

Occupational Requirements Survey (ORS)

Collection Manual

Third Edition



Instructions in this manual became effective July 2017. It includes updated procedures information from Procedure Alerts through #181, Technical Memorandums through #322, and applicable ORS SO-70s through #32.

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Preface

The Occupational Requirements Survey (ORS) Collection Manual is the primary document providing instructions on survey procedures, data collection, and coding for the Occupational Requirements Survey. This document provides broad collection and coding instructions applicable across all ORS collection activities and includes detailed data element definitions, explanations, and examples.

This Manual reflects current concepts, definitions, and practices. It will be updated periodically and supplemented by Technical Memoranda and Procedures Alerts issued from the Office of Compensation Levels and Trends (OCLT). See specific changes listed in the [Major Changes Table](#).

Introduction

The Social Security Administration (SSA) administers two large national programs that provide disability benefits to individuals who cannot work due to mental or physical disabilities. SSA uses an adjudication process to determine if individuals meet eligibility requirements to receive benefits. To support this adjudication process, SSA needs information about the requirements of work as it is generally performed in the national economy.

SSA and BLS signed an interagency agreement to begin collecting new occupational requirements data for use in SSA's disability programs. SSA chose the BLS, specifically the National Compensation Survey (NCS), because the NCS collects quality data on work characteristics in the economy. As a result, the BLS established the Occupational Requirements Survey (ORS) in 2012 to collect and publish occupational information that meets the needs of SSA at the level of the [O*NET-SOC 2010 occupation codes](#).

In 2013, NCS field economists began collecting data on primary physical attributes, environmental conditions, and vocational preparation requirements of work from establishments for selected cities. Collection of mental and cognitive demands of work began in 2014. In 2015, data was collected from a small number of establishments throughout the U.S. in preparation for the first production run. The first survey results were released in December 2016. Collection beginning in summer of 2017 marks the third and final sample group for estimates expected in the fall of 2018.

This manual outlines the fundamental collection concepts and technical procedures for collecting the ORS data elements, including: task lists, specific vocational preparation, physical demands, and environmental conditions. This manual incorporates revised procedures that narrow the scope of work that pertains to the hiring and pay factors of the job, rather than the more broad guidance to collect information about work as generally performed. The revised scope of work is limited to only tasks that are related to the "critical job function" (i.e., the reason the job exists). These tasks must be expected and usual, now defined as "critical." In addition, after further review of the duration data; (which included point estimates, respondent-determined ranges, and SSA-defined ranges) and collection procedures the BLS revised procedures to collect duration data only in the SSA-defined ranges. This change simplifies collection, reduces respondent burden, and more accurately reflects duration of job demands. By adjusting the parameters of what work is included to only that of the critical functions of jobs and revising the way we collect duration, the BLS expects to continue to accurately capture job requirements at this more narrowly defined scope while still identifying changes in the way work is performed in the modern economy.

Information Reference Guide

Useful references are shown below.

References:

To view the ORS Public Website:

<http://www.bls.gov/ors/>

To view the Standard Occupational Classification:

<http://www.bls.gov/soc/>

To view the O*Net SOC Crosswalk:

<http://www.onetonline.org/crosswalk/>

To view information on SSA's Occupational Information System Project:

https://www.ssa.gov/disabilityresearch/occupational_info_systems.html

For definitions of numerous ORS terms, see the [Glossary](#).

Major Changes to ORS Manual (July 2017)

The ORS Collection Manual continues to experience significant revisions. New sections have been added and some existing sections have undergone extensive change. Please continue to read the Manual as new and review the Major Changes Table for specific guidance on new material for 704 Collection.

Chapter	Source	Section Number and Action
Introduction	SI&P	Introduction reworded.
Key Concepts (1)	ORS Revision Team	New chapter combines definitions from Chapter 2 Fundamentals ORS Second Edition Manual as well as adding several new concepts. Please read as new.
		1_01 Added definitions for Worker, Job, Occupation ; added background information regarding the Standard Occupational Classification (SOC) system and Occupational Information Network (O*NET)
		1_02 Revised definition Work as Generally Performed
		1_02 Added definitions for Critical Job Function, Critical Tasks, and Incidental Tasks
		1_03 Added definition of Job Demands
		1_04 Added overall coding threshold for all ORS elements
		1_05 Modified duration guidelines- most job demand elements will be slotted into specified range categories.
		1_06 Revised definition of Accommodation to include only accommodations made for workers carrying out critical job functions. Clarified examples.
Collection Strategies (2)	PPD Maintenance	Renumbered Chapter 1 ORS Second Edition manual as Chapter 2 in ORS Third Edition Manual
	ORS Revision Team	2_01 Modified guidance on using job descriptions and other establishment documents as collection aids; merged most of former Section 1_04: Identify potential data elements ahead of time from ORS Second Edition Manual into this section.

Classifying Jobs (3)	ORS Revision Team	New chapter combines information from previous Chapter 2 Fundamentals and Chapter 3 Occupational Information from ORS Second Edition manual as well additional guidance for classifying jobs in ORS. Added Overview section.
		3_01 Added SOC Classification section
	ORS:SO-70# 23	3_03 Added Work Schedules section
Task Lists (4)	ORS Revision Team	Existing chapter which has been substantially revised. Please read as new. Added Overview section. Revised definition for Task Lists
		4_01 Added Collecting Task Lists section.
		4_02 Added Use of Job Descriptions in Creating Task Lists section
		4_03 Renamed and updated Documenting an ORS Task List section
		4_04 Added Consistency Between Task List and Element Coding section
		4_05 Eliminated from traveling demands driving for incidental tasks and time spent outdoors while traveling between job sites when that time is only spent getting from the mode of transportation to indoor work locations
SVP (5)	PPD Maintenance	Reordered existing sections within this chapter for consistency
	PA 180	5_03 Added information regarding distinguishing between Professional and Doctorate degrees. Added definition for Doctorate Degree
	PA 176	5_04 Revised definitions for Licenses, Certifications, Educational Certificates, and Other . Modified and added examples.
	ORS: SO-70: #20	5_04 Clarified guidance in subsection ‘Guidance for Collecting Pre-employment Training’.
	ORS SO-70: #17	5_04 Added subsection ‘Counting Semester Units’. Added definitions for Semester Unit, Credit Hour, and Semester .
	TM 315 Supplement	5_06 Added subsection ‘Guidance for collecting Post-employment training’

Cognitive Elements (6)		Cognitive Elements will not be collected for the 704 sample.
Physical Demands (7)	ORS Revision Team	7.01 Clarified collection guidance for both ‘How to collect Physical Demands’ and ‘Concurrent Physical Demands’
		7.02 Clarified that coding duration of Sitting vs. Standing/Walking hours should be for entire typical work day and not only for critical tasks.
		7.02 Clarified Standing/Walking examples to include Stooping. Eliminated “Stooping can performed while Sitting.”
		7.02 Renamed definition Sitting/Standing at Will , added guidance that ability to sit/stand at will should be determined based on critical tasks, added examples
		7.03 Added ‘None’ and ‘Negligible’ weight options to all Lifting/Carrying duration frequencies; Changed weight option from ‘Up to 10 pounds’ to ‘1-10 pounds’
		7.03 Clarified guidance for Lifting/Carrying and added example
	PA 179	7.04 Clarified guidelines for how to collect Pushing/Pulling
	ORS Revision Team	7.05 Eliminated “use a stepladder or another strategy to avoid overhead reaching”
		7.05 Clarified when to include/exclude Reaching while using crawling and climbing ladders, ropes, and scaffolding.
	PA 163	7.05 Clarified operating a steering wheel does not meet threshold for Reaching.
ORS Revision Team	7.06 Modified Fine Manipulation to include all duration spent using touchscreen or other hybrid keyboarding devices previously coded as Keyboarding; added/modified examples of both gross and fine manipulation	
	7.07 Revised definition of Keyboarding to match existing glossary definition.	
	7.07 Eliminated all categories of Keyboarding except for Traditional. 10-Key devices are now included as Traditional keyboarding devices. Use of Touchscreen and Other keyboarding devices now counts as Fine Manipulation. Revised examples.	

	ORS Revision Team	<p>7_08 Modified Stooping definition and added threshold. Eliminated Stooping while sitting. Added examples of Stooping not meeting the definition.</p> <p>7_09 Revised guidance regarding Climbing Ramps or Stairs. Modified guidance for work related and structure related climbing. Exclude any climbing of handicap access ramps. Added/revised examples</p> <p>7_10 Moved Driving to Physical Demands chapter. Added guidance to assume peripheral vision is present if driving is present.</p> <p>7_10 Eliminated coding of ‘Passenger’ or ‘Other’ for Driving</p> <p>7_11 Revised definition of Communicating Verbally to reflect glossary definition. Exclude from duration any time spent listening. Include only duration of communicating verbally whenever speaking is a critical task. Added several examples of when to include/exclude Communicating Verbally</p>	
	ORS SO-70:27; TM 315 Supplement	<p>7_11 Added Work-Related Intercoms/PA Systems; Clarified Hearing-Other Sounds</p>	
	Environmental Conditions (8)	ORS Revision Team	<p>8_01 Added Overall Coding Threshold for all ORS Elements guidance</p> <p>8_02 Eliminated condition for Outdoors threshold “a worker moves between different work sites during the workday”; Revised examples</p> <p>8_03 Eliminated condition for Extreme Cold threshold “Workers are indoors in locations that are not climate controlled”; Revised examples</p> <p>8_04 Eliminated condition for Extreme Heat threshold “Workers are indoors in locations that are not climate controlled”; Revised examples</p> <p>8_05 Added guidance to Wetness about use of gloves</p>
		ORS SO-70:28	<p>8_06 Added definition of oppressive humidity and added warehouse worker example</p>
		ORS Revision Team	<p>8_07 Added guidance regarding when exposure to Hazardous Contaminants is considered present; Added example</p> <p>8_08 Clarified guidance on Proximity to Moving Mechanical Parts; Added examples</p>

Appendix 2	ORS SO-70: 30	Added hammer weights
Appendix 3	Ed.gov	Added List of Professional and Doctorate degrees
Glossary	PPD Maintenance/ORS Revision Team	Terms added or revised: Accommodation Certification Credit Hour Critical Job Function Critical Tasks Doctorate Degree Educational Certificate Extreme Cold Extreme Heat Incidental Tasks Job Job Demands License Observable Behaviors Occupation Occupation Specific Credentials Oppressive (Humidity) Other Credential Professional Degree Semester Semester Unit Sitting/Standing at Will Stooping Task Task Lists Unobservable Behaviors Work as Generally Performed Worker

Chapter 1: Key Concepts

The purpose of the Occupational Requirements Survey (ORS) is to provide the Social Security Administration (SSA) with data about how work is generally performed in the national economy.

Jobs are performed differently from one establishment to another. ORS collects information from establishments about job demands related to the critical tasks of selected jobs within the establishment. These individual data are combined to represent the job demands for the occupations as generally performed in the national economy.

This chapter outlines key concepts and definitions associated with ORS collection:

- [Task, Worker, Job, Occupation](#)
- [Work as Generally Performed, Critical Job Function, Critical and Incidental Tasks](#)
- [Job Demands](#)
- [Thresholds](#)
- [Duration](#)
- [Accommodations](#)
- [Mitigation](#)

1_01 Task, Worker, Job, Occupation

Task

A **task** is a distinct activity assigned to or performed by workers who are carrying out job duties that result in a specific outcome.

