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The Role of Physical Job Demands and the Physical Work Environment in Retirement Outcomes

Abstract

We provide new evidence on the role of physical job demands and the physical work environment on retirement outcomes by linking occupation-level data on job requirements from the Occupational Requirements Survey (ORS) to individual-level data from the Health and Retirement Study (HRS). Using alternative strategies to address missing data, and after examining the concurrent validity of ORS job requirements with analogous measures from the Occupational Information Network (O*NET), we create a composite index of physical job demands comprising strenuous physical activities (e.g., lifting and strength) and a composite index of physical work environment comprising hazardous or taxing environmental conditions (e.g. noise, heat). We use these validated indices to estimate associations between job demands and retirement outcomes controlling for observed individual and household characteristics. We find that a one standard deviation increase in our index of physical jobs demands is associated with a 10 percentage point increase in the probability of being retired at any age and a 1.8 percentage point increase in the probability of transitioning into full retirement from full-time work. The same size increase in our physical work environment index is associated with a 7 percentage point increase in the probability of being retired, but it does not provide additional explanatory variation for transitions into retirement. These effects are almost entirely concentrated in men, who hold jobs that are significantly more physically demanding than women's, and they are also larger among older and less-educated workers.

Citation

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1. Introduction

Dramatic changes in life expectancy in recent decades, coupled with only small changes in the eligibility age for claiming retirement benefits, have tended to increase the proportion of an individual's life spent in retirement. This phenomenon has slowed labor force growth (Maestas, Mullen, and Powell 2016) and presents challenges to the financial sustainability of Social Security and other public programs (Gruber and Wise 2004). One potential policy response is to encourage older individuals to work longer, for example by raising the eligibility age for claiming Social Security retirement benefits. However, increasing the incentives to delay retirement does not automatically translate into all older individuals being able to work longer even if they are willing. The effectiveness of such policies will ultimately depend on factors such as the individual's health and the nature of job demands at work, particularly physical job demands as the age-decline in functional physical abilities of workers accelerates starting in the mid-40s (Lopez Garcia, Maestas, and Mullen 2019). Understanding how physical job demands and the physical work environment influence the decision to retire is therefore important for the design of policies and workplaces encouraging longer working lives.

In this paper, we examine the association between physical job demands (e.g., lifting, stooping, crouching) and the physical work environment (e.g., exposure to heat, cold, humidity, noise) with retirement status and retirement transitions, as well as how these associations vary by gender, age, and education, among individuals near retirement in the United States. Using rich information on job demands from the Occupational Requirements Survey (ORS), we first study the structure and properties of ORS data and implement robust strategies to address missing data on job traits across occupations coded at the four-digit census code level. We then compare measures of physical job demands and the physical work environment with similar metrics from the Occupational Information Network (O*NET) to identify the job traits that exhibit good statistical properties and concurrent validity. Using validated job requirements only, we construct indices of physical job demands and physical work environment by examining correlations across individual job requirements, and we merge them with restricted, individual-level data from the Health and Retirement Study (HRS) using census occupation codes at the four-digit level. Finally, we estimate regression models exploring how physical job demands and the physical work environment predict retirement status and transitions, and study heterogeneous associations between job demands and retirement by gender, age, and education.

Poor health is the most commonly cited reason for early retirement (van Rijn et al. 2014). A large body of studies, many of them using the HRS, have found that physical health plays a large role in the timing of retirement (Solem et al. 2016; Reeuwijk et al. 2017; Blundell et al. 2020; French 2005; McGarry 2004; McGonagle et al. 2015) especially in early and unplanned labor force exit (Dwyer and Mitchell 1999), as well as in perceptions of forced retirement (Szinovacz and Davey 2005). Whether and how poor health limits work greatly depends on the interaction between physical functional abilities and occupational demands (Lopez Garcia et al. 2019). Given the role of physical health on the timing of retirement, it is important to understand how physical job demands and the physical work environment directly influence retirement decisions. The push/pull model of retirement (Shultz et al. suggest that some workers are pushed into retirement due to declining health, and/or inability to maintain performance requirements, while others are pulled toward retirement by their increased desire for leisure or family caregiving responsibilities. According to this model, job conditions are related to pushes into retirement transitions (Fisher et al. 2016).

The existing research documenting the role of job demands on retirement decisions in the United States has largely relied either on subjective assessments of job demands from household surveys or on merged occupation-level data from O*NET, and results from these studies are mixed and even contradictory. For example, Angrisani et al. (2013) and Aaron and Callan (2011), both using subjective data from the HRS, find conflicting results about the role of physical strain at work on retirement timing. Among studies using objective measures of job demands from O*NET, Mcfall et al. (2015) find that subjective measures from the HRS are more predictive of transitions into retirement than a selection of O*NET physical and cognitive items that are likely to decline with age, while Angrisani et al. (2016) find the opposite using indices that include a larger set of O*NET items. Moreover, while O*NET has become the most popular data source to study job attributes in recent years, Handel (2016) points out several weaknesses with the O*NET data, including the nature of survey respondents (job incumbents for which there is no background information versus job analysts), significant gaps and duplication in content, overly complex and vague underlying constructs, as well as the fact that O*NET focuses more on abilities than functional limitations to perform jobs. In this paper, we examine how physical job demands and the physical work environment affect working longer using ORS data, which is unique in its focus on functional limitations and to our knowledge has not been used before to study this research question.

We find that physical job demands are more predictive of early retirement than the physical work environment, though increases in both indices increase the probability of being retired as well as retirement transitions. In particular, a one standard deviation (SD) increase in physical job demands is associated with a 10 percentage point (pp) increase in the probability of being retired, and with a 1.8 pp increase in the probability of transitioning into retirement. In turn, a 1 SD increase in our index of physical work environment is associated with a 7 pp increase in the probability of being retired, but it is not related to retirement transitions. This latter result depends critically on including physical job demands as a control variable in the regression, as the two indices are highly positively correlated with one another. We also find that physical job demands and the physical work environment are consistently more predictive of retirement and retirement transitions for men than women, for older rather than younger workers, and for workers without a college degree rather than with a college degree.

2. Data

We combine three data sources in this paper. The first one is the Occupational Requirements Survey (ORS), collected by the Bureau of Labor Statistics. The ORS supplies information on the physical demands, environmental conditions, mental and cognitive demands, and vocational preparation that are required in each job. The ORS employs field economists to interview human resources specialists, occupational safety managers, or supervisors at selected companies about job requirements at that firm. The data used in this analysis come from the 2018 public-use survey. For each requirement, the ORS reports the share of workers in an occupation whose job requires that ability.

The second data source is the O*NET, version 23.3 released in 2018. It has almost 800 detailed occupations at the six-digit level of Standard Occupational Classification (SOC) codes and measures more than 200 job traits including abilities, skills and knowledge required for to perform occupations, as well as work context and work characteristics. Generally, it provides a distribution of the characteristic for an occupation, e.g., mean and standard deviation, or probabilities of discrete values. We only use O*NET for comparison and validation of ORS measures.

The third data source is the HRS, a longitudinal household survey representing the noninstitutionalized U.S. population older than 50. Age-eligible respondents and their spouses are surveyed every two years, allowing us to track transitions from work into retirement. We use the RAND version of HRS, version P, and the restricted version to merge in occupational information from the ORS at the four-digit census code level. The HRS core questionnaire provides information about individual demographics, labor force status, pension arrangements, financial situation, and health status, and household composition.

