

Leisure Inequality: The Role of Occupational Intensity and Context

Joanna R. Pepin and Liana C. Sayer

Department of Sociology and Maryland Population Research Center

University of Maryland

ABSTRACT

Substantial gaps in knowledge about the mechanisms that link gender and educational attainment with leisure inequalities remain. Using data from the American Time Use Survey, Metabolic Equivalent Values (METs), and O*NET, we investigate influences of a broad array of occupation and work environment measures on time spent in social, active, and passive leisure. Preliminary results indicate employment in a sales/service occupation, compared with professional occupations, is associated with increased sedentary leisure. Natural and transportation occupations, relative to professional, was not associated with leisure differences, despite the pervasive differences in the physical and social-psychological demands and rewards of these jobs. Professional and service occupations are both relatively sedentary, but the emotional labor is higher and autonomy, flexibility, and rewards of many sales & service jobs much lower. These factors may account for the difference in time spent in sedentary leisure, a possibility we explore with the merged O*NET data.

Extended Abstract

Leisure inequalities by education and gender are well documented. Highly educated women and men have less leisure time but devote more of that time to “higher quality” leisure, activities that enhance health and social integration (Sevilla, Gimenez-Nadal and Gershuny 2012). Sociological and economic models of time use emphasize trade-offs between employment and leisure, theorizing that individuals with higher returns to paid work will allocate more time to employment, leaving less available for leisure (Coverman 1983, Kimmel and Connelly 2007). Increased industry competition and job insecurity associated with globalization and downsizing in the goal of nimble efficiency have ratcheted up work hours among more highly educated women and men, exacerbating time constraints and leading to an expanding leisure gap by education (Aguilar and Hurst 2007, Sevilla, Gimenez-Nadal and Gershuny 2012). Time constraints are gendered: women do more housework and child care than men, regardless of employment status, because these activities reinforce gendered identities and affirm cultural gender ideologies (Ferree 2010). Consequently, women have less leisure time than men and more of their leisure is spent with children and fragmented by household and care work tasks (Craig and Mullan 2013, Sayer 2016). The second shift, along with intensive mothering norms that prioritize time with children over discretionary adult-oriented, thus constrain leisure most strongly for employed mothers with preschool age children (Milkie, Raley and Bianchi 2009).

Explanations for gender and education leisure inequalities mostly focus on time and resource constraints, considering the quantity, fragmentation (extent leisure is combined with household and care tasks), and co-presence of spouse or children (Craig and Mullan 2013, Sevilla, Gimenez-Nadal and Gershuny 2012). Fewer studies have examined gender and educational inequalities in specific leisure activities, with most of this literature limited to study of television time. Theoretically, more time in sedentary leisure should result in poor health, but empirical evidence is weak and inconsistent (Pampel, Krueger and Denney 2010). We argue this is due to limitations in the conceptualization of leisure and the narrow emphasis on education as a measure of social class.

We contribute in two ways. First, research that distinguishes types of leisure is needed to advance understanding of the ways gender and social class differentiated leisure patterns may be a mechanism of social and health disadvantage. We disaggregate total time in leisure into time in specific leisure activities that reflect higher or lower quality leisure, indicated by the

opportunities these activities provide for developing cognitive, social and health capabilities (or capital). Leisure historically was conceptualized as a residual category consisting of any time remaining after subtracting the obligatory activities of paid and unpaid work (housework and care), and biologically necessary time sleeping, eating, and grooming. Economists have defined leisure as an activity that provides utility (Juster 1999). Sociologists have defined leisure as an activity that is engaged in primarily for its consumption benefits, rather than its monetary or resource benefits (Bittman and Wajcman 2000). These broad conceptualizations meant researchers aggregated such diverse activities as television, reading, exercise, and socializing, despite the distinct benefits of these activities for cognitive, social, and health capital. For example, reading, like watching television, is sedentary but is also thought to have cognitive and “spillover” benefits that promote healthy behaviors through enhanced reasoning and communication capabilities (Ross and Mirowsky 2013).

