

# Latent Work Capacity and Retirement Expectations

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# How do we measure work capacity?

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It's hard! *Work capacity* is not the same as working, which is what we observe.

Some examples of current approaches:

- Use survey measures of work limitations (e.g., Burkhauser, Houtenville and Tenant, 2012; Maestas, Mullen and Rennane, forthcoming)
- Indirectly estimate work capacity by examining individuals' labor supply responses to policy variation in disability insurance or retirement programs (e.g., Bound, 1989; Maestas, Mullen and Strand, 2013)
- Assume ability to work is function of health characterized by mortality rate and estimate current work capacity by past observed employment (Wise (ed.) 2017, *Social Security and Retirement Around the World: The Capacity to Work at Older Ages*)

# What does it mean to be able to work?

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In order to work, one must be able to do a(t least one) **job**.

A **job** is a bundle of **tasks**, or activities, that workers agree to perform in exchange for a wage. (Autor, Levy and Murnane, 2003; Yamaguchi, 2012).

**Tasks** require **knowledge**, **skills** and **abilities** in order to perform them.

- **Knowledge** — “sets of facts and principles needed to address problems and issues that are part of your job”
- **Skill** — “the ability to perform a task well... usually developed over time through training and experience”
- **Ability** — “an enduring talent that can help a person do a job”

*[Source: O\*NET taxonomy]*

# Example: Surgeon

Tasks		
Follow established surgical techniques during the operation.	Examine patient to obtain information on medical condition and surgical risk.	Operate on patients to correct deformities, repair injuries, prevent and treat diseases, or improve or restore function.
Knowledge	Skills	Abilities
Medicine and Dentistry	Active Listening	Problem Sensitivity
Customer and Personal Service	Complex Problem Solving	Deductive Reasoning
English Language	Critical Thinking	Inductive Reasoning
Biology	Judgment and Decision Making	Manual Dexterity
Education and Training	Reading Comprehension	Finger Dexterity

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# Our Contribution

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We propose a **new measure** of work capacity that explicitly links individuals' abilities to the jobs they are able to perform.

To construct our measure, we collected **new data** on a wide range of abilities harmonized to occupation-level measures of job demands available in the Occupational Information Network (O\*NET).

Today: Present some descriptive patterns and relate work capacity to work status and retirement expectations.

## Instructions for Making Abilities Ratings

These questions are about job-related activities. An *ability* is an enduring talent that can help a person do a job. You will be asked about a series of different abilities and how they relate to *your current job* – that is the job you hold now.

**Each ability in this questionnaire is named and defined.**

For example:

### Arm-Hand Steadiness

The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.

You are then asked to answer two questions about that ability:

**A** *How important is the ability to your current job?*

For example:

How important is ARM-HAND STEADINESS to the performance of *your current job*?

Not Important\*      Somewhat Important      Important      Very Important      Extremely Important

① ————— ② ————— ③ ————— ④ ————— ⑤

*(Note: An 'X' is marked through the number 4 in the original image.)*

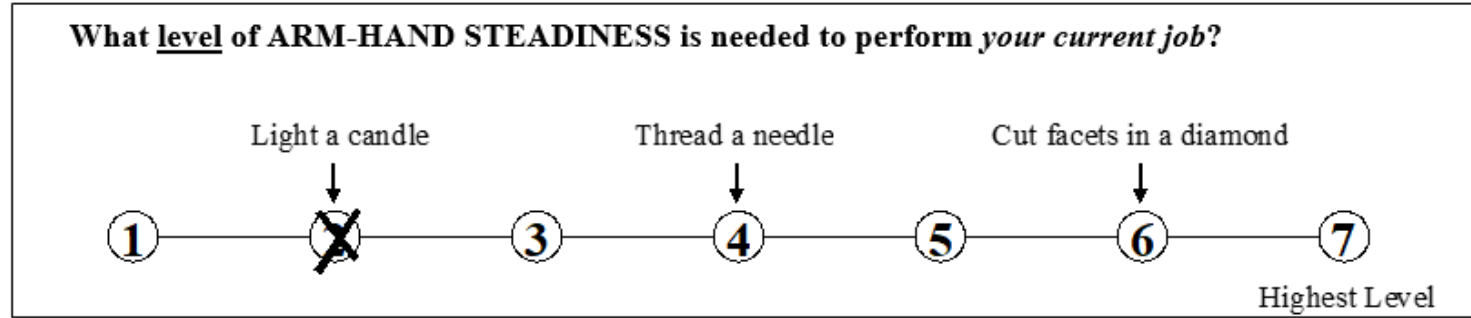
Mark your answer by putting an **X** through the number that represents your answer.  
Do not mark on the line between the numbers.