Below we provide a detailed description of the public use ORS data. We then describe the O*NET data, focusing on the occupational requirement measures that are comparable to the ORS measures, and we examine the concurrent validity between the ORS and O*NET measures. In the final subsection, we describe the how we construct our analytic sample and variables using the HRS data.

2.1 The Occupational Requirement Survey

We use publicly available information from Wave 1 of the Occupational Requirements Survey (ORS), which was fielded over three years between 2015 and

2018. The ORS Wave 1 data contain occupational requirements for 43 physical traits organized in 16 aggregate groups, and 10 environmental conditions. While ORS provides data for 420 occupations at the six-digit 2010 SOC level, only 393 of these occupations contain some information on physical traits and environmental conditions. For each job trait, ORS provides a mix of categorical and continuous measures, for a total of 236 variables in the case of physical job requirements and environmental conditions. However, as we will discuss below in more detail, some variables are missing for some job traits, and data on some job traits are unavailable for a significant number of occupations.

In the public-use ORS, categorical variables measure the percentage of workers in a given occupation who are subject to a given requirement, such as, for example, the percentage of workers in an occupation for which gross manipulation is required. For some job traits, ORS also provides estimates of the percent of workers subject to a given requirement for a given level of frequency: seldom, occasionally, frequently, or constantly. Continuous variables include selected summary statistics by occupation reflecting the duration of certain job traits that are required in a typical working day. For example, the ORS includes variables for the average number of hours spent sitting by occupation as well as the 10th, 25th, 50th, 75th, and 90th percentiles of hours spent sitting by occupation. Table 1 provides an overview of the types of variables available for each trait for physical job requirements, aggregated into 16 groups, and Table 2 provides an overview for the environmental conditions.

Table 1: Physical job requirements and data structure, ORS

		Type of Variable		
Name of Job Requirement		Percent Workers Job Trait Required	Frequency: Category levels	Duration: Mean/Percentiles
1	Gross manipulations	X	X	-
2	Fine manipulation	X	X	-
3	Foot or leg controls	X	X	-
4	Standing	-	-	X
5	Sitting	-	-	X
6	Keyboarding	X	X	-
7	Verbal communication	X	X	-
8	Lifting and carrying	-	-	X
9	Driving	X	-	-
10	Climbing			
	Structural ramps or stairs	X	X	-
	Work-related ramps or stairs	X	X	-
	Ladders, ropes, or scaffolds	X	X	-
11	Low postures			
	Crawling	X	X	-
	Crouching	X	X	-
	Stooping	X	X	-
	Kneeling	X	X	-
12	Reaching			
	Reaching at or below the shoulder	X	X	-
	Reaching overhead	X	X	-
13	Pushing and pulling			
	With feet only	X	X	-
	With feet/legs	X	X	-
	With hands/arms	X	X	-
14	Strength level			
	Sedentary	X	-	-
	Light work	X	-	-
	Medium work	X	-	-
	Heavy work	X	-	-
	Very heavy work	X	-	-
15	Vision			
	Far	X	-	-
	Near	X	-	-
	Peripheral	X	-	-
16	Hearing			
	In person speech	X	-	-
	In a group	X	-	-
	Telephone	X	-	-
	One-on-one	X	-	-

Table 2: Environmental working conditions and data structure, ORS

		Type of Variable		
Name of Job Requirement		**Percent Workers Job Trait Required**	**Frequency: Category levels**	**Duration: Mean/Percentiles**
1	**Humidity**	X	X	-
2	**Extreme cold**	X	X	-
3	**Extreme heat**	X	X	-
4	**Heavy vibrations**	X	X	-
5	**High, exposed places**	X	X	-
6	**Hazardous contaminants**	X	X	-
7	**Proximity to moving mechanical parts**	X	X	-
8	**Wetness**	X	X	-
9	**Outdoors**	X	X	-
10	**Noise***	X	-	-

Note: * The percentage of workers exposed to noise is categorized by three levels of intensity levels: "quiet," "moderate," and "loud."

One practical limitation of the public-use ORS data is the lack of complete information for many job traits and occupations. Specifically, the data are subject to two types of missing information: missing variables and missing occupations. For many job traits, the variable containing the percentage of workers for whom a particular trait is required is available (corresponding to Column 1 in Tables 1 and 2) but variables containing the percentage of workers subject to a requirement at a given frequency level is unavailable (Column 2). Similarly, for some job traits with continuous variables (Column 3), the mean is available but not all the percentiles. As a result, we restrict our analysis to the categorical variables in Column 1 and continuous variables containing mean levels in Column 3 of Tables 1 and 2.

A further limitation is the absence of certain occupational requirement variables for many occupations. Columns 1 and 2 of Table 3, and Column 1 of Table 4, present the percent of occupations for which each job requirement is observed in the ORS data, at the individual trait level (Column 1) or aggregated into a group of traits (Column 2), for physical job demands and environmental conditions, respectively. We group related variables in certain cases (e.g., climbing, low postures) in order to recover more usable observations by defining an indicator variable for whether any variable in the group is required for more than 50% of workers in an occupation. This strategy allows us to recover occupations that are missing one variable in a group but not all of them. Note that Tables 3 and 4 contain percentages of the 393 occupations in the database with information on physical job demands and the physical work environment and therefore do not include more than 400 occupations at the six-digit SOC codes included in O*NET but that are missing from the ORS database altogether. Also note that, while we present the percent of occupations with missing observations in the ORS database, this does not necessarily correspond to the percent of *workers* with missing variables since rare occupations are more likely to be excluded.

We find a wide range of missing observations at the occupation level, ranging from 27% (hearing other sounds) to 88% (gross manipulation). We recover information for missing occupations by imputation using the mean calculated for nonmissing occupations at the same two-digit SOC level. Columns 3 and 4 of Table 3, and Columns 2 and 3 of Table 4, present the sample mean for each job trait variable before and after imputation. Again, the mean is calculated at the six-digit SOC occupation level for the

393 occupations in the ORS database. Generally, the means are similar without imputation for the limited occupation set and with imputation for the full occupation set.

For the remainder of the analysis, we use the 16 aggregated physical job requirements and the 10 environmental conditions (for which no aggregation was needed), and use observed and imputed data.

Table 3: Percent of occupations observed for physical job demands, ORS

	Name of Job Traits	(1) Percentage of Occupations Observed (%): Individual	(2) Percentage of Occupations Observed (%): Aggregated	(3) Mean (before imputing)	(4) Mean (after imputing)
1	**Gross manipulation**	88%	-	99%	99%
2	**Fine manipulation**	84%	-	99%	99%
3	**Foot or leg controls**	75%	-	22%	23%
4	**Standing**	89%	-	56%	55%
5	**Sitting**	85%	-	47%	46%
6	**Keyboarding**	75%	-	70%	71%
7	**Verbal communication**	82%	-	93%	91%
8	**Lifting and carrying**	61%	-	25%	22%
9	**Driving**	36%	-	26%	20%
10	**Climbing**	-	85%	14%	14%
	Structural ramps or stairs	31%			
	Work-related ramps or stairs	75%			
	Ladders, ropes, or scaffolds	84%			
11	**Low postures**	-	84%	44%	45%
	Crawling	82%			
	Crouching	73%			
	Stooping	75%			
	Kneeling	76%			
12	**Reaching**	-	80%	85%	85%
	Reaching at or below the shoulder	74%			
	Reaching overhead	74%			
13	**Pushing and pulling**	-	55%	19%	18%
	With feet only	51%			
	With feet/legs	16%			
	With hands/arms	52%			