Our second contribution is to consider the impact of occupational characteristics, a neglected dimension of social class in the time use literature, on the quantity and quality of leisure. We consider if occupation has direct associations with leisure time and if it mediates associations of gender and education with leisure activities. The public health literature has begun to examine how occupation is associated with leisure, and documents that “blue-collar” workers are in jobs with higher levels of physical activity compared with “white-collar” workers (Church et al. 2011, Ng and Popkin 2012, Tudor-Locke et al. 2011b). The work is limited because it considers only one dimension of occupation, namely energy intensity, and uses relatively broad occupational classifications (e.g. blue collar and white collar) that likely mask salient influences of occupations on leisure activities. We might expect white-collar workers to engage in less sedentary leisure because their jobs are more sedentary compared with blue-collar jobs. Yet, white-collar workers tend to report less sedentary leisure and more positive health outcomes, relative to blue-collar workers. This is thought to come from preferences for particular leisure activities related to class-based socialization processes (Gershuny 2000).

Occupations vary in the extent they are gender and race typed, and levels of physical activity, stress, mental engagement, customer/client interaction, autonomy, flexibility, prestige, and material rewards (Kalleberg 2011). Gender and race occupational segregation link gender and racialized disadvantage with occupational working environments that vary in energy intensity, emotional labor demands, and intellectual and economic rewards (Clawson and Gerstel

2014, Williams, Muller and Kilanski 2012). Occupations thus may offer some insight into role that gendered preferences play in leisure because pathways into occupations are influenced by gender identity development and socialization (Charles and Bradley 2009), in addition to the insights about how the physical and psychological demands and rewards of occupations are linked with leisure quality. Energy expenditure is measured with the Metabolic Equivalent (MET) estimates that reflect physical activity intensity (see description of calculation and range of METs in methods section below). We use the METs but also merge data from O*NET on worker and occupational requirements, skills, and work context.

Use of METs and O*NET will provide a more comprehensive assessment of whether and how occupation influences leisure. For example, using METs alone, the anticipated association between more physically demanding occupations, like steel workers on construction sites and oil refinery roustabouts is for more time in sedentary leisure. However, steel workers may be more likely to belong to a union, be higher up in the construction hierarchy, and have more job stability, pay, and autonomy, and regular work hours, compared with oil refinery roustabouts (unskilled laborers responsible for digging trenches and cleaning sites and equipment). Both occupations have similar METs scores but the nature of their skills and work environments exposes them to disparate time, resource, and social network constraints on leisure.

Occupations are linked with the development of "lifestyles" because the work environment reinforces individual-level values and goals and provides opportunities to develop social relationships with coworkers (Kohn 1981, Kohn and Schooler 1982). Lifestyles are partly expressed through leisure pursuits (Cockerham 2005) that we anticipate our combination of METs and O*NET occupational measures will tap. Specifically, we anticipate that more physically taxing occupations that are more materially and social-psychologically rewarding will be associated with less time in sedentary, at home leisure activities, like television, because workers in these occupations will experience fewer resource and time constraints and higher exposure to social networks. How occupations that are simultaneously more sedentary, autonomous, long work hours and high material and social-psychological rewards (software engineer, professor) is less clear. Time constraints may produce positive associations with leisure activities that can be done at home when convenient (e.g. television) but traits associated with selection into these types of occupations (future-orientation, self-control, and self-efficacy) and social networks may lead to less time in sedentary activities. We also anticipate that occupations

that are physically and psychologically demanding, and characterized by nonstandard working hours, such as many health care occupations like nursing, will be associated with more time in sedentary leisure, because individuals in these occupations might welcome leisure that imposes no demands on them and also does not require schedule coordination. Last we anticipate that occupations that expose workers to stress and micro-aggressions (e.g. from potentially discriminatory encounters or contexts) such as many mid- and entry-level services jobs will be associated with more time in at-home sedentary leisure.