Source: O\*NET  
Abilities Survey

**\*If you rate the ability as Not Important to the performance of your job, mark the one [X] then skip over question B and proceed to the next ability.**

***B*** ***What level of the ability is needed to perform your current job?***

To help you understand what we mean by **level**, we provide you with examples of job-related activities at different levels for each ability. For example:



*Mark your answer by putting an X through the number that represents your answer.  
Do not mark on the line between the numbers.*

*Source: O\*NET  
Abilities Survey*



# Instructions for Rating Your Abilities

In this survey, you will be asked to rate your level of functioning for a series of different abilities. When giving your rating, please rate your *current* level of ability, not what you were able to do in the past or what you could do in the future with additional training. If you use an assistive device (e.g., glasses), please rate your ability when using the assistive device.

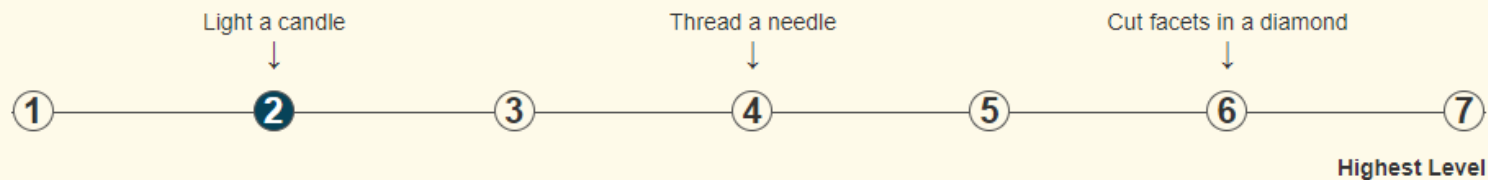
First you will be shown the name and definition of an ability. Please read the definition carefully. For example:

## Arm-Hand Steadiness

**The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.**

You will then be asked to rate your level of ability on a scale from 1 to 7, where 1 is the lowest possible level and 7 is the highest possible level. If you cannot do *any* level of the ability, please select that response below the numeric scale. To help you understand what we mean by **level**, we provide you with examples of tasks or activities at different levels for each ability. The examples are meant to help you find your own rating within the scale; do not focus on whether you perform the *specific* activity, which may come from an unfamiliar context. For example:

**Please rate your level of ARM-HAND STEADINESS by clicking the circled number that best matches your level of ability. If you cannot do any level of the ability, please select the response below the number scale instead of clicking a circled number.**



I cannot do any level of this ability.