14	**Strength level**	64%	64%	40%	43%
15	**Vision**	-	83%	93%	92%
	Far	37%			
	Near	74%			
	Peripheral	28%			
16	**Hearing**	-	87%	94%	93%
	Other sounds	27%			
	In a group	41%			
	Telephone	44%			
	One-on-one	69%			

Notes: Imputation using SOC two-digit level means

Table 4: Percent of occupations observed for environmental conditions, ORS

	Name of Job Traits	Percentage of Occupations Observed (%): Individual	Mean (before imputing)	Mean (after imputing)
1	**Humidity**	88%	0%	0%
2	**Extreme cold**	87%	2%	2%
3	**Extreme heat**	87%	1%	1%
4	**Heavy vibrations**	86%	1%	1%
5	**High, exposed places**	85%	6%	6%
6	**Hazardous contaminants**	81%	4%	4%
7	**Proximity to moving mechanical parts**	81%	10%	14%
8	**Wetness**	78%	24%	26%
9	**Outdoors**	75%	25%	26%
10	**Noise**	74%	76%	76%

Notes: Imputation using SOC two-digit level means

*2.2 Concurrent validity with the O*NET database*

The Occupational Information Network (O*NET) survey version 23.3 (2018) is a comprehensive database surveying more than 200 job attributes based on ratings for 773 occupations coded at the six-digit level of the 2010 SOC system. Job attributes include required knowledge, skills, abilities, work activities, work context, and work styles (Johnson et al. 2011; Fisher et al. 2014; Belbase et al. 2015). We use ratings of the importance of each attribute for job performance measured on a scale of 1 (not important) to 5 (extremely important). The ratings are based primarily on responses from workers randomly surveyed at a sample of businesses. To examine concurrent validity between the ORS and O*NET measures, we matched each of the 16 aggregate physical job demands and 10 environmental working conditions in the ORS database to the variable in O*NET that best corresponds to the description of the ORS trait. Tables A1 and A2 in the Appendix present our map of O*NET to ORS measures for physical job demands and environmental conditions, respectively, along with the survey module containing the relevant O*NET variable.

Note that the ORS and O*NET are designed for different purposes. The ORS seeks to understand what specific physical, social, and cognitive capabilities are required to complete particular tasks essential for conducting the job, whereas the O*NET seeks to understand what knowledge, skills, abilities, and work activities are typical in a particular occupation. Because the aims of the surveys are different, the scales are different across data sources. Figure 1 illustrates the relationship between the average O*NET importance rating on a scale of 1 to 5 and the corresponding ORS measure of the percentage of workers subject to a given occupational requirement for each occupation (using nonimputed data). The correlation between the O*NET and ORS measures are given for each trait (shown in brackets in the figure title). Despite the different scales we find a high-degree of consistency across the two databases for similar measures. For example, for work activities related to reaching, climbing, standing, sitting, and low postures in both the ORS and O*NET we calculate correlations across occupations (and recall not all occupations are available) at or above 0.8. Notable exceptions are gross and fine manipulation, hearing, and near vision with very low correlations (in the range of 0.2). In these cases, the low correlations are driven by very limited variation in the ORS measures, and as a result we do not include them in the construction of our index of physical job demands. All physical work environment traits exhibit good concurrent validity with their analogous O*NET measures and therefore we do not exclude any of them from the analysis.