Worker

A **worker** is an employee who is assigned a specific set of tasks. The term worker is equivalent to the term ‘position,’ historically used in the *Dictionary of Occupational Titles* and the *Revised Handbook for Analyzing Jobs*.

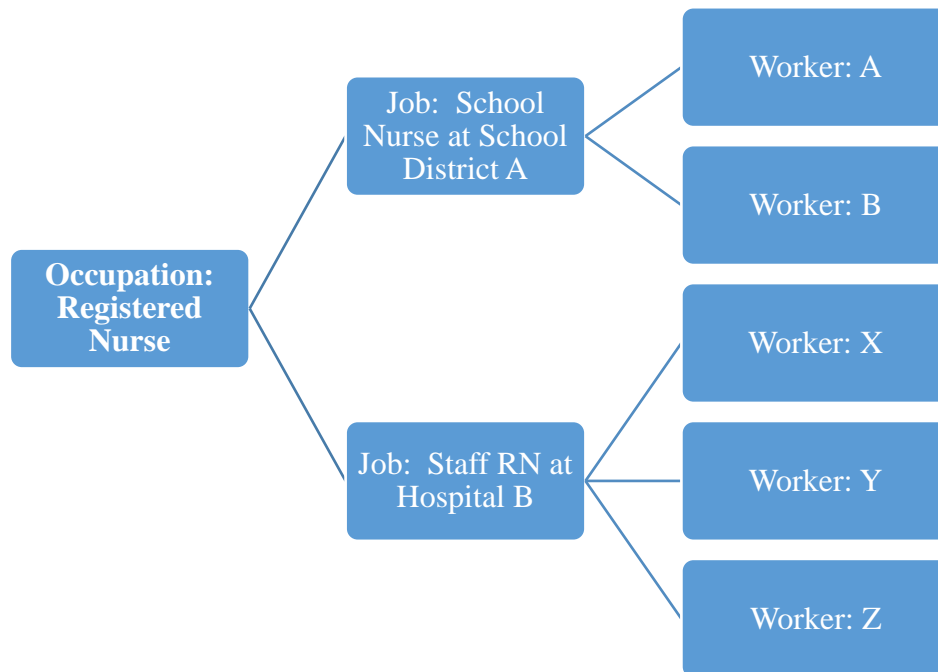
Job

A **job** represents all workers in an establishment with the same or similar tasks such that they may be analyzed collectively. In ORS, a sampled quote represents a job.

Occupation

An **occupation** is a broad term representing a defined set of responsibilities, skills, and tasks not specific to a company. In ORS, all sampled jobs are assigned to an occupation defined in the 2010 Standard Occupational Classification (SOC) system.

Comparison of Occupation, Job, and Worker



Standard Occupational Classification (SOC) system and O*NET

ORS classifies selected jobs found in establishments into the most detailed occupational code available. Federal statistical agencies are mandated to use the [SOC](#) system for the purpose of collecting, calculating, or disseminating occupational or labor market data.

To provide additional levels of detail, ORS jobs are classified using expanded eight-digit occupational codes from [O*NET \(Occupational Information Network\) Online](#).

For more information about job classification in ORS, see [Chapter 3: Classifying Jobs](#).

1_02 Work as Generally Performed, Critical Job Function, Critical and Incidental Tasks

Establishments may assign tasks to a job that are necessary for establishment operations but are not directly related to the larger occupation. ORS applies the concepts of critical job functions and critical tasks to define the scope of tasks included for duration coding, which is considered **work as generally performed**.

Work as Generally Performed

Work as generally performed refers to the ways in which most workers carry out the **critical tasks** associated with the **critical job function** of their occupation.

Critical Job Function

The critical job function is the main purpose of the job. It consists of critical tasks that are integral to the job. The job would not exist without the critical job function(s), which are the primary pay factors for the job.

Critical job functions are broad and often correspond to the detailed SOC occupational definitions.

Most jobs have one or a very limited number of critical job functions. An example of a job with multiple critical job functions is a combination job. While combination jobs are assigned the SOC code associated with the highest skill level required by the job (see section [3_02](#)), the tasks will cover all of the critical job functions.

Critical Tasks

A **critical task** is an activity workers *must* perform to carry out their critical job function(s). A task is considered critical when it is a primary and required component of the critical job function.

Critical tasks are:

- Tasks that workers are evaluated and rated on
- Tasks that are necessary to carry out the critical job function(s), despite the frequency they are performed

Example: Firefighters climb ladders infrequently, but must be able to perform this task in order to fight fires.

- Tasks that are expected and usual and workers are assigned to spend 10% or more of their work time performing, regardless of their relation to critical job function
- Example: Accountants in a real estate leasing office carry out accounting tasks as their critical job function. However, accountants in this establishment are also expected to spend 10% or more of their time inspecting and showing potential tenants rental properties. Since the time spent performing rental property tasks is 10% or more of their work time, these tasks are considered critical for this job.*

Incidental Tasks

Incidental tasks are excluded from ORS collection. A task is considered incidental when it does not support a critical function of a job, or is not a primary or required component of the critical function(s) of a job.

Incidental tasks are performed less than 10% of the time and meet at least one of the following conditions:

- are not tasks the job is evaluated or reviewed for
- are not required to carry out the critical job function(s)
- may be carried out by workers in any job at the establishment (these tasks may be important but are not a function of any one job at the establishment)

Example: When the copier is out of paper, any staff member refills the machine.

Exclude, regardless of the time workers spend performing them, incidental tasks that:

- are voluntary
- occur by chance (includes response to unusual or emergency situations unless a critical function of the job is emergency response)
- are specific to only one or a few workers in a job whenever a job has multiple workers

Example: At least one stocker at a warehouse must be able to operate a forklift, but it is not required of all the stockers at the warehouse to operate forklifts.

For more information on how to collect and document critical job function(s) and critical tasks in ORS, see [Chapter 4: Task Lists](#).

1_03 Job Demands

Job demands

Job demands are the knowledge, cognitive abilities, and physical actions required to perform critical tasks, as well as environmental conditions experienced while completing critical job tasks. Job demands include observable and unobservable behaviors:

- Observable behaviors: typing, driving, standing, lifting, reaching, etc.
- Unobservable behaviors: learning and applying knowledge, perception, problem solving, etc.

ORS captures a variety of job demands organized into four broad areas:

- [Specific Vocational Preparation](#)
- [Cognitive Elements](#)
- [Physical Demands](#)
- [Environmental Conditions](#)

1_04 Thresholds

A **threshold** is a magnitude or intensity that must be met or exceeded for a certain condition to be considered for ORS collection.

Overall Collection Threshold for All ORS Elements

Only the knowledge, cognitive abilities, physical actions, and environmental conditions required to perform critical tasks, as well as environmental conditions associated with a job's [critical tasks](#) are in-scope for ORS.

For more information about collecting the presence of ORS elements associated with critical tasks, see [Chapter 4: Task Lists](#).

Thresholds for Individual ORS Elements

Many individual ORS data elements must also meet additional thresholds before the element presence and frequency is collected and coded.

Thresholds exist for the following individual ORS elements:

Physical Demands

[Pushing and Pulling](#)

[Reaching](#)

[Stooping](#)

Environmental Conditions

[Outdoors](#)

[Extreme Cold](#)

[Extreme Heat](#)

[Wetness](#)

[Humidity](#)

[Hazardous Contaminants](#)

[Proximity to Moving Mechanical Parts](#)

[Heavy Vibration](#)

[High, Exposed Places](#)

Refer to the section on each element for a description of the relevant threshold.

1_05 Duration

Duration is the total time a worker performs critical tasks using certain physical demands or is exposed to an environmental condition.

When a respondent indicates that an element is not performed or experienced as part of the critical tasks, duration is coded as not present.

Additionally, when a data element does not meet an associated [threshold](#), it is out-of-scope and duration is coded not present.

When the associated threshold is met, capture the total amount of time a worker performs a physical demand or is exposed to an environmental condition. Percent of time is based on the full work day and captured according to the following duration scale:

Duration Scale	Percent of Time	Daily*	Weekly*	Annually*
Seldom	Up to 2%	Up to 10 minutes per day	Up to 1 hour per week	Up to 42 hours a year
Occasional	2% up to 1/3	10 minutes up to 2 2/3 hours per day	1 hour up to 1 2/3 days per week	One week up to 4 months
Frequent	1/3 up to 2/3	2 2/3 hours up to 5 1/3 hours	1 2/3 days up to 3 1/3 days per week	4 months up to 8 months per year
Constant	2/3 or more	5 1/3 hours or more	3 1/3 or more days per week	More than 8 months per year

* Hours are based on 8 hours daily, 40 hours weekly, 2080 hours annually work schedule.

Duration for critical tasks that occur less than daily

If a physical demand or environmental condition associated with critical tasks occurs weekly, monthly, annually, or seasonally, calculate the percent of time spent performing the activity and select the duration category.

Example:

Five hours per week, teachers enter grades and respond to emails using a traditional keyboard. They work 40 hours per week.

Keyboarding = 5 hours/40 hours = 12.5% of their weekly schedule. Code duration as '2% up to 1/3'.

1_06 Accommodations

Accommodations are changes to tasks or the work environment, enabling a person with a disability to compete equally or perform critical tasks. Not all employers can offer the same accommodations.

Collect job demands based on how most workers perform critical tasks without accommodation. When a change is available to all workers in the job, it is not considered an accommodation.

Examples	Accommodation	Reason
Allowing a worker to avoid/reassigning critical tasks to other workers in the job	Yes	Employer modification for one worker to perform critical tasks.
Allowing a worker to avoid/reassigning incidental tasks to other workers in the job	Not Applicable	Accommodations apply to critical tasks only and all incidental tasks are excluded from ORS collection
Allowing a worker to stand for a job normally performed sitting or sit for a job normally performed standing	Yes	Employer modification for one worker
Allowing all workers in the job the option to stand for a job normally performed sitting or sit for a job normally performed standing	No	Offered to all workers
Buildings with handicap access ramps and other unrestricted handicap access equipment	No	Employer does not provide or restrict their use
Tools such as eyeglasses, contacts, and hearing aids	No	Employer does not provide or restrict their use

1_07 Mitigation

Mitigation occurs when the employer installs devices or requires the use of personal protective equipment (PPE) that fully or partially eliminate potentially hazardous conditions or exposures.

Personal protective equipment (PPE) is gear used or worn to minimize exposure to serious workplace injuries and illnesses. Examples of PPE include gloves, boots, helmets, goggles, earplugs, respirators, and protective clothing such as lab coats.

For more information about collecting Environmental Conditions when mitigation strategies are present, see [Chapter 8: Environmental Conditions](#).

Chapter 2: Collection Strategies

The goal of ORS, like NCS, is to collect as much quality data as possible in an efficient manner. Strategies for success rely on positive respondent feedback, knowledgeable field economists, and expedited collection procedures. Good response rates are the foundation of reliable statistical data. Field economists collect high quality data by obtaining cooperation from a large portion of sampled establishments and ensuring the respondents at these establishments provide complete and accurate data.