Data and Measures. We use data from the 2011-2016 American Time Use Survey (ATUS), <http://www.atusdata.org>, (Hofferth; Flood; and Sobek 2015) to investigate how occupations influence the quantity and quality of leisure time and if occupation mediates or moderates gender and education influences on leisure quantity and quality. The ATUS is conducted by the Bureau of Labor Statistics as the outgoing rotation of the Current Population Survey. ATUS respondents are noninstitutionalized Americans ages 15 and over. Response rates range from 52 to 58 percent over the 2003-2016 period of (ongoing) data collection (Bureau of Labor 2015). Our sample consists of 5,082 mothers and fathers ages 18 to 54 with co-residential children under age 13 who are employed and who report working at least six hours on the diary day. All analyses are weighted to adjust for the complex survey design and post-stratification. In preliminary analyses presented here, we estimate associations of occupation categories and METs values with type of leisure activity, net of gender, education (<High School, High School, Some College, College Degree), childcare and housework time (reflecting time availability constraints), marital status (married, never married, cohabiting, divorced), extended family in household, number and age of children (reflecting housework and child care demand and supply), age, and race-ethnicity (coded non-Hispanic Black, Hispanic, and non-Hispanic White). Sample characteristics are shown in Table 1.

Leisure Measures. We analyze three mutually exclusive types of daily leisure, all measured in minutes per day. These include passive leisure (television, listening to music, using the computer, relaxing); social leisure (out of home entertainment events, socializing with others), and active leisure (exercise, sports, and physically active recreation). We exclude time in telephone calls and travel activities because of the ambiguous purpose and meaning of these activities (e.g. they may reflect a mix of social, care work, or household logistics).

Occupation. ATUS' provides six main occupation categories which we combine to construct a three-category measure of occupation that loosely approximates working conditions, time and resource constraints, and social opportunities: professional and managerial, sales and service, and natural/transportation workers. We combine service and sales/office occupations and farming, construction, and production/transportation categories resulting in three categories: Management/Professional; Service/Sales; and Natural/Transportation.

We use the assigned summary metabolic equivalent (MET) codes to categorize occupations into sedentary, light, and moderate energy expenditure occupations. No occupations are coded as vigorous when the summary measures are used (see discussion in Tudor-Locke et al. 2011); we will make use of the detailed METs in the next set of analyses. A MET represents the ratio of an activity metabolic rate to sitting or resting metabolic rate. One MET is equal to the Resting Metabolic Rate. The Tecumseh Occupational Physical Activity Questionnaire classification system assigns MET levels based on body position (sit, stand, walk, heavy labor) and activity intensity (light, moderate, vigorous) (Tudor-Locke et. al. 2011a). Following Tudor-Locke and colleagues (2011), we use the summary MET value for 22 occupations, which provides a more conservative representation of occupational energy expenditure. Light intensity occupations have METs values of less than 3, moderate intensity occupations have METs values between 3 and 6 and vigorous intensity occupations have METs values 6 to 8. Examples of low intensity occupations are human resource personnel and supervisors of workers; medium intensity occupations include food servers and licensed vocational nurses; and examples of high intensity occupations include firefighters and freight loaders (Tudor-Locke et al. 2011a).

Table 1 shows minutes per day in all leisure and in social, active, and passive leisure. Fathers report more total and passive leisure than mothers: 2h 20m of total, of which 1h 40m is passive leisure, compared with 1h 53m of total (1h 16m of passive) leisure for mothers. Levels of social and active leisure are not significantly different for fathers and mothers, both report about 21m of social and about one-quarter of an hour of active leisure.

Distributions of the occupational categorical measure and the METs are shown in Tables 1 and 2. The average occupation METs is 2.5 for fathers and 2.2 for mothers, reflecting the higher proportion of men in more active skilled and semi-skilled manual occupations. Table 2 indicates that more advantaged fathers and mothers (married, college educated, and white) are employed in occupations with lower METs values (light intensity) compared with less

advantaged mothers and fathers. This suggests that METs associations with leisure time may reflect both energy intensity of time on the job and selection factors associated with family SES, pathways into college, and “good” jobs.

In multivariate OLS models estimated separately for fathers and mothers, we assess influences of our three category occupational measure (Table 3) and the occupation METs value (Table 4) with social, active, and sedentary leisure. Occupation has no association with time in social and active leisure for fathers and mothers, but does influence passive leisure (see Table 3). For both fathers and mothers, employment in a sales/service occupation compared with those in professional occupations, increases sedentary leisure by about 15 daily minutes, or about 1h 45m per week. Professional and sales and service occupations are both relatively sedentary, but the emotional labor higher and autonomy, flexibility, and rewards of many sales & service jobs much lower. These factors may account for the difference, a possibility we will explore with the merged O*NET data. Natural and transportation occupations, relative to professional, do not influence social, active, or passive leisure, despite the pervasive differences in the physical and social-psychological demands and rewards of these jobs.