Figure 1: Concurrent validity between ORS and O*NET databases

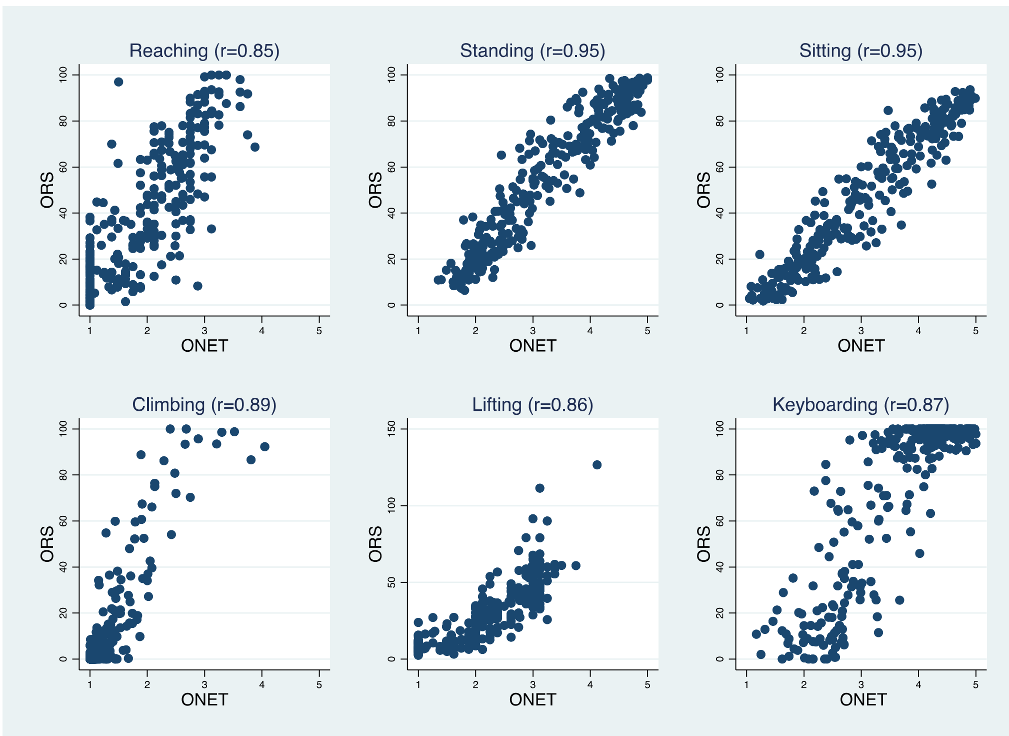


Figure 1, continued

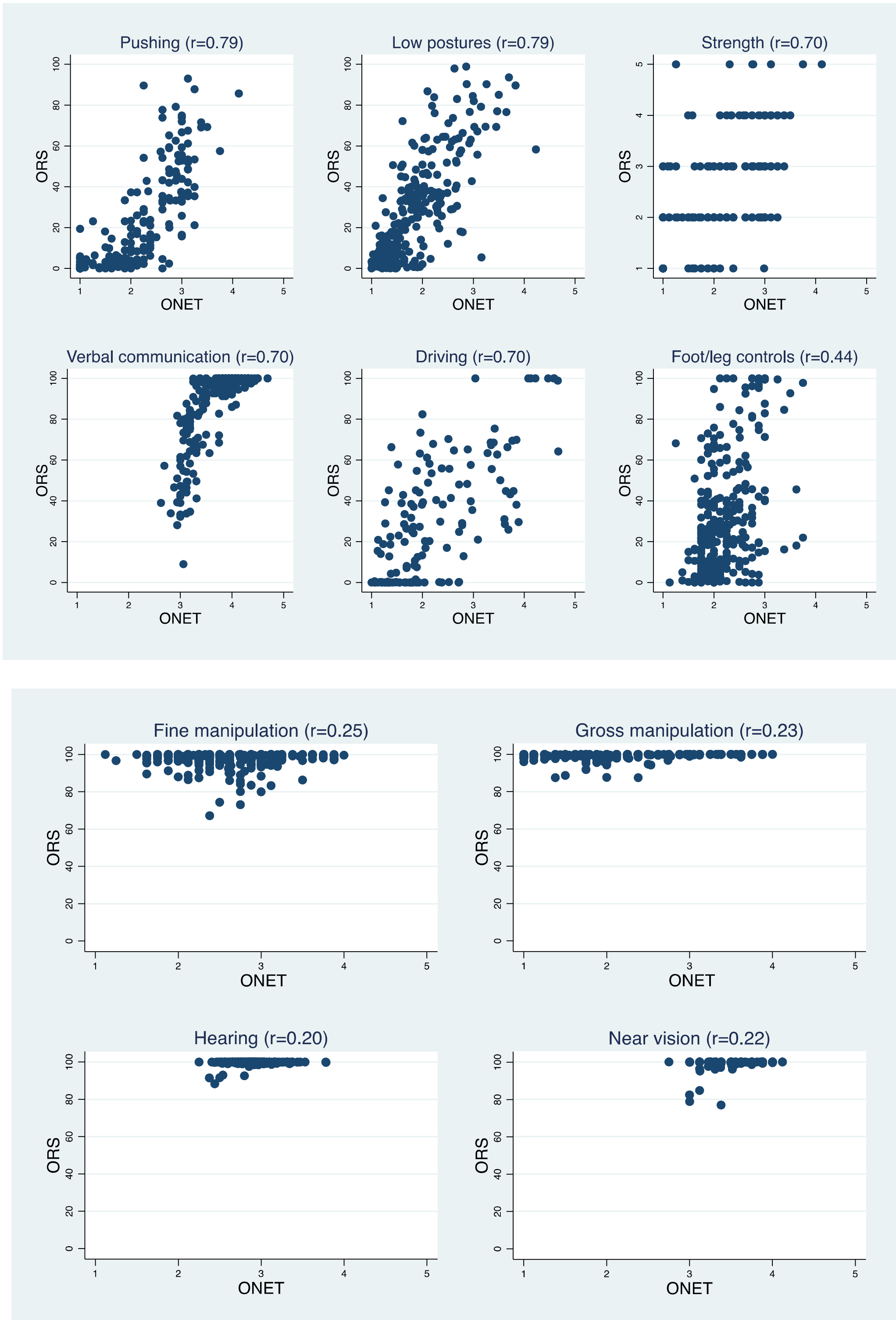
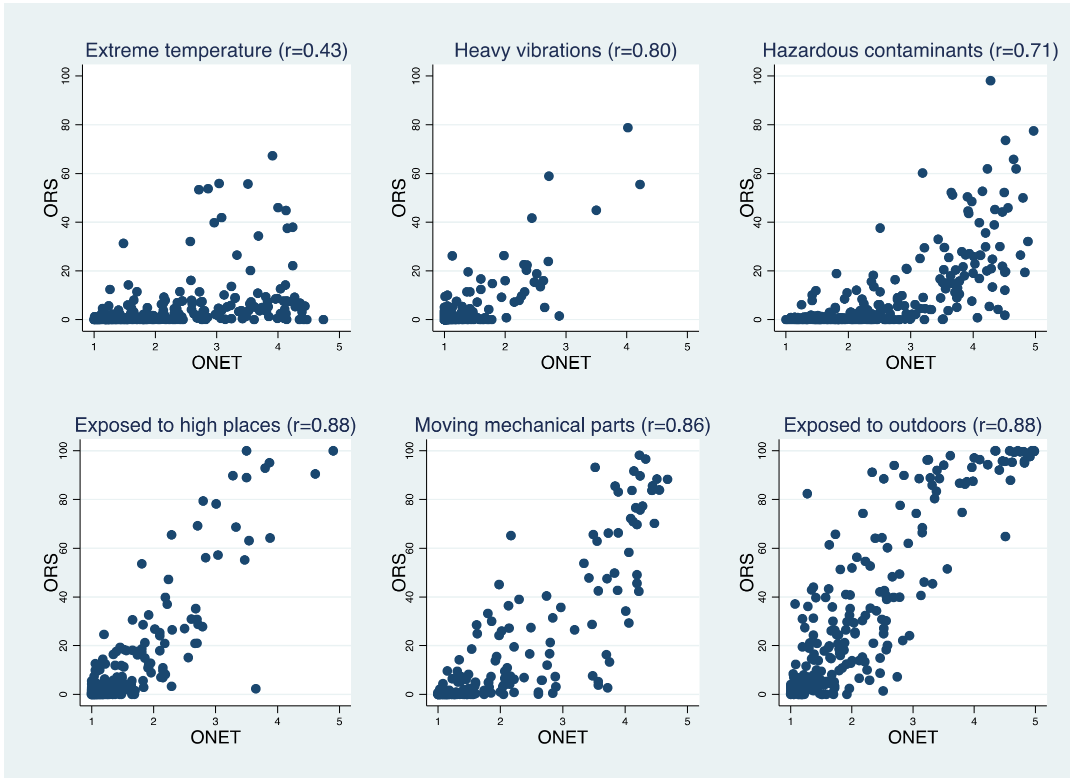


Figure 1, continued



2.3 The Health and Retirement Survey

The RAND Enhanced fat files of the HRS data, Version P, includes rich longitudinal information on the individual's retirement outcomes, as well as on background variables that we use as controls in our empirical specification, including age, gender, education, marital status, health status, cognition status, earnings, availability of DB/DC pension plans, availability of health insurance, and the spouse's age. We restrict our analysis to the data collected from 2004 to 2016 (seven waves) and respondents ages 51 to 70 in 2004 followed across waves, totaling 6,982 respondents. Of them, 6,398 respondents were matched with ORS data (91% match rate). Individuals not matched had missing information about their past jobs and were mostly older and already retired in Wave 7.

Retirement outcomes include the retirement status in each wave based on the self-reported labor force status, as well as transitions from "working" in period t to "retired/unemployed or not in the LF" in period $t + 1$, also based on labor force status. Importantly, we merge occupational job requirements from ORS to HRS respondents by the occupation (at the four-digit census code level) they held in Wave 7. Because this occupation might not necessarily be the most important occupation during the life-course and thus not accurately reflect job demands, in future work we plan to identify the most important occupation for each respondent using restricted data from the Life Mail History Survey.

Table 5 presents summary statistics for the relevant dependent and control variables. The total number of person-year observations for the examination of retirement status is N=33,694 (corresponding to N=6,398 individuals) and for retirement transitions is N=14,011 (corresponding to N=3,025 individuals).[1]

[1] The remaining 6,398-3,025=3,373 individuals excluded from the retirement transition sample include "never working" individuals who were already retired in Wave 7, as well as "always working" individuals who were continuously working across the six waves of HRS included in the analysis.