ORS presents a unique collection opportunity because most people are familiar with the Social Security Administration (SSA) programs. While it does not guarantee cooperation, this familiarity may help field economists get quality information for both ORS and NCS. The following strategies, explained further in this chapter, facilitate successful ORS collection:

- [Use Job Descriptions and Other Descriptive Documents to Prepare for Collection](#)
- [Identify a Collection Approach](#)
- [Prioritize to Maximize Data Collected](#)
- [Take Advantage of Opportunities to Observe Workers on Jobs](#)

2_01 Use Job Descriptions and Other Descriptive Documents to Prepare for Collection

Job descriptions and other establishment documents (e.g., Workers Compensation forms, OSHA/workplace safety forms, and organizational charts) are valuable tools when making a preliminary assessment of jobs and in expediting collection.

Use caution with establishment documents that include references to ORS elements and frequency. Job demands listed in job descriptions and other establishment documents may not match the definitions and thresholds for ORS elements. The description may also reflect the maximum exertion or exposure a worker could experience instead of the normal expectations and requirements of the job.

Before using any job descriptions or other descriptive documents, verify with the respondent they are current and accurately reflect the critical function and critical tasks of the job. Probe the respondent(s) before assuming any job demands and durations listed in a job description or other descriptive documents are consistent with ORS definitions and collection procedures. Job descriptions, or any other company documentation, are aids to collection and do not substitute for an interview.

Using job descriptions and other establishment documents may help to:

- Identify the potential critical job function(s) and critical tasks
- Determine possible Standard Occupational Classification (SOC) coding
- Review O*Net task lists associated with possible SOC options
- Launch discussions with the respondent on task lists, ORS data elements, and leveling
- Provide information on work schedules and supervisory information
- Learn about educational, training, certification, licensure, and experience requirements for Specific Vocational Preparation (SVP)

The presence of ORS data elements may be evident from the occupational information obtained from job descriptions and respondent discussion.

- Incidence of physical demand elements (e.g., writing is present, so gross and fine manipulation must be present)
- Incidence of environmental condition elements (e.g., tasks performed entirely in an office so working outdoors is not present)

Clarify any conflicting information that arises between respondent information collected early in the interview or through job descriptions and answers provided later in the collection interview. Confirm with the respondent that the researched information applies to the selected occupations. Resolve discrepancies with the respondent, during the interview or through follow up as needed.

2_02 Identify a Collection Approach

Each field economist should determine the best collection approach based on personal preference, establishment size, industry, and respondent personality. Options include collecting:

- Each quote individually.
- Multiple quotes concurrently.
- A portion of the interview for each quote individually and a portion for multiple quotes concurrently.
- Data from additional respondents such as supervisors, and occupational safety managers.

2_03 Prioritize to Maximize Data Collected

Efforts must be made to collect all data for all selected occupations. Sometimes that is not possible due to respondent constraints. Apply the following collection priorities to maximize data collected. Collect these items first:

- Task Lists
- SVP
- Cognitive Elements

The task list, knowledge, and cognitive abilities required inform the conversation and coding for all of the other elements.

Collect these physical demand elements next:

- Sitting vs. Standing/Walking and Sit/Stand at Will
- Lifting/Carrying
- Pushing/Pulling: hand/arm, foot/leg, and feet only

These three elements inform overall occupational strength and exertion requirements.

Collect the remaining elements to the greatest extent possible. At a minimum, attempt to collect the presence or absence of each item.

Conversational interviewing techniques can increase efficiency. Use information provided throughout the interview to support coding decisions. For example, if the task list for an occupation includes use of a computer, near visual acuity is present and may be assumed.

2_04 Take Advantage of Opportunities to Observe Workers on Jobs

ORS is collected by interviewing respondents who understand their establishment's job demands. Observations of workers can also be helpful in understanding how work is performed. They enable a better understanding of the physical actions and tools workers use as well as the environmental conditions in which they perform critical tasks.

- Notice workers and what they are doing while walking to and from the respondent's office.
- Accept offers for a company tour, especially for unfamiliar industries and jobs.
- Ask to observe jobs.
- Probe respondent while on a company tour to clarify what you observe to determine whether it is usual and associated with critical tasks.
- Document how your observations affect coding selections.

Chapter 3: Classifying Jobs

The goal of ORS is to capture work as it is generally performed in the national economy. Matching jobs found in individual establishments to the closest standard occupation in the national economy ensures any job demands collected reflect the correct occupation.

Other factors may also result in the need to further distinguish jobs during collection.

This chapter outlines the procedures for classifying and distinguishing jobs during the ORS collection process:

- [SOC Classification](#)
- [Job Characteristics](#)
- [Work Schedules](#)
- [Other ORS Variations](#)



3_01 SOC Classification

Identify the best SOC code based on SOC classification principles and the critical function and critical tasks of the job. Be sure to consider the work performed and the skills, education, and training required. Apply the [SOC Classification Principles and Coding Guidelines](#) and the definitions in the O*Net to determine the best match. For more SOC coding guidance, see [NCS Volume 1, Chapter 4](#).

Using O*NET

ORS requires job demands data coded at the most detailed level possible. SOC codes listed in the SOC manual are only listed at the 6-digit level. To provide additional levels of detail, ORS uses the 8-digit SOC codes created and used in the O*NET.

O*NET occupations contain definitions and detailed task lists and can provide verification that the best 8-digit SOC has been selected. If the task list provided by the respondent is significantly different from the O*NET list, review the SOC coding to ensure it is the best fit. Do not rely solely on the O*NET to determine the proper coding of SOCs or identify critical tasks.

Document any situation where an 8-digit SOC was available and not used. This may be appropriate because the occupation is not covered by any of the more detailed breakouts, or when more the one detailed breakout applies.

Example: A small shipyard has a combination Marine Engineer SOC 17-2121.01 and Marine Architect SOC 17-2121.02 occupation. The occupation performs both critical functions equally and the occupational work levels (4-Factors) are the same. Instead of choosing one of the two eight-digit codes, match the occupation to the 6-digit (combination) SOC 17-2121.00. Document your reason for not choosing one of the more detailed 8-digit SOC levels.

Classifying combination jobs

Some workers perform jobs that span more than one occupation. These **combination jobs** are difficult to classify in one detailed SOC code. If it is a common combination, check for any SOCs that cover the full span of the job.

When classifying a combination job, follow standard SOC classification principles:

- Select the SOC that matches the highest skill level performed by the job. Base skill level on information collected from the respondent.
- When there is no perceptible difference in skill levels, classify the SOC based on the critical functions required the majority of the time most often.

Document *all* SOC coding choices, including the correct secondary SOC code and associated duties.

Collect and code ORS elements based on how workers perform all critical tasks of a job that are related to different critical job functions, even if those tasks are related to different occupations.

Examples	Combination Job	Action	Reason
Receptionist/Secretary handles phones, reception, correspondence, and scheduling.	Yes	Select Secretary SOC. Document the receptionist SOC and collect all critical tasks.	The Secretary is the job with the higher skill level.
Teacher/janitor teaches shop during the school year; cleans the school during the summer.	No	Split the jobs at PSO.	The two jobs are unrelated and could be held by two different people.

Residual occupations

Classify jobs whose critical function and critical tasks are not described in a distinct detailed occupation in the appropriate “All Other” or residual occupation. Residual occupation categories appear as the last occupation in a group with a code ending in “99” and are identified by the words “All Other” at the end of the title. Residual occupations help identify unusual or emerging occupations.

Do not use residual occupation codes when you have insufficient information to determine whether a job belongs in a detailed or residual SOC. Code these jobs as a Refusal (REF).

Do not use residual occupation codes as a fallback when an establishment job title reflects a broad SOC group and encompasses different detailed SOCs. If a respondent cannot separate the detailed SOCs, select the detailed SOC which covers the majority of workers in the job title.

Examples	SOC Code
A school district groups all elementary and middle school teachers together. Respondent states majority work at the elementary school.	Select SOC of majority, 25-2021.00 Elementary School Teachers. Collect job demands applying to Elementary School Teachers only.
Substitute teachers	Select 25-3099.00, Teachers and Instructors, All Other. Substitute teachers are appropriately coded in a residual SOC.

University respondent cannot determine subject taught by associate professors in humanities department. An online search reveals majority of associate professors in the department teach English.

Select SOC of majority, 25-1123.00, English Language and Literature Teachers, Postsecondary.

3_02 Job Characteristics

Jobs in ORS are also classified by broad characteristics such as full-time/part-time, union/non-union, and time-based/incentive-based.

ORS procedures for classifying job characteristics follow NCS procedures. See [NCS Volume 1, Section 4.01](#).

3_03 Work Schedules

ORS captures the number of daily and weekly hours and annual weeks workers in the job are expected to perform.

For ORS, code the permanent, on-going work schedule of both exempt and non-exempt employees even when this time may exceed straight time pay. Exclude overtime hours worked for non-exempt employees working sporadic or ad-hoc overtime schedules.

For general procedures regarding coding work schedules, see [NCS Volume 1, Chapter 8](#).

3_04 Other ORS Variations

Jobs in ORS can vary for other reasons than described earlier in this chapter.

Reasons ORS variations may occur include:

Work preferences. For example, workers may be able to select whether to use the phone or email to contact a customer.

In this situation, code the duration based on the way most workers normally perform critical tasks.

Different tasks assigned on a regular basis. For example, workers rotate through different tasks supporting the same critical job functions within the same job.

In this situation, collect and code the full range or ORS element variation for critical tasks performed within the job.

The same critical tasks are performed at known different frequencies. For example, workers in the same job have different shifts that create variation in frequency.

In this situation, where the workers do not rotate regularly, identify the narrowest position and collect job demands related to the PSO 'hit' for the quote.

Scenario	Action	Reason
A company has day and night shift janitors that do not rotate. During PSO, 'day shift' janitors were selected. NCS leveling is the same, but the frequency of physical demands for lifting and push/pull differ for janitors working day shift versus working night shift.	Collect and code job demands for day shift janitors only.	The frequency of elements experienced are different by the shift, and workers do not rotate between shifts.
Nursing assistants rotate through shifts. Day shift has more interaction with patients and families.	Code the full range of job demands experienced.	Workers are expected to rotate between the various shifts.

Chapter 4: Task Lists

A **task list** itemizes the [critical tasks](#) performed within a job. This is because only the knowledge, cognitive abilities, physical actions, and environmental conditions associated with a job's critical tasks are in-scope for ORS.

The collection of task lists is essential to understanding how the critical tasks performed relate to the job demand elements. Therefore, coding of task lists is itself a required ORS element.



This chapter outlines the procedures for using task lists during the ORS collection process:

- [Collecting Task Lists](#)
- [Use of Job Descriptions in Creating Task Lists](#)
- [Documenting an ORS Task List](#)
- [Consistency between Task List and Element Coding](#)
- [Job Demands when Traveling is Involved](#)

4_01 Collecting Task Lists

Task lists reflect and record the detailed activities workers perform to accomplish critical functions. Task lists support SOC coding choices. Task lists also serve as a bridge between the critical job function and ORS element coding. There are many strategies for obtaining this information from respondents.

Possible ways to start the conversation include:

- What are the most important things this job does for your organization?
- What is the purpose of this job?
- What do workers in this job do in a regular day?