Table 4 estimates fathers’ and mothers’ daily minutes in social, active, and passive leisure, substituting the occupation METs value for the three category measure. Results are similar to those in the public health literature: fathers with occupations having a higher METs value (meaning a more physically demanding job) report less active leisure, on the order of about 2 minutes less per day. Levels of active leisure are depressed by the large number of zeros because active leisure is reported by few respondents. This may account for part of the modest influence, but we also believe the lack of explanatory power is due to the incomplete conceptualization of occupation.

Our preliminary results suggest exploring associations of occupation with leisure activities will contribute to the evidence base on gender and social class disparities in the quantity and quality of leisure. Results suggest that leisure activities may be one pathway through which social disadvantage is linked with negative mental and physical health outcomes. In our next set of analyses, we will include a broader array of occupational measures culled from the O*NET data merged to the detailed occupational classification in the ATUS. O*NET data include numerous occupation-specific measures of the qualifications, skills, and abilities of workers, occupation-specific tasks, use of tools and technology, physical and social-

psychological aspects of the work environment, work activities, labor market and occupational outlook factors, and the organizational context (variety, autonomy, job stability, recruitment and promotion, compensation levels and benefits, role conflict & overload, and organizational culture and values) <https://www.onetcenter.org/>. The measures reflect time and resource constraints (e.g. schedule flexibility, autonomy, compensation, task intensity) and exposure to physically and social-psychological demanding environments that likely influence leisure activities.

REFERENCES

- Aguiar, Mark and Erik Hurst. 2007. "Measuring Trends in Leisure: The Allocation of Time over Five Decades*." *Quarterly Journal of Economics* 122(3):969-1006.
- Bureau of Labor, Statistics. 2015. "American Time Use Survey User's Guide." Vol. Washington D.C.: U.S. Census Bureau.
- Charles, M. and K. Bradley. 2009. "Indulging Our Gendered Selves? Sex Segregation by Field of Study in 44 Countries." *American Journal of Sociology* 114(4):924-76.
- Church, Timothy S., Diana M. Thomas, Catrine Tudor-Locke, Peter T. Katzmarzyk, Conrad P. Earnest, Ruben Q. Rodarte, Corby K. Martin, Steven N. Blair and Claude Bouchard. 2011. "Trends over 5 Decades in U.S. Occupation-Related Physical Activity and Their Associations with Obesity." *PLOS ONE* 6(5):e19657. doi: 10.1371/journal.pone.0019657.
- Clawson, Dan and Naomi Gerstel. 2014. *Unequal Time: Gender, Class, and Family in Employment Schedules*: Russell Sage Foundation.
- Cockerham, William C. 2005. "Health Lifestyle Theory and the Convergence of Agency and Structure." *Journal of Health and Social Behavior* 46(1):51-67.
- Coverman, Shelley. 1983. "Gender, Domestic Labor Time, and Wage Inequality." *American Sociological Review* 48:623-37.
- Craig, Lyn and Killian Mullan. 2013. "Parental Leisure Time: A Gender Comparison in Five Countries." *Social Politics: International Studies in Gender, State & Society*.
- Ferree, Myra Marx. 2010. "Filling the Glass: Gender Perspectives on Families." *Journal of Marriage and Family* 72(3):420-39.
- Gershuny, Jonathan. 2000. *Changing Times: Work and Leisure in Postindustrial Society*. Oxford: Oxford University Press.
- Hofferth, Sandra L., Sarah M. Flood; and Matthew Sobek. 2015. "American Time Use Survey Data Extract Builder: Version 2.5 [Dataset]." edited by U. S. C. B. Bureau of Labor Statistics. College Park, MD: University of Maryland and Minneapolis, MN: University of Minnesota.
- Kalleberg, Arne L. 2011. *Good Jobs, Bad Jobs: The Rise of Polarized and Precarious Employment Systems in the United States, 1970s-2000s*: Russell Sage Foundation.