Table 5: Descriptive statistics

	Dependent Variable: Retirement Status (1=Fully retired or unemployed, 0=otherwise)		(2) Dependent Variable: Retirement Transition (1=Fully retired or unemployed, 0=otherwise) Conditional on working in *t*	
Variables	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
Dependent variable	0.50	0.50	0.19	0.40
Age	66.63	6.58	62.99	6.14
Female	0.53	0.50	0.50	0.50
High School	0.35	0.48	0.31	0.46
Some College	0.24	0.43	0.26	0.44
College and Above	0.26	0.44	0.32	0.47
Spouse Age Diff	3.10	4.07	3.25	4.21
In a couple	0.72	0.45	0.75	0.43
Spouse working	0.28	0.45	0.44	0.50
Poor health	0.19	0.39	0.13	0.33
Cognition Score	16.15	4.10	16.97	3.76
Annual Wage (log)	7.82	3.97	7.99	4.32
DB/DC Pension	0.32	0.71	0.73	0.91
Emp. Health Ins. (Own)	0.33	0.47	0.52	0.50
Emp. Health Ins. (Spouse)	0.15	0.36	0.23	0.42
N (individual-year)	33,694		14,011	
N (individuals)	6,398		3,025	

3. Empirical strategy

Our empirical analysis is divided into two steps. First, by examining correlations across individual measures, we construct composite indices for physical job demands and the physical work environment using the selected job traits found to exhibit good statistical properties. Second, after merging these indices with HRS data at the occupation level, we estimate linear probability models to characterize how the probability that a) an individual is retired, or b) a worker transits from work in period *t* into retirement in period *t*+1, depends on physical job demands or environmental working conditions ($JD_{i,t}$), controlling for a set of covariates ($X_{i,t}$), according to the following model:

$$R_{it} = \alpha_0 + \alpha_1 JD_i + X_{it}'\delta + \mu_t + \varepsilon_{it} \qquad (1)$$

In Equation (1), R_{it} is the retirement outcome, α_1 captures how occupational job demands change the propensity to either be retired or to transition into retirement, and X is a vector of observed individual characteristics such as age, gender, education, race, marital status, health, and cognitive status, as well as spouse's characteristics such as age and employment status to capture potential incentives for joint retirement decisions. We also control for financial incentives to retire by including the individual's hourly wage, availability of a DB or DC pension plan, and employer-sponsored health insurance.

4. Results

4.1 Constructing indices for job demands

Based on our comparison between the ORS and O*NET job requirements we drop from the analysis ORS measures that exhibit little variation and poor concurrent validity with O*NET, including fine and gross manipulation, hearing, and near vision. We excluded sitting as it is almost perfectly collinear with standing/walking. In addition, we also excluded verbal communication and keyboarding as these measures exhibit an inverse correlation with both physical job demands and the physical work environment so they might reflect a different underlying construct (perhaps more cognitive). This is perhaps unsurprising since these job demands are more likely to be associated with office jobs and clerical occupations. What remained were nine physical activity requirements and 10 measures of the physical environment of the workplace across observed occupations.

With these selected job traits, we conducted a series of exploratory and confirmatory factor analyses using occupation-level ORS data to determine how these job traits should be grouped (not shown). However, the predicted latent factors resulting from these analyses were not generally interpretable and we did not use them in our analyses. As an alternative, we constructed weighted average indices of job demands across occupations, where the weight was the occupation’s share of jobs in the national economy obtained from the Current Population Survey (CPS). The “physical activity” index included the nine physical activities retained from the previous analyses. The “physical environment” index included all 10 environmental conditions. We standardized both indices after having merged to the full HRS sample for ease of interpretation of our results.

Table 6 presents the mean standardized indices by sex and sample, and shows that both indices are significantly larger for men than women, which is reflective of men holding jobs that are physically more demanding, and larger for the subsample of individuals who transition into retirement than for the full sample. This latter result is explained by a composition effect. While “never working” individuals, who are older and already retired, held jobs that were more physically demanding than the other groups, and “always working” individuals, who are younger, hold less physically demanding jobs, individuals in the “retirement transition” sample hold jobs with physical job requirements more similar to the “never working” sample than to the “always working” sample.

Table 6: Mean indices by sample and sex

Subsamples		Physical Activity (mean)	Physical Environment (mean)
Retirement transitions (n=3,025)	**Male**	0.226	0.231
	Female	-0.054	-0.094
	Overall	0.067	0.059
Full Sample (retirement status) (n=6,398)	**Male**	0.141	0.174
	Female	-0.089	-0.129
	Overall	0.013	0.036

As a final test of the validity of our indices, we examine correlations across individual job requirements included in each index and we estimate the Cronbach's alpha to examine the internal consistency of both indices. Tables 7 and 8 show correlations across individual items for the physical activity index and the physical environment index, respectively, for the full sample of individuals (N=6,398). The individual elements of the physical activity index (perhaps with the exception of driving) are strongly positively correlated with each other, and the same for individual elements of the physical environment index (perhaps with the exception of exposure to cold). Similar correlations can be seen for the subsample of individuals examining retirement transitions (N= 3,025) presented in the Appendix (Tables A3 and A4). We also find that our indices exhibit a very high internal consistency, with an estimated Cronbach's alpha of 0.94 for the physical activity index, and 0.91 for the physical environment index. Finally, we find that the correlation across indices is 0.69 for the full sample, and 0.72 for the retirement transitions subsample. These high correlations are supported by high correlations between individual items of physical job demands and individual items of the physical work environment (Tables A5 and A6).

Table 7: Correlation matrix physical job demands (full sample N=6,398)

	Climbing	Leg control	Low posture	Reaching	Pushing	Strength	Standing	Driving	Lifting
Climbing	1.00								
Leg control	0.75	1.00							
Low posture	0.97	0.85	1.00						
Reaching	0.82	0.56	0.86	1.00					
Pushing	0.77	0.63	0.86	0.96	1.00				
Strength	0.68	0.41	0.72	0.96	0.93	1.00			
Standing	0.51	0.18	0.52	0.88	0.81	0.93	1.00		
Driving	0.65	0.94	0.70	0.33	0.35	0.17	-0.09	1.00	
Lifting	0.82	0.54	0.86	0.95	0.96	0.95	0.85	0.29	1.00

Table 8: Correlation matrix physical work environment (full sample N=6,398)

	Humidity	Cold	Heat	Vibrate	High places	Contami-nants	Moving parts	Wetness	Outdoors	Noise
Humidity	1.00									
Cold	0.42	1.00								
Heat	0.70	0.73	1.00							
Vibration	0.56	0.01	0.64	1.00						
High places	0.60	0.00	0.63	0.91	1.00					
Contaminants	0.62	0.10	0.69	0.77	0.82	1.00				
Moving parts	0.45	0.25	0.80	0.74	0.75	0.91	1.00			
Wetness	0.47	0.47	0.50	0.24	0.23	0.45	0.32	1.00		
Outdoors	0.65	-0.08	0.39	0.82	0.84	0.64	0.40	0.47	1.00	
Noise	0.32	0.32	0.67	0.53	0.50	0.66	0.77	0.64	0.44	1.00

4.2 Associations between job demands and retirement status and transitions

We next merge our indices of job demands to the HRS panel to examine the role of physical job demands and the physical work environment on retirement outcomes. Table 8 presents our results from linear probability models regressing two types of retirement outcomes: an indicator variable taking value 1 if the individual reports to retired at time t (Column 1), or and an indicator variable that takes value 1 if a working individual in period t reports to be retired in time t+1 (Column 2), on our physical activity and physical environment indices (and their interactions), as well as on a set of control variables described in Section 3. Regression results for control variables are reported associated with Table 9 are reported in Table A7 in the Appendix.

Since our indices of job demands are standardized within sample, we find that a 1 SD increase in our physical activity index is associated with a 10 pp increase in the probability of being retired, and with a 1.8 pp increase in the probability of transitioning from full-time work into retirement. In turn, a 1 SD increase in our physical environment index is associated with a 7 pp increase in the probability of being retired and is not related to the probability of transitioning into retirement. Interactions between the two indices in both regressions have a negative coefficient but statistically significant only for the retirement status regression and do not significantly change these results.

