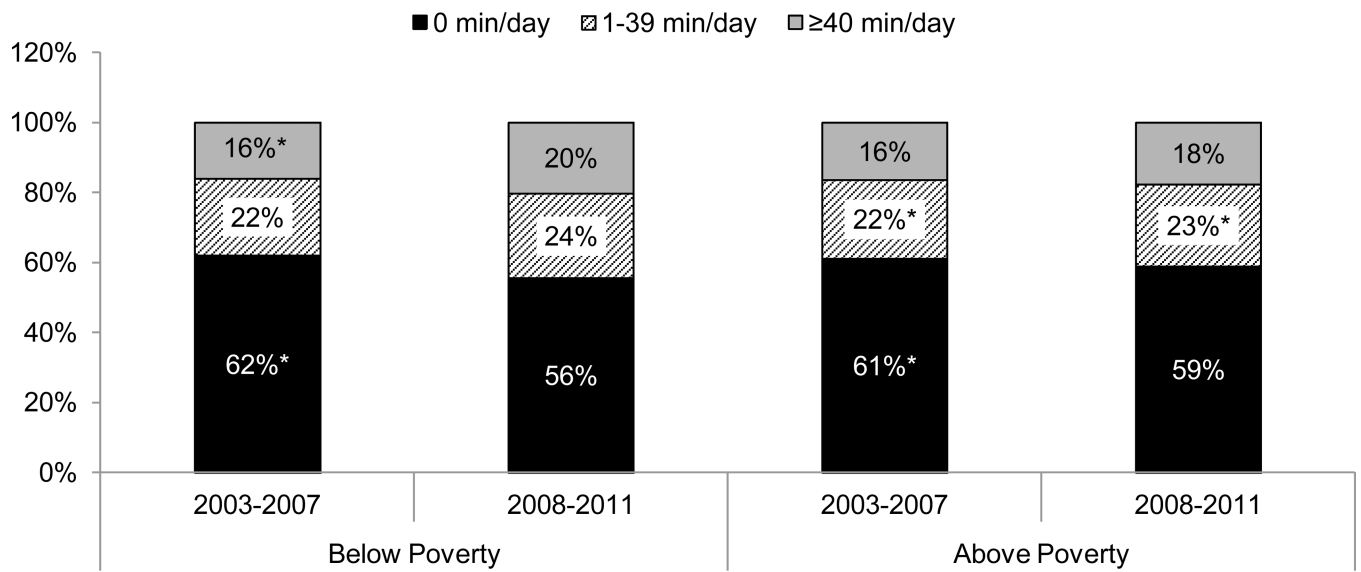


Figure 1.

Predicted probability of cooking by income and recessionary period for US males from 2003 to 2011 in the American Time Use Survey (n=51,139)

Results using multinomial logistic regression weighted to be nationally representative and adjusted for holiday, age, education, race/ethnicity, household type, individual employment status, and state-level unemployment rate.

* Within poverty group, proportion in cooking category is significantly different from 2003–2007 to 2008–2011, $p < 0.01$