- Kimmel, Jean and Rachel Connelly. 2007. "Mothers' Time Choices: Caregiving, Leisure, Home Production, and Paid Work." *Journal of Human Resources* XLII(3):643-81. doi: 10.3368/jhr.XLII.3.643.
- Kohn, M. L. 1981. "Personality, Occupation, and Social Stratification." Pp. 267-97 in *Research in Social Stratification and Mobility*, Vol. vol. 1, edited by D. J. Treiman and R. V. Robinson. Greenwich, CT: JAI.
- Kohn, Melvin L. and Carmi Schooler. 1982. "Job Conditions and Personality: A Longitudinal Assessment of Their Reciprocal Effects." *The American Journal of Sociology* 87(6):1257-86.
- Milkie, Melissa A., Sara B. Raley and Suzanne M. Bianchi. 2009. "Taking on the Second Shift: Time Allocations and Time Pressures of U.S. Parents with Preschoolers." *Social Forces* 88(2):487-517.
- Ng, S. W. and B. M. Popkin. 2012. "Time Use and Physical Activity: A Shift Away from Movement across the Globe." *Obesity Reviews* 13(8):659-80. doi: 10.1111/j.1467-789X.2011.00982.x.
- Pampel, Fred C., Patrick M. Krueger and Justin T. Denney. 2010. "Socioeconomic Disparities in Health Behaviors." *Annual Review of Sociology* 36(1):349-70. doi: 10.1146/annurev.soc.012809.102529.
- Ross, Catherine E and John Mirowsky. 2013. "The Sense of Personal Control: Social Structural Causes and Emotional Consequences." Pp. 379-402 in *Handbook of the Sociology of Mental Health, Handbooks of Sociology and Social Research*, edited by C. Aneshensel, J. Phelan and A. Bierman: Springer Netherlands.
- Sayer, Liana C. 2016. "Trends in Women's and Men's Time Use, 1965-2012: Back to the Future?." in *Gender and Couple Relationships, Pennsylvania State University National Symposium on Family Issues 2014*, edited by S. M. McHale, V. King, J. van Hook and A. Booth. New York: Springer.
- Sevilla, Almudena, Jose Gimenez-Nadal and Jonathan Gershuny. 2012. "Leisure Inequality in the United States: 1965-2003." *Demography* 49(3):939-64.
- Tudor-Locke, Catrine, Barbara E. Ainsworth, Tracy L. Washington and Richard Troiano. 2011a. "Assigning Metabolic Equivalent Values to the 2002 Census Occupational Classification System." *Journal of Physical Activity and Health* 8(4):581-86. doi: 10.1123/jpah.8.4.581.
- Tudor-Locke, Catrine, Claudia Leonardi, William D. Johnson and Peter T. Katzmarzyk. 2011b. "Time Spent in Physical Activity and Sedentary Behaviors on the Working Day: The American Time Use Survey." *Journal of Occupational and Environmental Medicine* 53(12):1382-87. doi: 10.1097/JOM.0b013e31823c1402.
- Williams, Christine L., Chandra Muller and Kristine Kilanski. 2012. "Gendered Organizations in the New Economy." *Gender & Society* 26(4):549-73.