Table 9: Effect of physical job demands and the physical environment on retirement

	(1) **Retirement Status** based on self-reported LFS (1=Fully retired or unemployed, 0=otherwise)	(2) **Retirement Transition** (1=Fully retired or unemployed, 0=otherwise) Conditional on working in t
Physical Activity (index)	0.103***	0.018**
	(0.004)	(0.009)
Physical Environment (index)	0.068***	-0.008
	(0.004)	(0.010)
N (individual-year)	33,694	14,011
N (individuals)	6,398	3,025

Notes: Controls include: gender, age groups, education, age difference with the spouse, indicator for whether in a couple, indicator for whether the spouse is working, indicator for poor health, cognitive test scores (word recall, backward counting, and serial 7s), annual wage (log), type of employer-sponsored pension plan (DB, DC, or DB/DC), existence of employer-provided health insurance (respondent and spouse), and time fixed effects. Statistical significance indicated by *p < 0.05. **p < 0.01. ***p < 0.001.

The lack of association between the physical environment index and transitions into retirement is likely driven by the high correlation across the two indices. As shown in Column 2 of Table 10 below, the association between the physical environment and retirement without including the physical activity is positive, though statistically significant only at the 10% level. When the two indices are included together in Column 3, the association between the physical environment index and retirement transitions is inverse but not statistically significant. These results suggest that the physical work environment contributes little additional variation to explain retirement transitions over and above the effect of physical activities. As shown in Table 11, when we split the sample between below and above the median physical activity index, the physical environment index continues to be strongly associated with retirement status in each of these two subsamples but is no longer associated with retirement transitions.

Table 10: Effect of physical job demands and the physical environment on retirement transitions

	Retirement Transition (1=Fully retired or unemployed, 0=otherwise) Conditional on working in *t*		
	(1) Physical activity only	(2) Physical environment only	(3) Both included
Physical Activity (index)	0.011**		0.018**
	(0.005)		(0.009)
Physical Environment (index)		0.009*	-0.008
		(0.005)	(0.010)
PN X TIMES	14,011	14,011	14,011
PN	3,025	3,025	3,025

Notes: Controls include: gender, age groups, education, age difference with the spouse, indicator for whether in a couple, indicator for whether the spouse is working, indicator for poor health, cognitive test scores (word recall, backward counting, and serial 7s), annual wage (log), type of employer-sponsored pension plan (DB, DC, or DB/DC), existence of employer-provided health insurance (respondent and spouse), and time fixed effects. Statistical significance indicated by $*p < 0.05$. $**p < 0.01$. $***p < 0.001$.

Table 11: Heterogeneous Associations by Low and High Physical Job Demands

	Retirement Status based on self-reported LFS (1=Fully retired or unemployed, 0=otherwise)			Retirement Transition (1=Fully retired or unemployed, 0=otherwise) Conditional on working in t		
	Physical Index			Physical Index		
	Below median	Above median	p-value difference	Below median	Above median	p-value difference
Physical Environment Index	0.047***	0.061***	0.237	-0.005	0.014	0.291
	(0.006)	(0.005)		(0.010)	(0.010)	
N (individual-year)	16,994	16,700		7,019	6,992	
N (individuals)	3,227	3,171		1,515	1,510	

Notes: Controls include: gender, age groups, education, age difference with the spouse, indicator for whether in a couple, indicator for whether the spouse is working, indicator for poor health, cognitive test scores (word recall, backward counting, and serial 7s), annual wage (log), type of employer-sponsored pension plan (DB, DC, or DB/DC), existence of employer-provided health insurance (respondent and spouse), and time fixed effects. Statistical significance indicated by *p < 0.05. **p < 0.01. ***p < 0.001.

4.3 Heterogeneous associations by gender, age, and education

We further investigate how job demands influence retirement outcomes for different subgroups. Overall, physical activity and the physical environment are more predictive of both retirement status and retirement transitions for men than for women (Table 12), but differences are only statistically significant for the physical activity index. Again, the physical environment is not predictive of retirement transitions for men and women over and above physical job demands, which is fully explained by the high correlation across indices (r=0.77 for men, r=0.65 for women). Physical activity and the physical environment are more predictive of retirement status for individuals above the median age in the sample (67 years old across all waves) than for younger individuals (Table 13), but only physical activity is predictive of more retirement transitions among older workers than younger workers. For example, a 1 SD increase in the physical activity index is associated with a 11 pp increase in the probability of being retired among older workers, but only a 7 pp increase for younger workers, a difference that is statistically significant ($p < 0.001$). Finally, and reflecting the fact that less skilled workers hold jobs that are more physically demanding than those held by more skilled workers, we find that both physical activity and the physical environment are significantly more predictive of retirement status among individuals without a college degree than those with a college degree or more (Table 14), but differences across educational groups in retirement transition regressions is not statistically significant for the physical environment index. A 1 SD increase in the physical activity index is associated with a 13 pp increase in the probability of being retired for those without a college degree, and with a 2 pp increase for those with a college degree, difference that is statistically significant ($p < 0.001$). The same increase is associated with a 4.5 pp increase in the probability of transitioning into retirement for those without a college degree, and with a 1 pp increase for those with a college degree ($p=0.085$).

Table 12: Heterogeneous associations by sex

	Retirement Status based on self-reported LFS (1=Fully retired or unemployed, 0=otherwise)			Retirement Transition (1=Fully retired or unemployed, 0=otherwise) Conditional on working in t		
	Male	**Female**	**p-value difference**	**Male**	**Female**	**p-value difference**
Physical Activity (index)	0.118***	0.086***	0.038	0.023**	0.006	0.064
	(0.006)	(0.006)		(0.011)	(0.011)	
Physical Environment (index)	0.069***	0.068***	0.950	-0.016	-0.000	0.167
	(0.006)	(0.006)		(0.011)	(0.011)	
N (individual-year)	14,774	18,920		6,729	7,282	
N (individuals)	2,826	3,577		1,428	1,597	

Notes: Controls include: age groups, education, age difference with the spouse, indicator for whether in a couple, indicator for whether the spouse is working, indicator for poor health, cognitive test scores (word recall, backward counting, and serial 7s), annual wage (log), type of employer-sponsored pension plan (DB, DC, or DB/DC), existence of employer-provided health insurance (respondent and spouse), and time fixed effects. Statistical significance indicated by *p < 0.05. **p < 0.01. ***p < 0.001.

Table 13: Heterogeneous associations by age

	Retirement Status based on self-reported LFS (1=Fully retired or unemployed, 0=otherwise)			Retirement Transition (1=Fully retired or unemployed, 0=otherwise) Conditional on working in t		
	Young	**Old**	**p-value difference**	**Young**	**Old**	**p-value difference**
Physical Activity (index)	0.073***	0.106***	p<0.001	0.006	0.023**	0.074
	(0.005)	(0.006)		(0.016)	(0.011)	
Physical Environment (index)	0.046***	0.072***	p<0.001	0.011	-0.017	0.289
	(0.006)	(0.006)		(0.019)	(0.012)	
N (individual-year)	19,337	14,357		7,586	6,425	
N (individuals)	3,672	2,726		1,638	1,387	

Notes: Controls include: gender, education, age difference with the spouse, indicator for whether in a couple, indicator for whether the spouse is working, indicator for poor health, cognitive test scores (word recall, backward counting, and serial 7s), annual wage (log), type of employer-sponsored pension plan (DB, DC, or DB/DC), existence of employer-provided health insurance (respondent and spouse), and time fixed effects. Statistical significance indicated by *p < 0.05. **p < 0.01. ***p < 0.001.