Critical tasks are not always obvious. When they are not, you must ask additional questions. Verify any unusual tasks for the occupation that are required, primary, and in support of the critical job function of the job. Only include tasks that do not support a critical job function when they are performed 10% or more of the work-day or week. Exclude any tasks that are not required, don't meet the threshold and/or are incidental.

Several questions that may help determine whether to include/exclude a task are:

- If workers could not do this, could the main purpose of the job still be accomplished?
- If no one in this job could perform this task, would the job still be useful to your organization?
- Are workers rated or evaluated on how well they perform this task?
- Is this something that anyone in the organization could do?

Examples of ORS Task Lists

Court Room Clerk	
<p><u>Critical Job Function</u> Perform clerical and courtroom duties in support of the municipal court</p>	<p><u>Critical Tasks</u></p> <ul style="list-style-type: none"> • Prepares docket or calendar of cases to be called • Assigns new court dates • Prepares legal forms, prepares and corrects convictions on computer • Reviews and researches documents online and in law library • Answers phone inquiries from attorneys, court personnel and the public • Accompanies judge with files into the courtroom on docket day. • Pushes cart with files and hands judge files as requested.

Excluded tasks:

- Crawls under desk to plug in new equipment. (Critical job function consists of clerical and courtroom duties. Plugging in equipment is not related to either. Task is infrequent, occurs by chance, and would not meet the 10% threshold for coding.)
- Voluntarily carries heavy packages delivered to reception area on the way into the office. (Task is optional, voluntary, and could be done by any job in the organization.)
- Walks across the street from the office to the courts building, climbing stairs to get into the building. (Climbing is optional as public buildings are mandated to have alternatives to stairs.)

Middle School Teacher

Critical Job Functions

Plans and provides classroom instruction to students in grades 6-8 in accordance with district and school policies and monitors students while on school premises.

Tasks

- Prepares, plans, and delivers instruction to students
- Meets with assigned team to develop lesson plans
- Uses smartboard in classroom teaching
- Grades assignments and enters scores into computers
- Monitors students getting on and off buses in the parking lot and during recess to ensure safety

Excluded tasks:

- Goes on annual field trip to a local water sanitation plant with students (The field trip is not a *primary* component of instructing and monitoring students and is not a regular part of the job. See incidental tasks.)
- Decorates classroom with posters (This task does not involve actual instruction or monitoring of students. Additionally, a teacher can decide whether to decorate the classroom or not so it is optional.)

Hairdresser	
<u>Critical Job Function</u> Provides beauty services relating to clients' requests.	<u>Tasks</u> <ul style="list-style-type: none"> • Shampoos, cuts, colors, blow dries hair for men, women, and children • Recommends styling products • Perms hair • Waxes eyebrows and facial hair • Creates up-dos for special occasions like weddings or prom
<u>Excluded tasks:</u> <ul style="list-style-type: none"> • Answers phone when receptionist is at lunch (It is not related to providing beauty services and is generally done by another job.) • Helps delivery person to offload shipment of beauty supplies for 30 minutes per week (It is not a critical task associated with providing beauty services and is performed less than 10% of time.) 	

4_02 Use of Job Descriptions in Creating Task Lists

Job descriptions often provide considerable information about the tasks that jobs perform, but they can be outdated and misleading. Respondents are the primary source of occupational information. If a respondent is insistent that a job description be used to code tasks, the following must be verified before using the information:

- Description is current
- Duties are accurately portrayed (job descriptions often overstate duties)
- Description is for the correct job
 - Title/job code matches quote selection
 - Description covers sufficiently narrow duties (e.g., if the selected quote is an art teacher then the description for a primary teacher would not be narrow enough)

Even after verification of the above items, proceed with caution. Job descriptions can be useful in determining what tasks should be included, but they often don't describe how tasks are performed.

4_03 Documenting an ORS Task List

Code the critical job function(s) and the critical tasks performed in support of the critical job function(s) for every usable quote. Helpful factors to include for context and improved understanding of potential ORS elements are:

- How tasks are performed
- Where tasks are performed
- Materials used-types of data, tools, and equipment
- Origination and destination of materials or information used
- People with whom the job interacts

Include details that validate element coding, such as examples of items lifted/carried, examples of items pushed/pulled, presence of driving and vehicle type, and how environmental condition exposures meet thresholds.

Copying/pasting entire job descriptions, the O*NET task list, the O*NET definition, or the SOC Manual definition is unacceptable and does not meet the task list requirement.

Using a simple approach similar to the one used by O*NET makes comparisons more straightforward:

- Start with a verb to state the action.
- State the object of the action (if any) and, when relevant, the frequency.
- State the purpose of the action (if relevant).
- Keep bulleted items brief and uniformly formatted.
- Enter task lists in the Task List text box on the SVP screen in **CIERA**.

Example: Using the approach above as a guide, a field economist discusses with a respondent the tasks of a janitor in an elementary school.

Respondent says:

“The janitor cleans all of the classrooms and public spaces such as hallways, rest rooms, and some outside areas. He reports to the Maintenance Supervisor. One of the biggest jobs is emptying the waste receptacles throughout the building. This includes emptying all of the classroom trash cans as well as the large cans in the hallways and cafeteria daily.

Additionally, he has to empty recycle containers throughout the building as needed. The janitor routinely uses a commercial vacuum to clean floors in classrooms and public areas, and waxes floors using a buffer as needed.

Since the building is full of children, there are many spills requiring spot cleaning. He also uses a small snow blower and/or a shovel to clear the entryway into the building, so the children may safely enter and exit the building. The janitor also plants flowers and shrubs in spring and fall.

The janitor maintains and makes minor repairs to the boiler system as needed, and does other simple maintenance such as replacing light bulbs or restroom supplies.

The duties of this occupation are usually performed after the children have left school for the day, as it would be difficult to do many of the tasks with children present.”

Example – Janitor Task List
Critical job function: Cleans interior and performs light indoor and grounds maintenance at an elementary school.
Task List: <ul style="list-style-type: none">• Empties wastebaskets• Polishes floors using buffer• Vacuums carpeted areas• Cleans messes as requested• Replenishes restroom supplies• Replaces light bulbs as needed• Adjusts boiler• Shovels sidewalks in winter• Plants flowers and shrubs in the spring

4_04 Consistency between Task List and Element Coding

A job's task list clearly and concisely summarizes job duties. Element coding represents the movements and exposures experienced as a result of the worker performing these duties. Cognitive, physical, and environmental coding must be documented with examples relating to and consistent with the task list.

If the respondent indicates job demands are present that are not related to the critical tasks included in the task list, determine whether a task related to a critical job function was missed. If yes, add it to the task list. If no, unless the duration meets the 10% threshold, the ORS elements related to the task should not be coded, as they do not meet the overall threshold for determining presence.

Unless a job's critical function is to respond in emergency or unusual situations, exclude tasks resulting from such situations. There are situations in which tasks may be critical but occur infrequently. Critical tasks do not include tasks that occur because of unusual events, including emergency situations.

Proceeding when respondent answers are incomplete

Use the task list as a reference to probe and confirm respondent answers. If the respondent can confirm that an element exists and the threshold is met, but is unable to provide associated duration, code the element as 'Present, Duration Unknown (PDU)'. Only use 'PDU' after exhausting all other methods to establish duration, including requesting to contact a different respondent, to establish a duration.

If a respondent is unable to confirm that an element is present, code 'Unknown (UNK)'.

Example 1 – LAN Techs
Critical Job Function: Maintains company software and hardware for all employees.
Task List: <ul style="list-style-type: none">• Assists company employees with technical problems by phone and in person• Configures new employee computers• Maintains company servers• Installs new software on employee computers• Runs software updates as needed
Element Coding Inconsistency with Task List: Respondent indicates Extreme Heat is present for less than 2% of time because if the HVAC system happens to malfunction, at least one LAN Tech must stay in the server room until the system is repaired.
Resolution:

Do not code for Extreme Heat. This exposure is not experienced by most of the workers in the job but rather is the result of a chance event- an unusual, emergency situation.

Example 2 – Preschool Instructor

Critical Job Function: Provides classroom instruction and recreational activities to preschool age children.

Task List:

- Teaches lessons to children using toys and other learning tools
- Monitors recess and playtime
- Reports progress to parents
- Develops lesson plans

Possible Element Coding Inconsistency with Task List:

Respondent indicates that overhead reaching is present. All toys and learning tools are located on a high shelf so that the children cannot reach them. Even when standing, instructors must reach overhead to take these items off of the shelf to use during lessons and at playtime and then return them to the shelf upon completion.

Resolution:

Code for overhead reaching. Coding is consistent with the task list, as it is done in support of teaching lessons and monitoring playtime.

Example 3 – Machine Operator

Critical Job Function: Responsible for all aspects of operation of injection molding machines.

Task List:

- Operates injection molding machine
- Performs machine set up and adjusts as necessary
- Inspects final product
- Resolves machinery issues.

Element Coding Inconsistency with Task List:

Respondent indicates that the machine operator climbs stairs that are a part of the machine to make adjustments on the top of the machine and when machinery malfunctions.

Resolution:

Code for work related climbing. Add documentation to explain this demand is part of critical tasks (performing machine adjustments and resolving machinery issues) which support the critical job function.

Example 4 – Dental Assistant

Critical Job Function: Provides assistance to the dentist during surgeries and other treatments

Task List:

- Assists dentist performing dental treatments
- Takes impressions of teeth
- Performs x-rays
- Explains treatment plan to patients

Element Coding Inconsistency with Task List:

Respondent indicates that the dental assistant sweeps and mops the dental office before closing which takes about 15 minutes each 8-hour day. Dental assistants also sometimes drive in order to drop off/pick up mail at the nearby post office when others in the office are unavailable.

Resolution:

Exclude cleaning duties and driving from the task list. Sweeping and mopping the dental office is not associated with a critical job function and the job spends less than 10% of time performing this task. Dropping off mail is not specific to the job – anyone in the establishment can do it.

4_05 Job Demands when Traveling is Involved

Some jobs require travel as part of the critical job function(s). This travel may be local or long distance. Collect the presence and duration for physical demands associated with critical tasks performed during travel. Include any time [sitting or standing/walking](#) if travel is part of the typical workday.

Include:

- [Driving](#) between locations where critical tasks are performed
- [Lifting/carrying](#) or [pushing/pulling](#) work-related displays, sales materials, or equipment

Exclude:

- Travel and associated demands that are part of a regular commute
- Lifting or pushing/pulling personal luggage
- Exposure [Outdoors](#) from travel unless the worker is performing critical tasks between the transportation mode and other work sites such as making deliveries

Examples	Include Durations for:	Exclude Durations for:
Computer consultants travel by car and plane to client sites, carrying a laptop in a shoulder bag and wheeled personal luggage.	<p>Sitting while flying</p> <p>Walking between airport and car, client sites and car, and around airport</p> <p>Driving elements - sitting, gross manipulation, far visual acuity, peripheral vision, foot/leg controls</p> <p>Lifting/carrying work laptop</p>	<p>Pushing/pulling personal luggage is excluded because the worker can choose what to bring</p> <p>Outdoor exposure between client sites, car and airport-does not meet Outdoors condition of performing critical tasks outdoors.</p>
Pharmaceutical sales reps drive to doctors' offices carrying sample cases.	<p>Driving elements -- sitting, gross manipulation, far visual acuity, peripheral vision, foot/leg controls</p> <p>Walking to and from the car while working</p> <p>Lifting/carrying sample cases</p>	<p>Traveling to and returning from a work office or residence as part of a commute</p> <p>Outdoor exposure between car and doctors' offices - does not meet Outdoors condition of performing critical tasks outdoors.</p>

Chapter 5: Specific Vocational Preparation (SVP)

Specific Vocational Preparation (SVP) is the amount of preparation time required by a typical worker to learn the techniques, acquire the information, and develop the aptitude needed for average performance in a specific job.