Table 1. Means and Standard Errors of All Variables

Variable	All		Fathers		Mothers	
	100%		64%		36%	
	M	SE	M	SE	M	SE
Leisure (all)	130	(1.62)	139	(2.01)	113	(2.31)
Social Leisure	21	(0.78)	21	(0.90)	20	(1.31)
Active Leisure	18	(0.63)	18	(0.84)	16	(0.93)
Passive Leisure	91	(1.51)	100	(1.98)	76	(1.78)
Childcare	57	(1.03)	48	(1.34)	72	(1.64)
Housework	51	(0.99)	40	(1.22)	71	(1.84)
Occupation						
Professional & Managerial	0.44		0.41		0.51	
Sales & Service	0.31		0.25		0.43	
Natural & Transportation	0.24		0.35		0.07	
Occupation METS (Energy Expenditure)	2.36	(0.01)	2.47	(0.02)	2.16	(0.01)
Marital Status						
Married	0.83		0.91		0.68	(0.01)
Never Married	0.06		0.02		0.14	(0.01)
Cohabiting	0.05		0.05		0.06	(0.01)
Divorced/Separated	0.06		0.03		0.13	(0.01)
Household characteristics						
Extra Adult Family Member	0.15	(0.01)	0.13	(0.01)	0.19	(0.01)
Number of Children	2.11	(0.02)	2.20	(0.02)	1.94	(0.03)
Presence of Child Under 2	0.23	(0.01)	0.25	(0.01)	0.18	(0.01)
Presence of Child 2-5 yrs old	0.43	(0.01)	0.45	(0.01)	0.41	(0.01)
Education						
Less Than High School	0.09		0.11		0.05	(0.01)
High School	0.25		0.27		0.22	(0.01)
Some College	0.24		0.23		0.26	(0.01)
BA or More	0.41		0.39		0.46	(0.01)
Race						
Black	0.10		0.07		0.14	(0.01)
Hispanic	0.22		0.23		0.21	(0.01)
White	0.68		0.70		0.65	(0.01)
Age	37.04	0.13	37.74	(0.15)	35.79	(0.19)
N = 5,082						

Notes: Data from ATUS 2011 – 2016; Analytic sample comprised of mothers and fathers ages 18 to 54 with co-residential children under age 13 who worked at least 6hrs on the diary day; We use person-level and replicate weights;

Table 2. Average Occupation Mets Value by Gender and Key Demographic Characteristics

	All		Fathers		Mothers	
Marital Status						
Married	2.29	(0.71)	2.38	(0.80)	2.10	(0.41)
Never Married	2.38	(0.60)	2.73	(0.79)	2.32	(0.55)
Cohabiting	2.47	(0.70)	2.67	(0.78)	2.22	(0.50)
Divorced/Separated	2.24	(0.58)	2.42	(0.76)	2.17	(0.48)
Education						
Less Than High School	3.07	(0.80)	3.21	(0.82)	2.73	(0.64)
High School	2.30	(0.69)	2.80	(0.85)	2.29	(0.53)
Some College	2.36	(0.68)	2.51	(0.78)	2.15	(0.45)
BA or More	2.02	(0.44)	2.00	(0.50)	2.05	(0.36)
Race						
Black	2.30	(0.57)	2.38	(0.64)	2.24	(0.51)
Hispanic	2.66	(0.82)	2.87	(0.87)	2.35	(0.60)
White	2.22	(0.65)	2.30	(0.75)	2.09	(0.39)