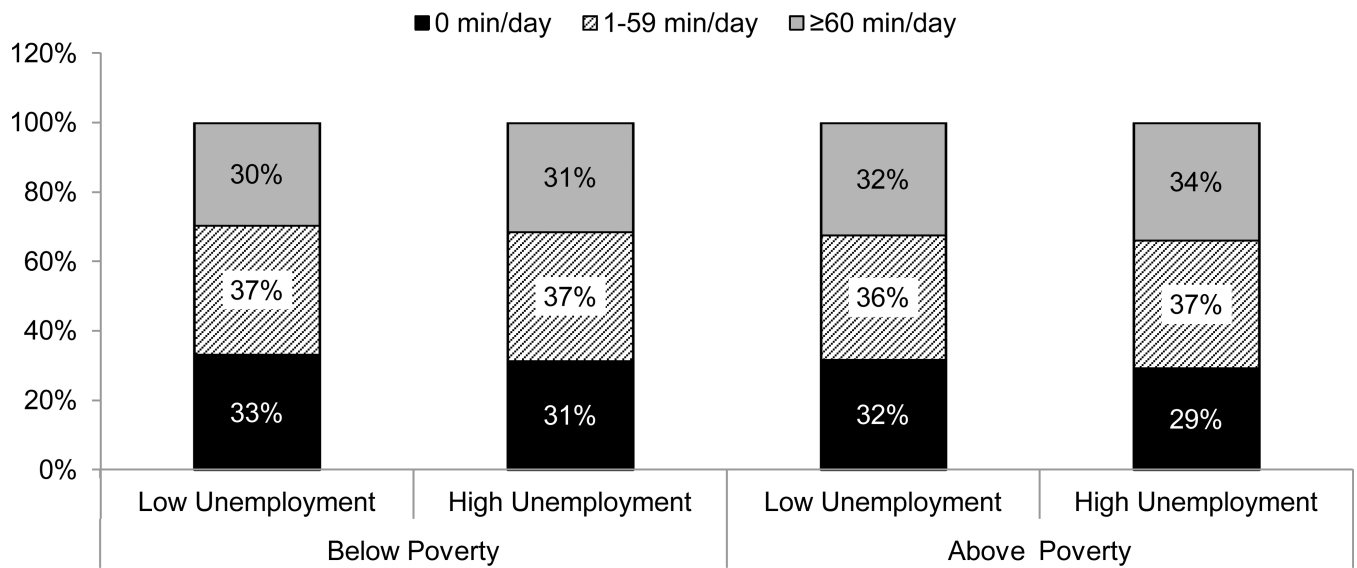


Figure 2.

Predicted probability of cooking by income and state-level unemployment for US females from 2003 to 2011 in the American Time Use Survey (n=67,496)

Results using multinomial logistic regression weighted to be nationally representative and adjusted for holiday, age, education, race/ethnicity, household type, individual employment status, and time period. Within income groups, there were no statistically significant differences in the proportion cooking for any cooking level from low state-level unemployment to high state-level unemployment, $p < 0.01$.

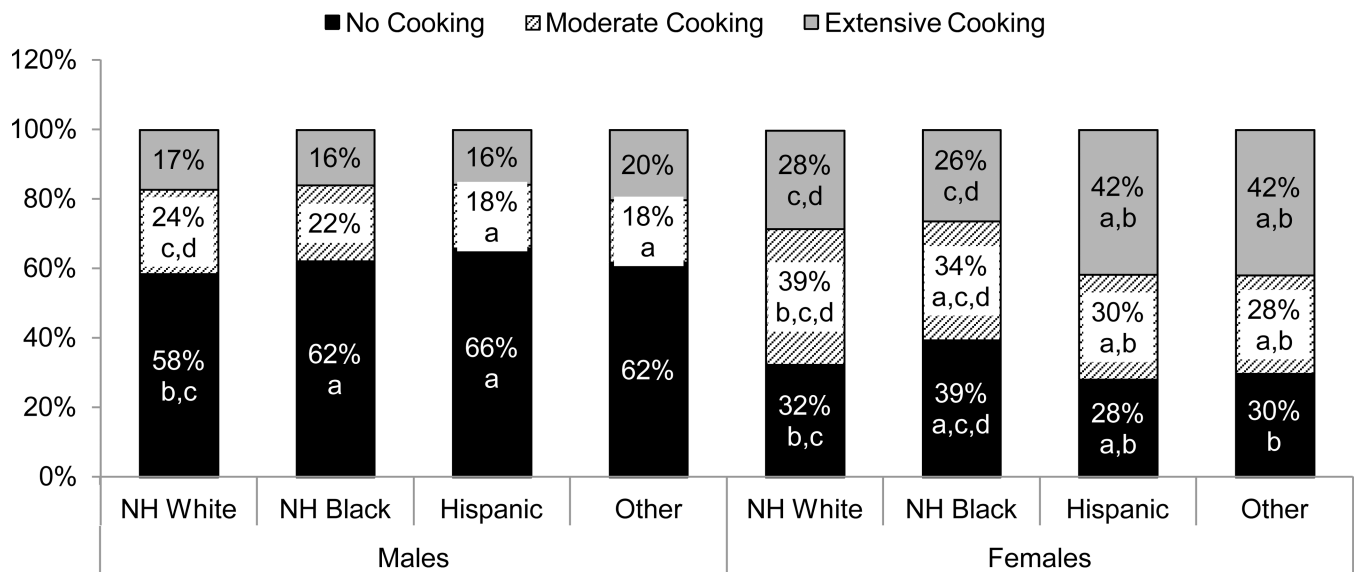


Figure 3.

Predicted probability of cooking by race/ethnicity for US adults from 2003 to 2011 in the American Time Use Survey (N=118,635)

Results using multinomial logistic regression weighted to be nationally representative and adjusted for holiday, age, education, household type, individual employment status, time period, and state-level unemployment rate. No cooking is 0 min/day for men and women, moderate cooking is 0–39 min/day for men and 0–59 min/day for women, and extensive cooking is 40 min/day for men and 60 min/day for women.