SVP measures the *minimum* vocational preparation time needed for a job, not the type of knowledge required.

ORS collects the following four elements:

- Minimum Education
- Pre-Employment Training
- Experience
- Post-Employment Training

This chapter outlines the procedures for collecting SVP:

- [Computing SVP Level](#)
- [Avoiding errors that can result in over- or understatement](#)
- [Collecting Minimum Education](#)
- [Collecting Pre-employment Training](#)
- [Collecting Experience](#)
- [Collecting Post-employment Training](#)

5_01 Computing SVP Level

Field economists do not need to calculate the overall SVP level of a job. **CIERA** assigns the overall SVP level by summing the time entered for each of the four individual SVP components.

Note: If any of the four SVP components is coded as “Unknown,” CIERA will not display an overall SVP level.

Understanding SVP levels and job skill levels

It is essential to have a conceptual understanding of how each component sums to derive an overall SVP. Lower-skilled jobs have shorter preparation times than higher-skilled jobs. As a result, a small increase in preparation time can significantly change the SVP level for unskilled and semi-skilled occupations, while having little impact on the SVP levels for skilled occupations.

SVP Calculations and Levels

Skill Level	SVP Level	Preparation-Time
Unskilled	1	Short Demonstration Only (4 hours or less)
	2	Anything beyond short demonstration up to and including 1 month
Semi-skilled	3	Over 1 month up to and including 3 months
	4	Over 3 months up to and including 6 months
Skilled	5	Over 6 months up to and including 1 year
	6	Over 1 year up to and including 2 years
	7	Over 2 years up to and including 4 years
	8	Over 4 years up to and including 10 years
	9	Over 10 years

Calculating SVP – an example

The example below illustrates what is included and excluded from SVP as well as how overall SVP level is calculated.

Job Title: Bookkeeper

Job Description Requirements: At least 6 months experience in bookkeeping or an Associate's degree

Additional Information Provided by Respondent:

- Works a standard 8/40/52 work schedule
- Needs a high school diploma or GED
- Works with an assistant who demonstrates what to do for about 3 weeks.
- 90 day probationary period
- Verified accuracy of job description

SVP Calculations and Level

When either experience or education will meet requirements, count the one that involves the least time. Do not include probationary periods.

Minimum Education = High School only = 0 SVP

Pre-Employment Training = None = 0 SVP

Experience = 6 Months = 26 Weeks SVP

Post-Employment Training = 3 Weeks OJT = 3 Weeks SVP

SVP = Education + Pre-Employment Training + Experience + Post-Employment Training

$0 + 0 + 26 + 3 = 29$ Weeks

29 Weeks = 6.692 Months = SVP 5

NOTE: In the example above, the probationary period is not counted as post-employment training.

5_02 Avoiding Errors that can Result in Over- or Understatement

If a company provides a range of time or several combinations of education, training, or experience, code the combination that results in the lowest overall SVP time.

Example:

A respondent says a new employee must have a high school diploma and five years of experience OR a Bachelor's degree with no experience.

Code: *Minimum Education – 'Bachelor's degree' and Experience – 'Not Required'*

Reason: *Coding a Bachelor's degree without experience results in an SVP level 6 and high school plus 5 years' experience results in an SVP level 8.*

When to use 'Unknown' and 'Not required'

An SVP component that cannot be determined is different from an SVP component that is not required.

Code 'Not Required' when an SVP component is not present or needed for the job.

When an SVP component cannot be determined or is unavailable, code it as 'Unknown' in CIERA. Code any components that are available.

Coding 'Not Required' for an SVP component when presence or duration is unavailable may understate the actual SVP.

Example:

Respondent does not know if there is a minimal educational requirement, but can confirm a requirement for one-year prior experience.

Code: *Minimum Education is 'Unknown' and Experience is 1 year.*

Note: If any of the four SVP components is coded as 'Unknown', the system cannot compute an overall SVP level and portions of SVP are imputed for estimation.

Coding a non-levelable job

If a job is non-levelable and it is not possible to collect an SVP component accurately, code the SVP element as 'unknown'.

Coding '0' or 'not required' will give the job an artificially low SVP level.

Example: Lead Actor in a Theatre Company

Preparation Required	Code As:
None specified, but respondent states that they would not cast someone with no prior acting experience as the lead actor.	Experience "Unknown"

Four yr. drama degree. Five yrs. prior acting experience to be hired into company as an actor and 2 yrs. experience as an actor with the company to move up to lead actor.

Bachelor's degree: 2 years;
Experience: 7 years

Collecting concurrent SVP time

Count overlapping time elements (Experience, Pre- and Post-Employment Training time) once to avoid overstating the SVP requirements of the occupation.

Code all overlapping time required between Pre-employment Training and other SVP component in the applicable category: Minimum Education, Experience, or Post-employment Training. Code the presence of any required credential in Pre-employment Training and select 'Concurrent' for duration.

Examples of Concurrent SVP Time	Code	Reason
A police detective must have a minimum of two years' experience as a police officer, along with required coursework and an exam. Required coursework is completed after becoming a police officer.	Code '2 years' for Experience. Code 'Yes' and 'Concurrent' for Pre-employment Training/Other.	Concurrent experience and pre-employment training time. Pre-employment training time is reflected in Experience.
A worker needs a minimum of five years prior experience in project management and PMP certification. Certification requires at least 3 years prior experience, 35 hours of training, and an exam.	Code '5 years' for Experience. Code 'Yes' and 'Concurrent' for Pre-employment Training/Certification.	Concurrent experience and certification. The time for certification is already reflected in Experience.
A BLS field economist (FE) spends 6 months completing on-the-job training and completes one week of National Office collection training.	Code '6 months' for Post-employment Training	Concurrent post-employment training. There is no separation of post-employment training types.

5_03 Collecting Minimum Education

Minimum Education measures the minimum level of formal coursework required of a job, excluding general education.

If an establishment requires a diploma or degree, regardless of academic discipline, collect:

- Type of degree requirement
- Vocational time to complete coursework relevant to the job



When coding minimum education, use the list of degrees and associated vocational time in the Education SVP Chart.

Education SVP Chart

Degree	Vocational Time	Reason
4 years of High School	None	All time is general education
4 years Vocational High School	2 of 4 years	2 years are general education
2 years Associate's Degree	1 of 2 years	1 year is general education
2 years Vocational Associate's	2 years	All time is vocational
4 year Bachelor's	2 of 4 years	2 years are general education
5-Year Bachelor's/Master's	3 of 5 years (2 as Bachelor's, 1 as Master's)	2 years are general education
Master's	All post-grad. years (usually 1-2 years)	All time is vocational
Professional	All post-grad. years (usually 2-4 years)	All time is vocational
Doctorate	4 years	All time is vocational

Modified from *The Revised Handbook for Analyzing Jobs*, U.S. Department of Labor, Employment and Training Administration, 1991, Chapter 8.

Guidance for collecting Minimum Education

1. If no formal education is required, collect whether the job requires reading and writing in any language.

Do not infer reading and writing requirements based on job tasks. Always ask the respondent. For example, even when a job requires driving and a valid state driver's license, do not assume the job task requires reading and writing because the workers may have needed to take a written test to get their license.

2. Collect the presence of a degree and the vocational time to complete coursework relevant to the job. Exclude the portion of time for general education.
3. Do not multi-select more than one of the following degrees in CIERA:
 - 'High School'
 - 'High School Vocational'
 - 'Associate's'
 - 'Associate's Vocational'

NOTE: If any of these are selected, no other degree option should be selected.

4. ORS classifies graduate degrees into three categories: 'Master's', 'Professional', and 'Doctorate.' These degrees are earned after completion of a 'Bachelor's' degree and are generally distinguished by the levels of coursework and research involved. Coding based on the degree name can lead to misclassification, particularly for degrees that should be coded as **Professional**.

Use the following information to distinguish between **Professional** and **Doctorate**.

A **Professional degree** is a graduate degree that is required to work in a specific career/profession. Professional degrees do not require a Master's degree, and typically fall into three main fields (medical, law, and religion). It is common for the title of the professional degree to include "Doctor," but they are awarded based on classwork and do not require a dissertation. When gathering education requirements remember that the phrase "doctor of" does not always indicate the presence of a 'Doctorate.'

Examples of Professional degrees :

- Doctor of Dental Medicine (D.M.D.)
- Doctor of Medicine (M.D.)
- Doctor of Optometry (O.D.)
- Doctor of Jurisprudence or Juris Doctor (J.D.)
- Doctor of Psychology (Psy.D or D.Psych)

A **Doctorate degree** is research oriented and requires a dissertation or similar independent research effort. The Doctor of Philosophy (Ph.D.) and research doctorate are equivalent in title and focus almost exclusively on research or advanced studies.

Examples of 'Doctorate' degrees:

- Doctor of Business Administration (D.B.A.)
- Doctor of Education (Ed.D.)
- Doctor of Philosophy (Ph.D.)
- Doctor of Social Work (D.S.W.)
- Doctor of Theology (Th.D.)

See [Appendix 3](#) for additional examples of Professional and Doctorate degrees.

5. If graduate degrees such as 'Master's,' 'Professional', and/or 'Doctorate' are required, both the graduate degree(s) and a 'Bachelor's' degree must be selected in CIERA:

Minimum Education

No minimum level required

Workers required to read and write Yes No Unknown

Degree required

High School

High School Vocational Unit

Associates Unit

Associates Vocational Unit

Bachelor's Years

Master's Years

Professional Unit

Doctorate Unit

Other Unit

Unknown

6. Do not place certifications, educational certificates, or licenses in the 'Other' category. Code these under Pre-employment Training.

Examples of ‘Education’	Action	Reason
An accountant at a manufacturing facility is required to have a 4-year Bachelor’s degree in Accounting.	Code ‘Degree required.’ Select ‘Bachelor’s.’	This counts as 2 yrs. of minimum education. Exclude 2 years of general education
A research biologist is required to have a PhD in the biological sciences. The respondent says that after a Bachelor’s degree, a PhD typically requires 3 years of coursework and between 1 to 5 years to complete a dissertation. Average time to complete a dissertation is 3 years.	Code ‘Degree required.’ Select ‘Bachelor’s’ as well as ‘Doctorate.’	2 years Bachelor’s; 3 years Doctorate, plus 1 year for dissertation - count only the minimum time required.

5_04 Collecting Pre-employment Training

Pre-employment Training is the amount of time needed to complete training required as a condition for hiring. This type of training often can result in a credential such as a **certification, license, or educational certificate.**

Capture the presence of any required pre-employment credentials along with the minimum associated training or classroom time.