Table 14: Heterogeneous associations by education

	Retirement Status based on self-reported LFS (1=Fully retired or unemployed, 0=otherwise)			Retirement Transition (1=Fully retired or unemployed, 0=otherwise) Conditional on working in t		
	Below College	**College and Above**	**p-value difference**	**Below College**	**College and Above**	**p-value difference**
Physical Activity (index)	0.128***	0.023**	p<0.001	0.045**	0.009	0.085
	(0.005)	(0.009)		(0.018)	(0.010)	
Physical Environment (index)	0.083***	0.022**	p<0.001	-0.037*	-0.002	0.101
	(0.005)	(0.009)		(0.020)	(0.012)	
N (individual-year)	24,862	8,832		9,577	4,434	
N (individuals)	4,721	1,677		2,068	957	

Notes: Controls include: gender, age groups, age difference with the spouse, indicator for whether in a couple, indicator for whether the spouse is working, indicator for poor health, cognitive test scores (word recall, backward counting, and serial 7s), annual wage (log), type of employer-sponsored pension plan (DB, DC or DB/DC), existence of employer-provided health insurance (respondent and spouse), and time fixed effects. Statistical significance indicated by *p < 0.05. **p < 0.01. ***p < 0.001.

5. Conclusions

In this paper, we examine the effect of physical job demands and the physical environment of the workplace on retirement status and retirement transitions among individuals near retirement in the U.S., relating rich information on job demands at the occupation level from the ORS to labor supply outcomes from the HRS. To the best of our knowledge, our study is the first to examine the structure and properties of ORS data and implement robust strategies to address missing information on job traits across occupations, as well to examine the concurrent validity of ORS measures with similar metrics from the O*NET. Using job traits that exhibit good statistical properties and concurrent validity, we construct average indices of physical activities and the physical environment and we merge them with restricted, individual-level data from the HRS using census occupation codes at the four-digit level to examine the role of these job demands on retirement outcomes.

We find that physical activities (e.g., lifting, low postures, reaching, pushing) are more predictive of retirement behaviors than the physical environment (e.g., exposure to cold, heat, contaminants, noise), though both types of physical job requirements increase the probability of being retired and retirement transitions. In particular, a one standard deviation increase in physical activity is associated with a 10 percentage point increase in the probability of being retired, and with a 1.8 percentage point increase in the probability of transitioning into retirement, after controlling for a series of sociodemographic variables including age, sex, education, health, financial situation, health insurance, and spouse’s labor supply status and age. Estimates for the association between the physical environment and the probability of being retired are positive but smaller in magnitude and, with retirement transitions, is not statistically significant, which is explained by a large positive correlation across the two indices. Overall, we conclude the physical environment in the workplace had limited additive power to explain retirement outcomes over and above the role of physical activities. In terms of heterogeneity, physical job requirements are generally more predictive of retirement outcomes for men, older, and less-educated workers.

Our results are in line with the previous literature showing the importance of using objective measures of job demands to model labor market outcomes, such as retirement, but also clarify future steps in the retirement research agenda. First, if physical activities and the physical work environment matter, what specific job requirements matter more and for what jobs? Performing a more detailed analysis by groups of occupations and individualizing job demands would allow us to answer these policy relevant questions. Importantly, why does the physical environment of the workplace seem to matter less than physical activities? Finally, if physical demands of the job are the most important predictor of retirement, then the introduction of technology, robotics, and other task-altering factors could make some jobs less onerous and lead to prolonged employment.

Finally, there are a number of limitations for our study that can be addressed in future research. First, although our research goal was to add cognitive job demands to the current analysis, unfortunately cognitive measures were not available in Wave 1 of the ORS and the preliminary data from Wave 2 was too incomplete at this point. Including cognitive job demands is a top priority in our research agenda upon finalization of Wave 2data collection. In addition, although in this paper we focus on a narrower set of labor supply outcomes, in future work we plan to expand our analysis to include more detailed labor supply transitions among older individuals, including transitions from full-time to part-time jobs, from main occupations to “bridge” occupations, as well as transitions from retirement to any type of paid work or “unretirement.”

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Appendix

Table A1: Matching ORS and O*NET variables for physical job demands

ORS Variables	O*NET Variables	O*NET Module
Reaching: Overhead reaching; reaching at/below the shoulder	Extent Flexibility: The ability to bend, stretch, twist, or reach with your body, arms, and/or legs	Physical abilities
Pushing/Pulling: Exerting force upon an object so that the object moves away from the force; exerting force upon an object so that the object moves toward the force	Static Strength: The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical abilities
Strength: The capacity for exertion or endurance (sedentary/light/medium/heavy/very heavy)	Static Strength: The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical abilities
Lifting weights: Raising or lowering an object from one level to another. This includes upward pulling (lbs.)	Static Strength: The ability to exert maximum muscle force to lift, push, pull, or carry objects.	Physical abilities
Fine manipulation: Picking, pinching, touching, working primarily with fingers rather than the whole hand or arm	Finger Dexterity: The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.	Psychomotor abilities (excluded)
Gross manipulation: Seizing, holding, grasping, turning, or otherwise working with the hand(s)	Manual Dexterity: The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.	Psychomotor abilities (excluded)
Foot/leg controls: Use of one or both feet or legs to move controls on machinery or equipment	Control Precision: The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.	Psychomotor abilities
Driving: Operation of a passenger vehicle or other conveyance: automobile, van, or bus	Operating Vehicles, Mechanized Devices, or Equipment: Running, maneuvering, navigating, or driving vehicles or mechanized equipment.	Work output
Standing/Walking: Remaining on one's feet in an upright position without moving about	Spent Time Standing	Work context
Sitting: In a seated position; inactive and seated or prone; sitting also includes active sitting such as riding a bike, or choosing between sitting and standing	Spend Time Sitting	Work context

Climbing: Ascending or descending ladders, scaffolding, ropes, poles and the like using feet and legs and/or hands and arms; ascending or descending ramps and/or stairs using feet and legs	Spend Time Climbing Ladders, Scaffolds, or Poles	Work context
Low postures: Crawling, kneeling, crouching, stooping	Spend Time Kneeling, Crouching, Stooping, or Crawling: How much does this job require kneeling, crouching, stooping or crawling?	Work context
Hearing: Hearing requirements are the ability to hear, understand, and distinguish speech in person or by telephone and/or other sounds (e.g., machinery alarms, medical codes/alarms)	Hearing Sensitivity: The ability to detect or tell the differences between sounds that vary in pitch and loudness.	Sensory abilities (excluded)
Near Vision: Clarity of vision at approximately 20 inches or less, as when working with small objects or reading small print	Near Vision: The ability to see details at close range (within a few feet of the observer).	Sensory abilities (excluded)
Verbal Communication: Expressing or exchanging ideas by means of the spoken word to impart oral information to clients or the public and to convey detailed spoken instructions to other workers accurately, loudly, or quickly	Oral Comprehension: The ability to listen to and understand information and ideas presented through spoken words and sentences. Oral Expression: The ability to communicate information and ideas in speaking so others will understand.	Cognitive abilities
Keyboarding: Entering text or data into a computer or other machine by means of a keyboard. Devices include traditional keyboard, 10-key pad, touch screen, and other	Interacting with computers: Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information.	Work activities

Source: 1) ORS Survey Collection Manual 2015 2) O*NET Resource Center: The O*NET Content Model