◀ Back

Next ▶

**Table 1. Summary of Abilities in Adapted "O\*NET" Abilities Survey**

<b>Item</b>	<b>Ability</b>	<b>Item</b>	<b>Ability</b>
1	Oral Comprehension	27	Response Orientation
2	Written Comprehension	28	Rate Control
3	Oral Expression	29	Reaction Time
4	Written Expression	30	Wrist-Finger Speed
5	Fluency of Ideas	31	Speed of Limb Movement
6	Originality	32	Static Strength
7	Problem Sensitivity	33	Explosive Strength
8	Deductive Reasoning	34	Dynamic Strength
9	Inductive Reasoning	35	Trunk Strength
10	Information Ordering	36	Stamina
11	Category Flexibility	37	Extent Flexibility
12	Mathematical Reasoning	38	Dynamic Flexibility
13	Number Facility	39	Gross Body Coordination
14	Memorization	40	Gross Body Equilibrium
15	Speed of Closure	41	Near Vision
16	Flexibility of Closure	42	Far Vision
17	Perceptual Speed	43	Visual Color Discrimination
18	Spatial Orientation	44	Night Vision
19	Visualization	45	Peripheral Vision
20	Selective Attention	46	Depth Perception
21	Time Sharing	47	Glare sensitivity
22	Arm-Hand Steadiness	48	Hearing Sensitivity
23	Manual Dexterity	49	Auditory Attention
24	Finger Dexterity	50	Sound Localization
25	Control Precision	51	Speech Recognition
26	Multilimb Coordination	52	Speech Clarity

# American Work Capacity & Abilities Survey

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Survey Module #508 in RAND American Life Panel (ALP)

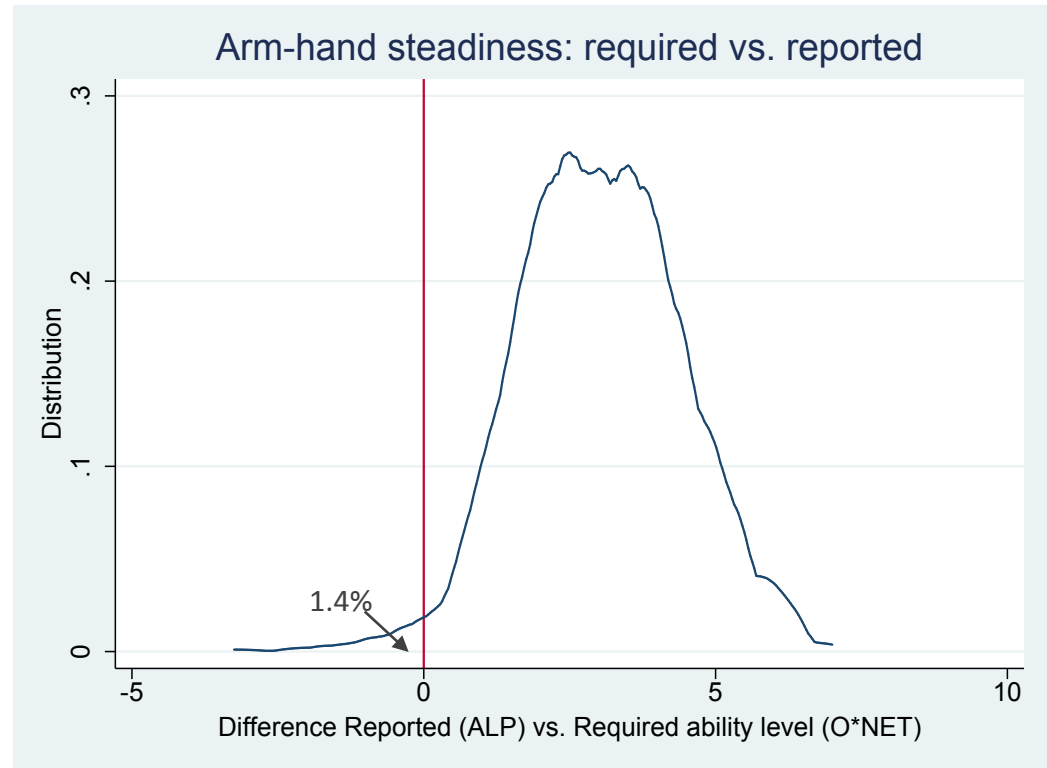
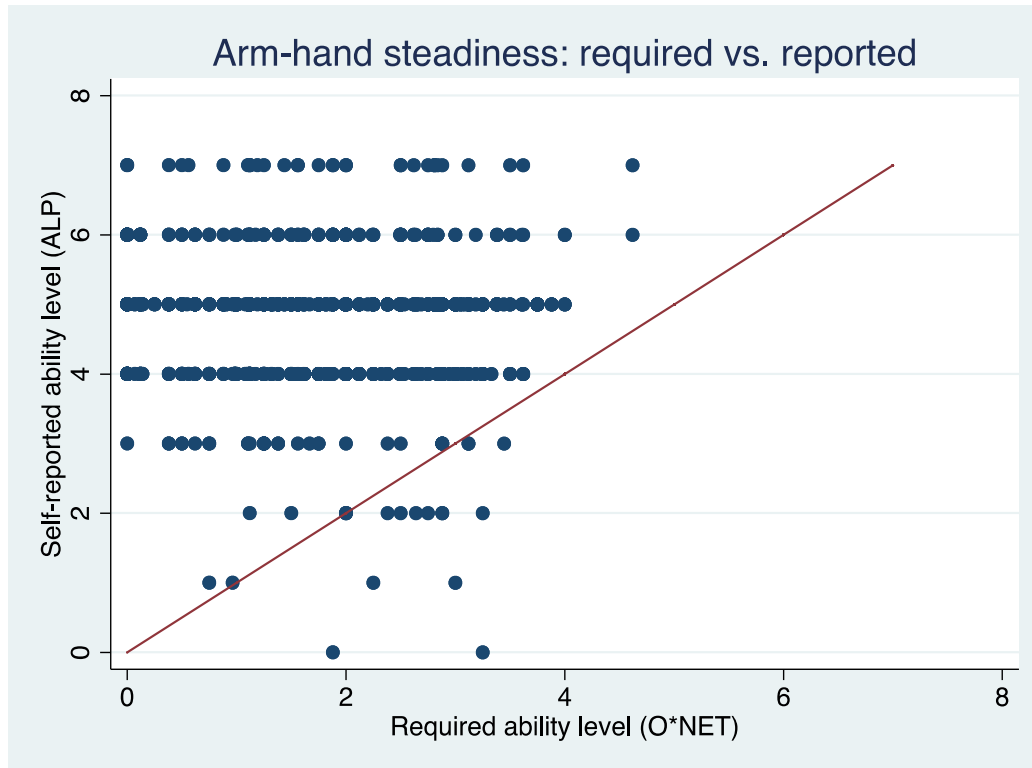
July-September 2018