Classify credentials into one of four categories based on the purpose, issuing body, and duration, not their title. There are four categories applicable for Pre-employment Training:



- **Certification** – issued by a certification body or industry/professional association, acknowledges that **occupation specific** skills and abilities exist, and expires if not renewed.
- **License** – issued by a government agency, constitutes a legal authority to perform a **specific occupation**, and expires if not renewed.
- **Educational Certificate** – issued by an educational institution (or a training provider), certifies that an **occupation specific** program of study was completed, and typically does not expire.
- **Other** – any credential issued by a standardized body, may be relevant for a wide variety of jobs and occupations, and may expire or be valid for life. This category includes time spent in vocationally relevant credit and non-credit courses that do not result in a degree, license, certification, or educational certificate.

Occupation specific credentials mean that the credential only applies to a specific occupation (or small group of occupations). Occupation specific credentials may be the same for a broad occupation group (digits 4 and 5 of the SOC code), but would rarely cross major SOC groups.

Sometimes credentials will have titles using the word ‘certificates’ but are actually issued by a government agency and therefore, should be coded under licenses. For example, teaching certificates are often issued by a state’s departments of education and would therefore be coded as a ‘License.’

When collecting Pre-employment Training include:

- Apprenticeships
- Vocational training
- Non-credit courses
- Credit courses that do not result in a degree

Exclude:

- Credentials that may be desirable but are not a job requirement
- Credentials not associated with any critical job tasks and only a hiring criteria requirement
- Certificates of attendance or participation for training that is not vocationally relevant

Summary table

	Duration	Awarded by	Nature
Certification	Time-limited	Certification body	Occupation specific
License	Time-limited	Government agency	Occupation specific
Educational Certificate	Lifetime	Training provider or Educational Institution	Occupation specific
Other	Varies	Varies	Vocationally relevant but not specific to an occupation

Guidance for collecting Pre-employment Training

Collect only the time needed to earn the initial credential, not any ongoing education or development time to maintain the credential.

Do not include independent preparation time, time spent on optional exam prep classes, or time spent taking an exam when determining duration of pre-employment training.

If the same pre-employment training occurs in different configurations (i.e., hours, days, months, years), capture the pre-employment training time in hours.

There are situations where a credential is required, but there is no training duration. This occurs when:

1. Time is already reflected in education or prior experience. Capture presence of credential and code 'Concurrent' for duration.
2. No training time is required. There is an application and/or test only. Capture presence of credential and code 'No formal time' for duration.

When coding SVP, count overlapping time elements once to avoid overstating SVP requirements of the occupation.

- Distinguish between classes that can be taken concurrently and those that must be taken consecutively to avoid overstatement.
- When a credential or non-degree related coursework is a condition of hire, collect it as Pre-employment Training *even* when the credential/coursework can be completed *post-hire*.

Note: When training for a certification or license is provided after hire, first clarify that the certification/license is a requirement for the job that was hit at PSO. For example, the respondent indicates a cadet receives training and, after certification, becomes a firefighter. If the cadet job is hit at PSO, then certification is not coded in pre-employment training because it is not a condition of hire for the cadet job. If the firefighter job is the hit, then certification is coded in pre-employment training.

Counting Semester Units

Use the following information to calculate duration for required pre-employment training that does not result in a degree.

- A **semester unit** is equivalent to one **credit hour**. Three credit hours equals one class and nine credit hours equals a full course load for one semester.
- A **semester** is one-half of an academic year and is equal to 15 weeks.

Apply this method carefully since it can overstate SVP time. Count all credits that are vocationally-relevant. Subtract any required credit hours which are time spent toward general education.

Examples of ‘Pre-Employment Training’	Action
Journey-level welders must complete 3-months of classroom training, a 4-year apprenticeship, and pass a test to receive a state-issued journeyman certificate before working.	Code ‘License’-‘Yes’ and 51 months duration. State-issued, occupation specific.
Elementary teachers must have their teaching ‘certification’ issued by the state. Time needed for certification is concurrent with Bachelor’s degree. District also requires all teachers to have CPR certification (4 hour Red Cross training)	For teaching certification: Code ‘License’-‘Yes’ and ‘Concurrent.’ State-issued, occupation specific. For CPR certification: do not count. This certification is related to an unexpected emergency-response task for this occupation; not relevant to critical job functions of a teacher.
Dental assistants must have a certificate from an accredited specialty school, and a state-issued x-	For state-issued x-ray license: Code ‘Other’-‘Yes’ and ‘Concurrent’. X-ray license is not occupation-specific for this

ray license. Coursework takes 7 months and includes prep for the state licensing exam.

job. Time toward x-ray license is concurrent with education certificate.

For the certificate from accredited school: Code 'Educational Certificate' - 'Yes' and 7 months.

Lawyers are hired out of law school and have 6 months to pass the bar exam. Time toward license is concurrent with minimum education.

Code 'License' - 'Yes' - 'Concurrent'; Capture occupation specific licenses required as a condition of hire, even if obtained post-hire.

Board certified dermatologists require a medical license issued from the state as well as board certification from the American Board of Dermatology. Can receive medical license after 1 year of residency and board certification after a minimum of 4 years of residency.

Code 'License' - 'Yes' - 'Concurrent'; Capture occupation specific license, time is concurrent with time spent toward certification.

Code 'Certification' - 'Yes' - 4 years for residency.

Truck drivers at shipping company must have commercial driver's licenses that do not require classroom training.

Code 'License' - 'Yes' and 'No formal time.' State-issued, occupation specific. No time is required; application or test only.

Pizza delivery drivers needs standard state-issued driver's license

Code 'Other' - 'Yes' - 'No Formal Time.' Driving is related to critical function of job. No time is required; application or test only.

Retail store workers handling food at a convenience store must complete a 2 hour online food safety training course and pass an exam to be certified by the state in safe food handling practices.

Code 'Other' - 'Yes' - '2 hours' The food safety certification is not occupation-specific for this job, but is related to critical tasks.

Bartenders take classes and get a certificate from bartending school. Their employer and the state do not require the certificate.

Code no, not required. Certification is not required.

Pastry chefs at a resort restaurant must possess a certificate of pastry arts and a food handler's safety permit. The pastry arts' certificate takes six months to obtain and the permit is exam only.

Code 'Educational Certificate' - 'Yes' - 6 months.

Code 'Other' - 'Yes' - 'No Formal Time'

5_05 Collecting Experience

Experience measures the minimum amount of prior relevant work activity.

Include:

- Skills acquired or used in a similar job
- Progressively responsible levels of work
- Broad, yet related, vocational capabilities

Exclude:

- Non-vocational experience requirements, such as attendance history or a general requirement of previous employment.

If the respondent provides a range, document the range and code the least amount of time required.

If a company requires either education or experience, collect the option that involves the least time and code under the appropriate component.

If there is an overlap of Experience and Certification time, code time in Experience. Code the presence of a credential in Pre-Employment Training and use ‘Concurrent’ for duration coding. See [5_02 Collecting concurrent SVP time](#) for examples of coding overlapping SVP time.

Do not code minimum education and minimum experience unless the company requires that combination.



Examples of ‘Experience’	Action	Reason
An office requires that secretaries have at least one year of prior clerical experience.	Collect one year	Skills acquired at a similar job prior to being hired.
A police captain must have one-year of experience as a sergeant and one year of experience as a patrol officer.	Collect two years	Skills acquired through progressively responsible levels of work.
A fast food worker must have a history of good work attendance.	Do not collect	Non-vocational experience.
A cashier must have one year of general work experience to demonstrate reliability.	Do not collect	Non-vocational experience.

5_06 Collecting Post-employment Training

Post-employment Training measures the minimum amount of training time occurring after an employee has been hired.

Include:

- Time workers take to learn basic job tasks while being actively taught by a supervisor or a more experienced worker
- On-the-job training with verbal and written instruction, demonstration and observation, hands-on practice, or imitation
- Vocationally relevant classes or training needed to do the job, including in-plant or internal company training
- Time spent shadowing



Exclude:

- Continuing education
- Time spent learning tasks that are beyond the basic requirements of the job
- Orientation on topics such as company policies, work place rules, or company benefits
- Time during the probationary period that does not overlap active training
- Coaching for job development

Guidance for collecting for Post-employment Training

- **Use terms familiar to the respondent.** The term “post-employment training” is a survey label. Ask about training that new employees receive using terms such as “on-the-job-training”, “OJT”, “mentoring,” and “active shadowing.”
- **Collect a range.** A respondent may provide a range for training based on variations between individual employees within the occupation. When the amount of training provided varies based on the amount of education or experience of a new employee, document the accepted combinations and code the one that represents the least amount of time overall.

For example: Housekeepers at a hotel require between one hour and one day of on-the-job training, depending on prior experience. A new hire with no prior experience requires a minimum of eight hours of on-the-job training. A new hire with five years of experience may only require an hour of on-the-job training. For this occupation’s SVP, code post-employment training time as

eight hours and experience as “No, not required,” as it results in the minimum time required over all the SVP components.

- **Use an [estimated SVP level](#) for the job to guide the conversation.** If you are able to collect information on education, pre-employment training, and experience for the job, you can identify two or three likely SVP levels for the job. Use these estimated SVP levels to help a respondent narrow the range provided for post-employment training.

For example, a respondent says there is no minimum education, pre-employment training, or prior experience required for the housekeeping position. The overall SVP level for this position is likely either SVP 1 or SVP 2 depending on how much post-employment training time is coded. Any on-the-job training time that exceeds 4 hours, will move the SVP level from 1 to 2. To arrive at the appropriate SVP level, determine if the minimum post-employment training required is 4 hours or less or more than 4 hours up to one month. Code the minimum time provided.

- **Do not use probationary periods as a proxy for post-employment training.** Probationary periods are usually much longer than the amount of time that an employee actively spends learning critical job tasks needed for average performance. However, probationary periods may be used to help narrow the range for post-employment training.

If a respondent remains non-committal on an amount of time for post-employment training, you may attempt to collect an estimate using thresholds. A threshold is a magnitude that must be met or exceeded for a certain condition to exist. These thresholds are based on the amount of time most likely to change the overall SVP level.

To use thresholds as a fallback method, ask the following questions. You can start at any point and go higher or lower based on your evaluation of the overall job:

- “Is post-employment training more than half a day?”
- “Is post-employment training more than a month?”
- “Is post-employment training more than ‘X’ months?”

Use the ‘X’ in the last question above for any number of months up to seven (7). When post-employment training exceeds seven (7) months, the job has a minimum SVP level of five (5). At this point, begin measuring SVP levels in years and ask the respondent a final follow-up question:

- “Is post-employment training more than a year?”

Once post-employment training is greater than a year, it takes at least an additional year to affect SVP further. By asking this final question (if necessary), you will have covered all SVP levels that change with lower thresholds.

When using the fallback method, code the amount of time using decimals ending in nine (9). This allows for easy identification of fallback incidence. The chart below indicates entries to use for each threshold.

Fallback coding for Post-employment training

If Post employment training is less than....	Code Duration
Half a day	0.49 days
One month	0.9 months
Two months	1.9 months
Three months	2.9 months
Four months	3.9 months
Five months	4.9 months
Six months	5.9 months
Seven months	6.9 months
One year	0.9 years

The fallback procedure is not intended to eliminate all missing post-employment training times. The respondent may not have the information and may not be able, or willing, to contact a supervisor or other knowledgeable source to clarify specific data. If you are not able to collect a reliable estimate, code post-employment training as “unknown.”