*Table A2: Matching ORS and O*NET variables for physical work environment*

ORS Variables	O*NET Variables	O*NET Module
Exposed to Cold or Heat: Exposed to extreme cold or heat (40 degrees or below when exposed 2/3 or more of the time, or 32 degrees or below when exposed up to 2/3 of the time; above 90 degrees in a dry environment, or above 85 degrees in a humid environment	Very Hot or Cold Temperatures: How often does this job require working in very hot (above 90 F degrees) or very cold (below 32 F degrees) temperatures?	Work context
Heavy Vibrations: Exposed to a shaking object(s) or surface(s) that causes a strain on the body or extremities	Exposed to Whole Body Vibration: How often does this job require exposure to whole body vibration (e.g., operate a jackhammer)?	Environm ental conditions
Hazardous Contaminants: Exposure that negatively affects the respiratory system, eyes, skin, or other living tissue via inhalation, ingestion, or contact	Exposed to Contaminants: How often does this job require working exposed to contaminants (such as pollutants, gases, dust or odors)?	Environm ental conditions
Exposed to high, exposed places: Must be exposed and at risk of falling five feet or more from workers center of gravity. Must be at risk of bodily injury from falling	Exposed to High Places: How often does this job require exposure to high places?	Work context
Exposed to moving mechanical parts: Operation of or proximity to materials, mechanical parts, settings, or any moving objects (most commonly moving machinery or equipment) that could cause bodily harm.	Exposed to Hazardous Equipment: How often does this job require exposure to hazardous equipment?	Work context
Exposed to outdoors: A worker performs typical job duties outdoors, or a worker moves between different work sites during the workday	Outdoors, Exposed to Weather: How often does this job require working outdoors, exposed to all weather conditions?	Physical work conditions

Source: 1) ORS Survey Collection Manual 2015 2) O*NET Resource Center: The O*NET Content Model

Table A3: Correlation matrix physical job demands (retirement transition sample, N=3,025)

	Climbing	Leg control	Low posture	Reaching	Pushing	Strength	Standing	Driving	Lifting
Climbing	1.00								
Leg control	0.75	1.00							
Low posture	0.97	0.85	1.00						
Reaching	0.82	0.56	0.86	1.00					
Pushing	0.77	0.63	0.86	0.96	1.00				
Strength	0.68	0.41	0.72	0.96	0.93	1.00			
Standing	0.51	0.18	0.52	0.88	0.81	0.93	1.00		
Driving	0.65	0.94	0.70	0.33	0.35	0.17	-0.09	1.00	
Lifting	0.82	0.54	0.86	0.95	0.96	0.95	0.85	0.29	1.00

Table A4: Correlation matrix physical work environment (retirement transition sample, N=3,025)

	Humidity	Cold	Heat	Vibrate	High places	Contami-nants	Moving parts	Wetness	Outdoors	Noise
Humidity	1.00									
Cold	0.42	1.00								
Heat	0.70	0.73	1.00							
Vibration	0.56	0.01	0.64	1.00						
High places	0.60	0.00	0.63	0.91	1.00					
Contaminants	0.62	0.10	0.69	0.77	0.82	1.00				
Moving parts	0.45	0.25	0.80	0.74	0.75	0.91	1.00			
Wetness	0.47	0.47	0.50	0.24	0.23	0.45	0.32	1.00		
Outdoors	0.65	-0.08	0.39	0.82	0.84	0.64	0.40	0.47	1.00	
Noise	0.32	0.32	0.67	0.53	0.50	0.66	0.77	0.64	0.44	1.00

Table A5: Correlations physical job demands and the physical work environment (full sample)

	Climbing	Leg control	Low posture	Reaching	Pushing	Strength	Standing	Driving	Lifting
Humidity	0.58	0.49	0.74	0.71	0.62	0.62	0.58	0.52	0.77
Cold	0.19	-0.42	0.18	0.31	0.23	0.25	0.54	-0.39	0.31
Heat	0.69	0.47	0.64	0.77	0.64	0.71	0.78	0.35	0.81
Vibration	0.94	0.68	0.95	0.83	0.76	0.72	0.56	0.62	0.84
High places	0.96	0.78	0.90	0.85	0.79	0.70	0.72	0.70	0.85
Contaminants	0.90	0.76	0.96	0.91	0.97	0.85	0.74	0.55	0.98
Moving parts	0.82	0.67	0.78	0.80	0.82	0.79	0.76	0.37	0.91
Wetness	0.35	0.39	0.45	0.83	0.75	0.84	0.89	-0.02	0.68
Outdoors	0.90	0.81	0.93	0.84	0.76	0.75	0.73	0.78	0.75
Noise	0.67	0.59	0.77	0.86	0.82	0.90	0.98	0.62	0.90

Table A6: Correlations physical job demands and the physical work environment (retirement transition sample)

	Climbing	Leg control	Low posture	Reaching	Pushing	Strength	Standing	Driving	Lifting
Humidity	0.58	0.49	0.74	0.71	0.62	0.62	0.58	0.52	0.77
Cold	0.19	-0.42	0.18	0.31	0.23	0.25	0.54	-0.39	0.31
Heat	0.69	0.47	0.64	0.77	0.64	0.71	0.78	0.35	0.81
Vibration	0.94	0.68	0.95	0.83	0.76	0.72	0.56	0.62	0.84
High places	0.96	0.78	0.90	0.85	0.79	0.70	0.72	0.70	0.85
Contaminants	0.90	0.76	0.96	0.91	0.97	0.85	0.74	0.55	0.98
Moving parts	0.82	0.67	0.78	0.80	0.82	0.79	0.76	0.37	0.91
Wetness	0.35	0.39	0.45	0.83	0.75	0.84	0.89	-0.02	0.68
Outdoors	0.90	0.81	0.93	0.84	0.76	0.75	0.73	0.78	0.75
Noise	0.67	0.59	0.77	0.86	0.82	0.90	0.98	0.62	0.90

Table A7: Controls in labor supply regressions

	Retirement Flag based on self-reported LFP (1=Fully retired or unemployed, 0=otherwise)	**Retirement Transition** (1=Fully retired or unemployed, 0=otherwise) Conditional on working in t
2.female	0.034***	0.018**
	(0.006)	(0.008)
56-60	0.024**	0.057***
	(0.010)	(0.010)
61-65	0.131***	0.170***
	(0.010)	(0.012)
66-70	0.275***	0.227***
	(0.011)	(0.014)
71-75	0.371***	0.259***
	(0.012)	(0.018)
>76	0.429***	0.293***
	(0.014)	(0.039)
HS or eq	-0.003***	-0.003***
	(0.001)	(0.001)
some college	0.027***	-0.027
	(0.010)	(0.017)
college and above	0.017*	-0.034*
	(0.010)	(0.018)
spouse_age_diff	0.006	-0.064***
	(0.011)	(0.018)
in_couple=1	0.084***	0.049***
	(0.008)	(0.013)
swork	-0.139***	-0.037***
	(0.007)	(0.010)
poor_health	0.068***	0.032**
	(0.007)	(0.013)
total cognition scores (27 points)	-0.004***	-0.005***
	(0.001)	(0.001)
ln_earnings2	0.003***	0.001
	(0.001)	(0.001)
DB Pension	-0.422***	0.021*
	(0.007)	(0.012)
DC Pension	-0.435***	-0.037***
	(0.007)	(0.009)
DB/DC Pension	-0.403***	-0.016
	(0.011)	(0.023)
Emp_Health_Ins_Own	0.021***	0.010
	(0.007)	(0.009)
Emp_Health_Ins_Spo	0.021***	-0.009
	(0.007)	(0.010)
Constant	0.226***	0.144***
	(0.020)	(0.030)