^a Within gender, proportion in cooking category is significantly different than Non-Hispanic White, $p < 0.01$

^b Within gender, proportion in cooking category is significantly different than Non-Hispanic Black, $p < 0.01$

^c Within gender, proportion in cooking category is significantly different than Hispanic, $p < 0.01$

^d Within gender, proportion in cooking category is significantly different than Non-Hispanic Other, $p < 0.01$

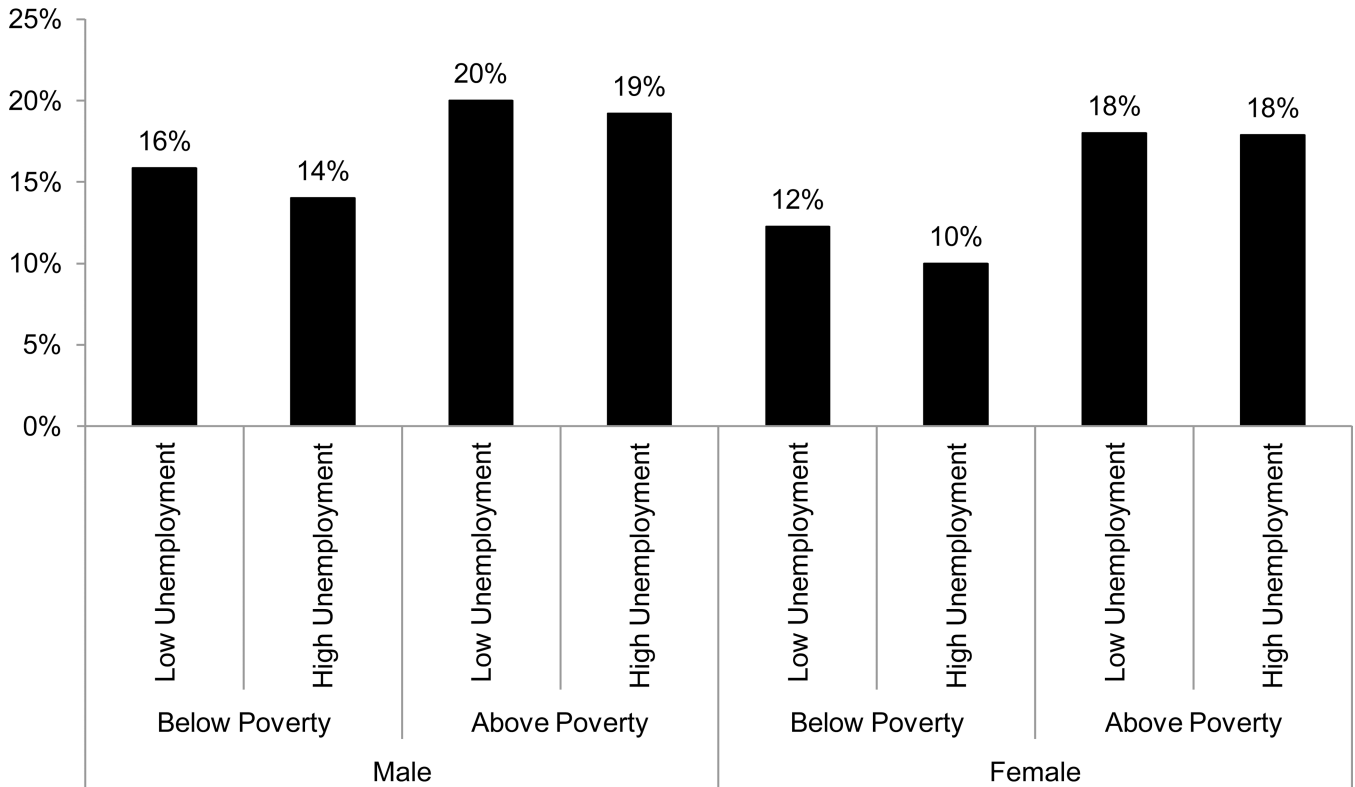


Figure 4.

Predicted probability of eating away from home by state-level unemployment and income for US adults from 2003 to 2011 in the American Time Use Survey (N=118,635)

Results using log binomial regression weighted to be nationally representative and adjusted for holiday, age, education, household type, race/ethnicity, individual employment status, and time period. Within income level, there were no statistically significant differences in the proportion eating away from home from low state-level unemployment to high state-level unemployment, $p < 0.01$