Table 3. Mothers' and Fathers' Leisure with Occupation Categorical Measure

	Social		Active		Sedentary	
	Fathers	Mothers	Fathers	Mothers	Fathers	Mothers
Occupations (Professional is reference)						
Sales/Services	0.46 (3.26)	1.45 (2.67)	-1.70 (1.98)	-0.23 (2.69)	10.61 * (5.15)	14.50 ** (4.44)
Natural/Transportation	-3.55 (3.50)	-1.44 (5.41)	-4.52 (2.40)	-2.53 (3.01)	9.37 (5.53)	8.26 (8.72)
Childcare	-0.08 *** (0.01)	-0.10 *** (0.02)	-0.02 (0.01)	-0.00 (0.01)	-0.12 *** (0.02)	-0.21 *** (0.03)
Housework	-0.06 *** (0.01)	-0.09 *** (0.02)	-0.02 (0.01)	-0.02 (0.01)	-0.13 *** (0.03)	-0.12 *** (0.03)
Marital Status (married is reference)						
Never Married	5.83 (12.86)	-4.98 (4.56)	-2.82 (5.98)	-4.26 (2.36)	2.71 (12.49)	7.26 (6.60)
Cohabiting	-3.72 (3.72)	-3.94 (4.04)	-6.33 * (2.71)	-0.90 (3.45)	16.22 (9.43)	12.54 (9.03)
Divorced/Separated	-2.27 (3.86)	-2.81 (4.21)	-0.61 (4.59)	-5.69 * (2.23)	-7.46 (8.13)	-9.54 (6.00)
Education (BA or more reference)						
< H. School	-8.56 (6.71)	8.36 (9.85)	-12.46 *** (2.95)	-10.76 ** (3.62)	20.41 * (9.75)	19.27 (11.84)
High School	-6.78 * (3.40)	4.16 (3.88)	-6.37 ** (2.42)	-6.86 * (2.96)	13.95 * (5.71)	19.90 *** (5.75)
Some College	-5.23 (3.10)	1.05 (2.53)	-3.94 (2.32)	-3.29 (2.95)	14.98 ** (5.34)	5.17 (4.50)
Race/Ethnicity (White is reference)						
Black	-3.42 (4.93)	-6.01 (4.16)	-5.79 * (2.73)	-6.02 * (2.54)	23.16 * (10.28)	12.01 (6.77)
Hispanic	-3.04 (3.52)	-4.64 (4.16)	-5.48 * (2.35)	-4.45 * (2.20)	2.99 (5.39)	-10.24 (5.35)
Family Characteristics						
Extended Family	-3.73 (3.76)	-0.23 (3.86)	0.39 (3.04)	-1.63 (2.70)	-12.60 (6.61)	-8.07 (6.00)
Number of Children	2.00 (1.40)	0.58 (1.26)	-0.37 (0.85)	0.66 (0.95)	-5.14 ** (1.99)	0.80 (2.36)
Child Under 2	2.34 (2.29)	-1.00 (4.04)	-4.19 (2.22)	-12.52 *** (2.21)	-7.19 (5.14)	1.42 (5.23)
Child 2-5 yrs old	1.09 (2.27)	3.38 (3.00)	0.43 (1.91)	-6.13 ** (2.03)	-7.10 (4.05)	-0.00 (4.09)
Age	-0.13 (0.15)	0.18 (0.20)	-0.17 (0.14)	0.07 (0.16)	0.30 (0.34)	0.83 * (0.36)
Intercept	33.61 *** (6.93)	25.67 ** (9.81)	36.36 *** (5.89)	26.03 *** (6.57)	98.96 *** (15.61)	57.23 *** (15.59)
N	3,017	2,065	3,017	2,065	3,017	2,065
R2	0.03	0.03	0.03	0.05	0.05	0.09

Standard errors in parentheses * p < .05; ** p < .01; *** p < .001;

Notes: Data from ATUS 2011 – 2016; Analytic sample comprised of mothers and fathers ages 18 to 54 with co-residential children under age 13 who worked at least 6hrs on the diary day; We use person-level and replicate weights;