Collecting post-employment training for non-standard work schedules

If a work schedule is **not** 8/40/52 and post-employment training time is less than 1 month:

- Clarify whether training time follows the work schedule or has a unique schedule. For example, a part-time worker may work full-time on training days.
- Collect and code the total number of *hours* of training.

Coding post-employment training based on work schedule

Training	Full Time Standard (8/40/52)	Full Time Non-standard (12/36/52)	Part Time (4/20/52)
1 week	1 week	36 hours	20 hours
1 day	1 day	12 hours	4 hours
2 weeks	2 weeks	72 hours	40 hours

Examples of ‘Post-Employment Training’	Action	Reason
A meat cutter working an eight-hour shift five days per week is required to take a one-week food safety course during the first month of employment.	Code as 1 week	This is a standard FT work schedule; Vocationally relevant training
A newly hired custodian working an 8/40/52 schedule shadows a lead worker for one day to learn how to operate a buffing/waxing machine and use chemicals.	Code as 1 day	This is a standard FT work schedule; Vocationally relevant training
New restaurant servers working 36 hours per week receive OJT from experienced servers on a 3-hour lunch shift.	Code as 3 hours	This is a non-standard work schedule, collect training time in hours; Vocationally relevant training
New teachers are assigned an experienced teacher as a mentor that provides guidance throughout the new teacher’s first year.	Do not collect	Coaching for job development
New and experienced firefighters are required to do 3 hours of training per shift on an ongoing basis.	Do not collect	Continuing education

Chapter 6: Cognitive Elements

****Special Notice: Cognitive Elements will not be collected in ORS704.**

Some key cognitive demands of an occupation are the need to use judgment, make decisions, and adapt to changes in the job.

ORS collects the following cognitive demand elements:

[Decision-making](#)

[Work Review](#)

[Pace](#)

[Adaptability](#)

[Work-related Personal Interactions](#)



It is common for the demands of a specific cognitive element to range widely. For example, pace may vary dramatically during the day or over a period of days or months. Specific guidelines for handling ranges are reflected in each section.

To determine which level to capture, apply the following rules:

- Code the highest frequency (shortest interval) for Work Review, Adaptability/change in work tasks, Adaptability/change in location, and Work-related Personal Interactions/Contacts.
- Code the highest level expected for Decision-making, Pace of work, and Work-related Personal Interactions/purpose of personal interaction. The full intent of a level must be met for it to be coded.

Include documentation and examples that illustrate why coding choices were made.

6_01 Collecting Decision-making

Decision-making measures the type and scope of decisions the occupation is expected to make.

It is common for occupations to include a range of decision making. Collect the highest level of independent judgment a worker is expected to use to perform the critical tasks of the occupation.

There are three levels of decision-making. The levels are not comprehensive, but instead represent key break points of applying independent judgment to make decisions. The three levels are:

1. Employee uses independent judgment to select from a limited number of predetermined actions.

- The worker is trained to recognize the situations and to respond in a specific way based on the facts.
- The facts needed to make the decision are apparent and there is a clear logical path to follow to identify the end action.

2. Employee uses independent judgment to determine the most appropriate course of action in situations that do not have set responses.

- The worker is expected to identify the situation and determine the relevant facts from the information available.
- The worker uses independent judgment to determine possible responses, evaluate options, and determine the best response.
- The worker can use independent judgment to tailor the response to fit the specific situation.

3. Employee uses independent judgment to make decisions by choosing from a large number of possibilities in situations where a high degree of uncertainty or complexity may exist.

- The worker considers the information available and recognizes that there are multiple relationships, reactions, or unknowns.
- The worker must use independent judgment to make assumptions about relationships and reactions, consider how these could impact the result, and select a course of action.
- Judgment at this level can be applied within administrative and technical areas. It is not limited to professional and managerial decisions.

Examples of Decision-Making

Level of Decision Making	Office Worker	Restaurant Worker	Construction Worker
1. Select from a limited number of predetermined actions	The worker sorts incoming mail and dispatches to the correct employee's mailbox. The worker collects outgoing mail and dispatches to a central location for pick up.	The worker carries dirty dishes from dining room to the kitchen and wipes tabletops and chairs. The worker replaces silverware and soiled table linens and sets tables with clean silverware and glassware.	The worker loads construction material set out by his supervisor onto the truck for delivery to a construction site. The worker unloads unused materials from trucks returning from a construction site.
	The worker answers incoming telephone calls and greets customers. Determines who to call when customers come into the establishment based on customer request and a list of contacts.	The worker takes orders, and may give recommendations. The worker requests identification from customers when legal age is questionable. The worker computes bills and accepts payments	The worker decides the appropriate tools to use for mixing concrete and installing a fence.
2. Determine the most appropriate course of action in situations that do not have set responses	The worker answers incoming telephone calls and greets customers. Opens mail not addressed to specific individuals and determines whether to throw out or forward to other employees. Decides how and where to purchase office supplies.	The worker decides the number of servers to schedule based on historical patterns. Determines whether customer special requests can be addressed and how to resolve customer complaints about food or service.	The worker corrects locations for footings to accommodate issues not originally identified; and determines how much concrete to mix to install a fence, and how to adjust work planned for the day.
3. Choose from a large number of possibilities in situations where a high degree of uncertainty or complexity may exist	The worker analyzes and creates office procedures, and organizes office operations. Also evaluates office production and coordinates the activities of other clerical workers to minimize waste.	The worker plans menus and related activities. The worker may hire or fire restaurant personnel. The worker ensures that the restaurant has the necessary supplies to continue rendering services, and makes purchases based on cost, demand, and availability.	The worker designs fences and drafts specifications according to customer requests, and ensures the design meets all applicable building codes. Makes decisions on proper materials based on cost and design considerations, intended use, and site specifications.

6_02 Collecting Work Review

Work Review measures the frequency at which a machine, supervisor, or lead worker checks an individual's work to ensure performance standards are being met.

Work review can occur in person or remotely.

Exclude automated recorders such as cameras that serve only as security measures.

Collect the highest frequency of work review that a worker receives in an occupation under normal circumstances. Do not consider the highest level to be what the establishment would perform on a worker with known or suspected unsatisfactory performance. Use the following frequency categories:

- More than once per day
- Once per day
- At least once per week, but less than daily
- Less than weekly



Examples of Work Review

Supervision	Description of Work Review
<p>More than once per day</p>	<p>A data processor enters and validates policy information for a large insurance firm. Systems constantly monitor the number of errors and corrections made, speed of work and time away from the desk. Workers receive ongoing feedback on the quality and quantity of work.</p>
	<p>A machinist, producing parts, has his worked randomly checked and measured by quality control staff. Two parts per day get inspected.</p>
	<p>A telemarketer makes outbound calls to generate and follow up on sales leads. Work is under constant random monitoring to ensure adherence to law and policy. Workers are told when performance does not meet expectations.</p>
<p>Once per day</p>	<p>A canvasser receives instruction and a new list of contacts at the beginning of the day. Results are evaluated at the end of each day and workers are provided feedback.</p>
	<p>A convenience store cashier counts the till at the end of every shift and must balance within \$1 or an ‘infraction’ is recorded on her record.</p>
	<p>A construction worker hangs drywall in residential construction. He receives a review daily from the site manager. Workers are told when performance does not meet expectations.</p>
<p>At least once per week, but less than once daily</p>	<p>A junior sales representative sells color imaging equipment and manages customer prospect profiles. The supervisor ensures objectives are met and provides performance feedback weekly.</p>
	<p>A pharmaceutical sales rep’s regional manager comes to town once per month to ride along on calls. Staff are told when performance does not meet expectations.</p>
	<p>A waiter sells food and drink at a busy restaurant. The manager monitors wait staff sales amounts and customer service on a weekly basis. Staff are told does not meet expectations.</p>
<p>Less than weekly</p>	<p>A factory plant director has full plant responsibilities. Work is evaluated on efficiency and achievement of company objectives. Performance reviews are conducted annually.</p>
	<p>A senior sales representative is responsible for generating new accounts and growing the revenue stream for the establishment. Performance is reviewed quarterly based on new customer rates and overall dollar volume achieved.</p>

6_03 Collecting Pace

Pace is the physical and cognitive speed needed to perform work tasks.

Pace can be the actual rate required of workers to complete repetitious tasks, or the rate at which workers are expected to respond to a variety of in-coming projects.

There are two components to Pace:

- **Pace of work** measures the rate at which a worker must process new or incoming information, or to take physical action based on new information.
- **Controlling workflow** means that a worker can prioritize work tasks or can adjust the amount of time it takes to complete them.

How to collect Pace of Work

Determine if the pace of work varies by asking if there are faster and slower periods of work. There is no time threshold applied to code “yes” for the variation: it may vary within a few hours or vary based on seasons of the year.

Collect the fastest pace at which work is expected to be performed. There are three different rates of pace:

- Rapid with no periods of waiting
- Steady with rare periods of waiting
- Unhurried with much time spent observing or waiting, rushed periods rarely or never occur

If a worker in an occupation works at a steady pace at certain times of the year, but the rest of the year experiences long periods of waiting, code this as steady with rare periods of waiting.

If a worker spends most of his day working at a rapid pace with no waiting, but works at a slower pace at the beginning and end of the workday, code this as rapid.

Examples of Pace of Work

Pace of Work	Description
Rapid with no periods of waiting	A customer service representative answers incoming calls from an automated queue. Calls are constant.
Steady with rare periods of waiting	A building security guard at a secure facility screens employees and visitors entering the facility; and walks standard patrols on a rotating basis with other guards.
	A high-school teacher teaches classes, prepares lesson plans, and sponsors a school organization. The teacher maintains a regular schedule of classes.
Much time is spent observing or waiting	A front-desk security guard for a condominium watches over property or people. Large portions of time are spent waiting and monitoring from a stationary location.
	A lab technician monitors experiments and tests, assists in running equipment and endures long pauses while testing proceeds.

How to collect the Control of Workflow

Collect the presence of a worker's ability to control the workflow.

Controlling workflow means that a worker can prioritize work tasks or can adjust the amount of time it takes to complete them. There may be tight, broad, or no deadlines, but the worker has some control over the amount of work completed within any specific time period. Work tasks are the regular duties of an occupation. Exclude tasks that are voluntary or occur by chance.

A worker may be able to control workflow even when the worker is not able to leave a physical location. For example, a telemarketer at a call center may go offline to take a break, without leaving the workstation.

When external factors determine workflow, the worker has limited or no control. This may happen when business processes, production line speeds or customer demands control workflow.

If the employee has some control over workflow for certain tasks but not over others, code this as "No".

For example, a store clerk restock shelves and works the cash register. When stocking shelves the clerk can adjust the amount of time that it takes to complete the task, but while working the register the flow of customers controls the workflow. Code this as "No."

Examples of Control of Workflow

Description	Collect As	Reason
A firefighter responds to emergency calls	No	External demand
A retail sales person responds to customer needs	No	External demand
An elementary school teacher monitors kids on the playground at recess	No	External demand
A website technician creates and uploads links to content within 4 hours of receiving assigned material	Yes	There may be tight deadlines, but the worker has some control over the amount of work completed within a time period
A high-school teacher monitors a class and teaches lessons	Yes	The worker has some control over the amount of work completed within any specific time period
A sales representative determines whether to schedule appointments or write up schedules, number of calls per day, etc. to meet goals	Yes	The worker can adjust when and how quickly tasks are completed
A researcher determines the overall project timeline, tasks, and work accomplished on specific days	Yes	Worker controls the schedule

6_04 Collecting Adaptability

‘Adaptability’ measures characteristics of an occupation that cause a worker to adjust to changes in work routines.