N=2,270, ages 25-70

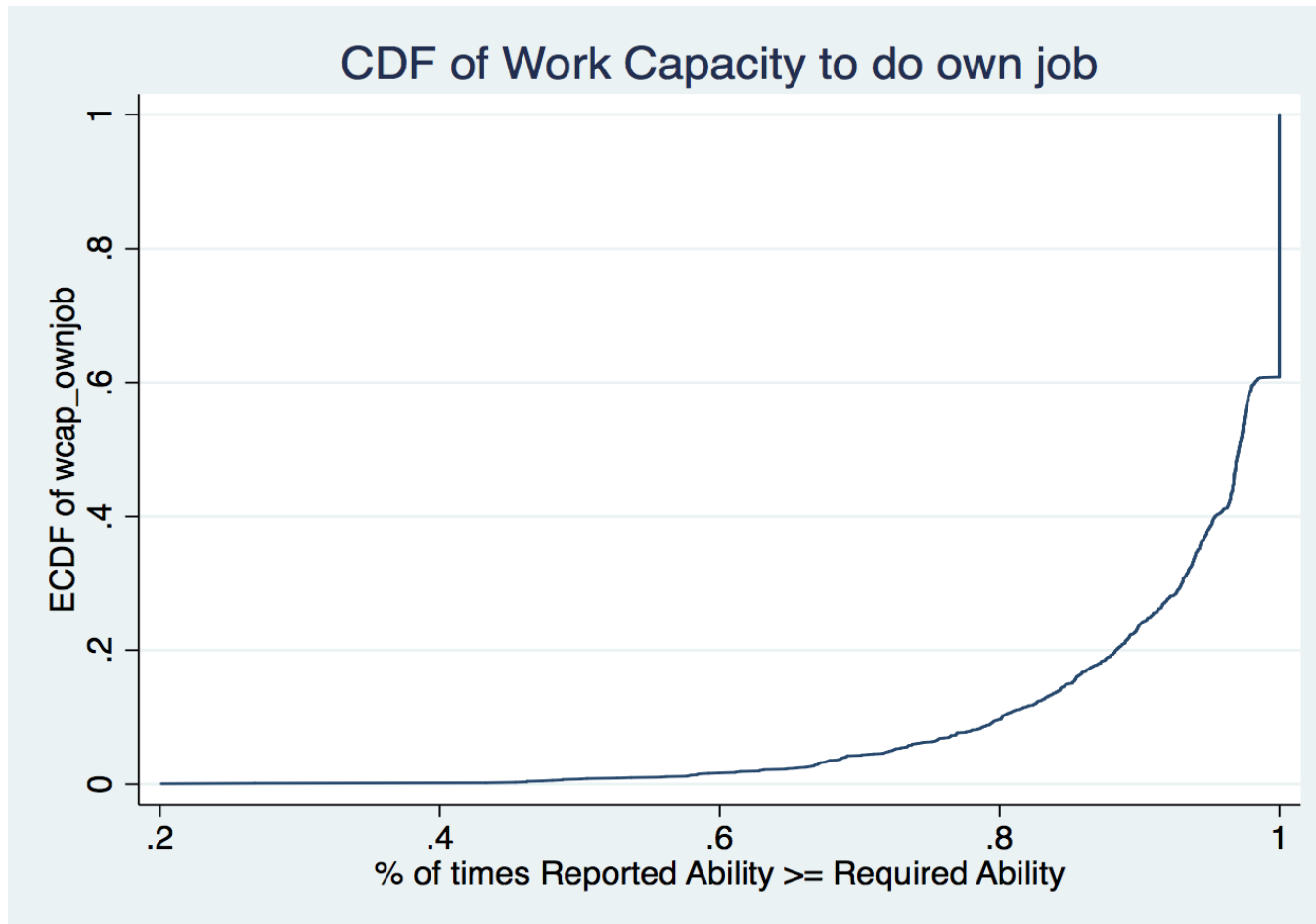
- Response rate = 82%
- 69% sample = active workers

# Relating ability ratings to job demands

## Example: arm-hand steadiness



# Validation: Can workers do their current jobs?



Mean=0.93

10<sup>th</sup> percentile=0.80

25<sup>th</sup> percentile=0.91

Median=0.97

61<sup>st</sup> percentile=1

Sample: Current workers

Required abilities for a job are weighted for their importance for that job

# Constructing Total Work Capacity

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For any given person:

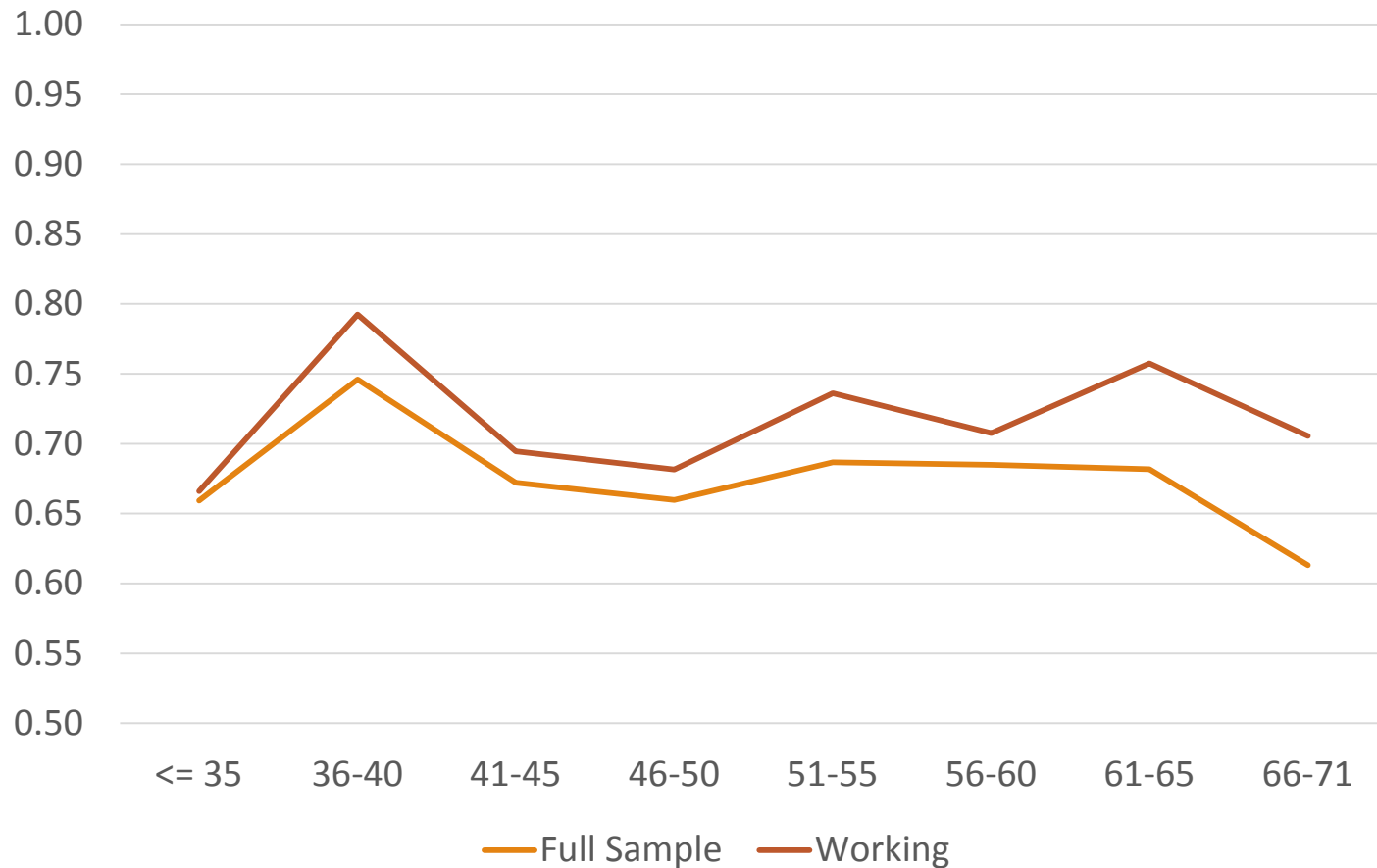
1. Construct job-specific work capacity for all jobs in the national economy.
2. Create an indicator for whether person can do at least 91% of the job (based on 25<sup>th</sup> percentile of job-specific work capacity in own job).
3. Construct weighted percentage of jobs the person “can do” based on abilities alone, weighted by share of jobs available to someone with the same education level.

Some stats:

Mean	Std Dev	Median	No WLHP	Has WLHP
0.67	0.38	0.86	0.71	0.51

*WLHP=Work-limiting health problem*

Total Work Capacity by Age



Work capacity declines with age—but not in working population

# How does total work capacity relate to work status and retirement expectations?

<b>Dependent variable:</b>	<b>Observed work status (full sample)</b>	<b>Self-reported probability of working at age 65 (workers only)</b>
Total work capacity	0.067***	0.112***
No work-limiting health problem	0.354***	-0.020
Constant	0.759***	0.522***
Number of observations	2,164	1,317



# Summary

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Measured work capacity correlates with report of work-limiting health problem

Measured work capacity decreases with age

- Not if we restrict to people who are (still) working -> important to have a measure of work capacity for *nonworkers* to forecast effects of policies to extend working lives

Measured work capacity is associated with retirement expectations

- Presence of work-limiting health problem can tell us who is working *now* but not about who *plans* to work longer