Table 4. Mothers' and Fathers' Leisure with Occupation Energy Expenditure

	Social		Active		Sedentary	
	Fathers	Mothers	Fathers	Mothers	Fathers	Mothers
Occupation METs	-1.19 (1.67)	-3.30 (3.02)	-2.13 * (1.01)	-1.91 (1.61)	2.51 (2.43)	-2.51 (4.84)
Childcare	-0.08 *** (0.01)	-0.10 *** (0.02)	-0.02 (0.01)	0.00 (0.01)	-0.13 *** (0.02)	-0.21 *** (0.03)
Housework	-0.06 *** (0.01)	-0.09 *** (0.01)	-0.02 (0.01)	-0.02 (0.01)	-0.13 *** (0.03)	-0.12 *** (0.03)
Marital Status (married is reference)						
Never Married	5.51 (12.96)	-4.61 (4.55)	-3.13 (6.04)	-4.17 (2.41)	3.04 (12.53)	8.80 (6.60)
Cohabiting	-3.80 (3.68)	-3.75 (4.07)	-6.50 * (2.73)	-0.94 (3.54)	16.70 (9.41)	14.01 (9.18)
Divorced/Separated	-2.47 (3.88)	-2.77 (4.17)	-0.85 (4.54)	-5.79 * (2.27)	-7.00 (8.15)	-8.72 (6.07)
Education (BA or more reference)						
< H. School	-9.19 (6.43)	10.51 (10.31)	-12.71 *** (2.88)	-10.24 ** (3.25)	23.37 * (9.36)	28.10 * (11.59)
High School	-7.59 ** (2.91)	5.15 (3.65)	-7.05 ** (2.69)	-6.91 ** (2.35)	17.09 ** (5.42)	26.99 *** (5.51)
Some College	-5.68 * (2.62)	1.70 (2.61)	-4.55 * (2.20)	-3.34 (2.40)	18.12 *** (4.73)	10.74 * (4.40)
Race/Ethnicity (White is reference)						
Black	-3.43 (4.97)	-5.59 (4.13)	-5.91 * (2.75)	-5.82 * (2.53)	23.90 * (10.51)	12.69 (6.83)
Hispanic	-2.96 (3.51)	-4.18 (4.07)	-5.33 * (2.30)	-4.32 * (2.19)	3.37 (5.42)	-8.59 (5.39)
Family Characteristics						
Extended Family	-3.66 (3.76)	-0.16 (3.83)	0.39 (3.06)	-1.64 (2.68)	-12.27 (6.70)	-7.44 (5.92)
Number of Children	1.97 (1.42)	0.67 (1.27)	-0.35 (0.85)	0.71 (0.93)	-5.35 ** (2.00)	0.94 (2.38)
Child Under 2	2.36 (2.30)	-1.02 (4.03)	-4.19 (2.20)	-12.50 *** (2.22)	-7.14 (5.13)	1.06 (5.28)
Child 2-5 yrs old	1.09 (2.27)	3.32 (2.95)	0.44 (1.91)	-6.16 ** (2.04)	-7.23 (4.03)	-0.40 (4.07)
Age	-0.13 (0.15)	0.16 (0.20)	-0.17 (0.14)	0.06 (0.15)	0.29 (0.34)	0.73 * (0.36)
Intercept	35.90 *** (7.07)	32.91 ** (11.22)	40.03 *** (6.29)	29.85 *** (6.79)	97.74 *** (16.55)	68.17 *** (18.00)
N	3,017	2,065	3,017	2,065	3,017	2,065
R2	0.03	0.04	0.03	0.05	0.05	0.09

Standard errors in parentheses * p < .05; ** p < .01; *** p < .001;

Notes: Data from ATUS 2011 – 2016; Analytic sample comprised of mothers and fathers ages 18 to 54 with co-residential children under age 13 who worked at least 6hrs on the diary day; We use person-level and replicate weights;

Appendix Table A. Occupation Codes and MET Values Assigned

Activity	ATUS Codes	Occupation Categories	Summary MET Values
Occupations			
1 Management	0010 - 0430	Managerial	1.73
2 Business and financial operations	0500 - 0950	Managerial	1.67
3 Computer and mathematical	1000 - 1240	Managerial	1.58
4 Architecture and engineering	1300 - 1560	Managerial	1.64
5 Life, physical, and social science	1600 - 1960	Managerial	2.00
6 Community and social services	2000 - 2060	Managerial	2.08
7 Legal	2100 - 2150	Managerial	1.50
8 Education, training, and library	2200 - 2550	Managerial	2.50
9 Arts, design, entertainment, sports, media	2600 - 2960	Managerial	2.13
10 Healthcare practitioner and technical	3000 - 3540	Managerial	2.22
11 Healthcare support	3600 - 3650	Sales/Service	2.83
12 Protective service	3700 - 3950	Sales/Service	2.56
13 Food preparation and serving related	4000 - 4160	Sales/Service	2.58
14 Building and grounds cleaning and maintenance	4200 - 4250	Sales/Service	3.58
15 Personal care and service	4300 - 4650	Sales/Service	2.53
16 Sales and related occupations	4700 - 4960	Sales/Service	2.00
17 Office and administrative support	5000 - 5930	Sales/Service	1.83
18 Farming, fishing, and forestry	6000 - 6130	Natural/Trans.	3.67
19 Construction and extraction	6200 - 6940	Natural/Trans.	4.29
20 Installation, maintenance, and repair	7000 - 7620	Natural/Trans.	3.19
21 Production	7700 - 8960	Natural/Trans.	2.69
22 Transportation and material moving	9000 - 9750	Natural/Trans.	2.67

Source: <https://epi.grants.cancer.gov/atus-met/met.php>