Collect changes in three different areas: work tasks, work schedule, and work location.

Work tasks are the typical duties of an occupation. A change in work task requires the worker to remember new instructions, procedures, or similar information. A change in work task includes:

- New work assignments
- Tasks that occur infrequently throughout the year
- Irregular/variable tasks

Supervisors or lead workers directing an individual to switch between assigned tasks is not considered a change in work tasks. For example, do not consider a grocery assistant switching from bagging customer orders to collecting carts from the parking lot, at a manager’s request, as a change in work tasks. These are part of the expected core duties of that occupation.

Use the following aids when collecting work tasks:

- Task list
- Scope of the job
- Specific physical actions required to complete work
- How and with what (tools, equipment) tasks are completed

Collect the highest rate of change in Work Tasks. Use the following frequencies:

- At least once per day
- At least once per week, but less than daily
- At least once per month, but less than weekly
- Less than monthly, including never



Work Schedule is the regular recurring work hours and days for the occupation set by the employer. To be considered a change in the work schedule, the change must be directed by the employer. When a change in work schedule is present, code 'Yes'.

Include:

- Unscheduled overtime
- Unexpected weekend hours
- An unexpectedly shortened workday

Exclude:

- Employee driven flexibility
- Work schedules that follow an established pattern

Flexibility in the hours, or days, that an employee works is not a change by itself. For example, a server choosing her shift at a restaurant experiences a schedule change only when the employer reconfigures the work schedule in a way that changes regular recurring work hours or workdays.

Rotating shifts or standard variable shifts, such as those experienced by nurses or police, are not counted as a change in work schedule. Although the days or hours vary over pay periods, they follow a repeating known pattern.

Work Location is the physical site where a worker performs the typical duties of the occupation. A change in work location is a change to a new worksite or from a discontinued worksite. Changes in work location may accompany changes in work tasks or schedule.

Include:

- Location changes that are required by the job, but are not a part of a set route, such as when emergency workers respond to calls
- Changing to a new work site, such as a construction crew changing sites
- Switching assigned client sites
- Location changes that are part of a route with no set stops, such as a parcel delivery driver

Exclude:

- Moves to different buildings located in the same vicinity (such as a campus)
- Location changes that are part of a route with set stops

Collect the highest frequency of change in work location during a work year. It may vary within a few hours or vary based on the seasons of the year. Use the following categories:

- Does not change unless it is permanent
- Changes up to four times a year
- Changes more than four times a year

Examples of Adaptability

Job Description	Work Tasks	Work Schedule	Work Location
An elementary school music teacher teaches classes at ABC elementary on M, W, F, and XYZ elementary on T, TH from 9 AM to 3 PM each day.	Less than monthly, including never	No	Does not change unless it is permanent
A cashier at a pizza parlor works the register. Once a month, if she fills in for other staff, she may be asked to make deliveries or to stay later than normal.	At least once per month, but less than weekly	Yes	Changes more than four times per year
A crewmember on the landscaping staff for a Golf Course rotates between the lawnmower, string trimmer, and leaf blower around the course grounds throughout the day. Shifts vary seasonally.	Less than monthly, including never	Yes	Less than monthly, including never
A firefighter fights fires in high-rise commercial buildings or private residences. Throughout the course of the year, the firefighter rotates through various roles on the truck and may assist with forest fires. They work fixed rotating schedules.	At least once per month, but less than weekly	No	Changes more than four times a year
An administrative worker works in a temporary office support pool for various university departments. Can be assigned to different departments during the day. Responsibilities range from answering phones to maintaining databases, generating reports, processing budget requests or handling special projects.	At least once per day	Yes	Does not change unless it is permanent

6_05 Collecting Work-Related Personal Interactions

Work-Related Personal Interactions is the requirement of the job to cooperate with others, handle conflict, and respond to social cues, requests, and criticism.

Collect both the frequency and purpose of work-related verbal interactions.

There are two types of work-related personal interactions:

- Regular contacts
- Other contacts

Regular contacts are those people with whom a worker has an established working relationship. Regular contacts include:

- Co-workers, supervisors, and managers with whom the worker regularly works
- Clients, customers or students seen on a regular basis
- All other contacts with whom the job regularly works

Regular contacts may not include everyone in the worker's organization or work location.

People with whom the worker has no established working relationship, including the public, fall in the 'Other' category.

Examples of Types of Contacts

Types of Contacts	Collect As
An accountant works with a clerk assigned to his/her department.	Regular
A store manager orders goods from a regular supplier.	Regular
An elementary teacher works with students in his/her class.	Regular
A sales clerk at a Walmart talks to customers while ringing up their orders.	Other
A nurse and a doctor both work at the same hospital, but do not work together.	Other

How to collect the purpose of interaction

Collect the reason for work-related verbal interaction with regular contacts and other contacts. If there is variation, code the highest level of interaction expected for the occupation. Use the following categories:

- Exchanging straightforward, factual information
- Coordinating work with others; solving recurring problems with cooperative parties
- Some gentle persuading or soft selling; discussing
- Influencing; hard selling; asserting control in situations
- Resolving controversial or long-range issues; defending; negotiating

Type of Interaction in a Fast Food Restaurant	Description
Exchanging straightforward, factual information	A fast food worker notifies another worker that customer food orders are ready.
Coordinating work with others; solving recurring problems with cooperative parties	A shift manager coordinates the tasks and breaks of fast food crew members.
Some gentle persuading or soft selling; discussing	A store manager resolves worker issues, and discusses strategies for meeting franchise sales goals with shift managers and crew members.
Influencing, hard selling; asserting control in situations	A regional manager increases sales by engaging store managers and staff in new sales strategies; leads meetings to explain policy changes; and implements changes.
Resolving controversial or long-range issues; defending; negotiating	A franchise owner negotiates with the corporate office for a better deal, and works with regional managers to resolve issues that have a long-term impact on franchise growth and sales.

Examples: How to Collect Work-Related Personal Interactions

Description	Regular or Other	Frequency of Contact	Type of Contact
A tollbooth worker takes payments and makes change for more than 500 drivers passing through the toll lanes during an eight-hour shift. Each day the worker attends a ten-minute staff meeting where the supervisor reviews basic information and safety issues. Employees discuss safety issues and suggest procedures changes.	Regular contacts (supervisor, co-workers)	No more than once per day; includes never	Coordinating work with others
	Other contacts (public)	Constantly, every few minutes	Exchanging straightforward, factual information
A psychologist meets with clients seeking help with personal issues. Most clients schedule recurring appointments. However, once every few weeks, a client comes once and never returns.	Regular contacts (recurring clients)	More than once per day, but not more than once per hour	Some gentle persuading or soft selling
	Other contacts (one-time clients)	No more than once per day; includes never	Some gentle persuading or soft selling

How to collect frequency of contact

Collect the highest frequency of work-related verbal contact that a worker has with regular contacts and other contacts.

If the frequency of contact changes during the work schedule, code the most frequent level experienced and document the circumstances. Use the following frequency categories:

- Constantly, every few minutes
- More than once per hour, but not constantly
- More than once per day, but not more than once per hour
- No more than once per day, includes never

Do not differentiate between individuals within a category. For example, a receptionist may interact with an unfamiliar client once per visit, but is greeting such individuals several times per hour. The correct frequency is more than once per hour.

Exclude optional social contacts that are not required to perform the work.

Chapter 7: Physical Demands

Physical Demands are the physical activities workers perform to carry out [critical tasks](#). We collect the following ten categories:

[Sitting vs. Standing/Walking](#)

[Lifting/Carrying](#)

[Pushing/Pulling](#)

[Reaching](#)

[Keyboarding](#)

[Manipulation](#)

[Stooping, Crouching, Kneeling, Crawling](#)

[Climbing](#)

[Vision](#)

[Communication](#)



7_01 Collecting Physical Demands

1. Determine the physical demands needed to perform the job's [critical tasks](#). Exclude [accommodations](#) and any physical demands associated with incidental tasks. See [Overall Coding Threshold for All ORS Elements](#).
2. Collect the duration for all elements except for Vision or Hearing. See [Duration](#) for details on coding duration. If workers do not experience a physical demand element while performing their critical tasks, code 'Not Present'.
3. Certain elements have unique collection guidelines:
 - Lifting/Carrying has unique collection guidelines. See [7_03 Collecting Lifting/Carrying](#).
 - Climbing Ramps/Stairs - Structure has unique collection guidelines. See [7_09 Collecting Climbing Ramps or Stairs](#).
4. Apply thresholds to [Pushing/Pulling](#), [Overhead Reaching](#), [Stooping](#).
5. Exclude physical demands related to a worker's commute
6. Collect the presence of 'One or Both' hand/arm (foot/leg) for the following physical demand data elements:
 - Pushing/Pulling – hand/arm, foot/leg, and feet only
 - Manipulation – Gross, Fine, and Foot/Leg Controls
 - Reaching – At/Below Shoulder and Overhead

If *any* of the critical tasks performed requires *both* hands/arms (feet/legs), code as '*Both*.'

If *all* of the critical tasks performed can be completed using *one* hand/arm (foot/leg), code as '*One*.'

7. To avoid overstatement, do not double count physical demands except where specified.

Examples:

- Code an Administrative Assistant typing on a computer as Keyboarding only, and do not include this time in Gross and Fine Manipulation.
- Code time associated with climbing a ladder as Climbing Ropes, Ladders, or Scaffolds only and do not include this time in Overhead Reaching.
- Code writing as both Gross and Fine Manipulation per manual instruction

8. Any time spent during paid breaks should be coded based on the way workers experience demands when they are not on break.

Example:

If workers generally stand for all their tasks, except for when they are on a paid break, 100% of the work schedule should be coded as Standing/Walking. Do not code the time workers spend on breaks as Sitting.

Concurrent Physical Demands

There are many situations where critical tasks performed include the presence of multiple physical demand elements *concurrently*. For these elements, the duration of time spent in each element can exceed the daily work hours.

Examples:

Writing involves both Gross Manipulation-‘One’ and Fine Manipulation-‘One’.

Pushing a heavy cart while standing up includes:

- Pushing with hands/arms-‘Both’
- Pushing with feet/legs-‘Both’
- Gross manipulation-‘Both’
- Standing/walking

Making a phone call *may* include:

- Gross Manipulation-‘One’ (holding the receiver with one hand)
- Fine Manipulation-‘One’ (dialing the phone with the other hand)
- Communicating Verbally (speaking with another person)
- Hearing – Telephone (listening to another person speaking).

Driving a passenger vehicle with automatic transmission includes:

- Sitting
- Gross Manipulation-‘Both’ (holding the steering wheel)
- Manipulation-Foot/Leg Controls-‘One’
- Far Visual Acuity
- Peripheral Vision

Some physical elements should not be coded concurrently for ORS.

Example:

Sitting and Standing/Walking cannot be performed at the same time.

Stooping, Crouching, Kneeling, Crawling, and Climbing cannot be performed at the same time, nor while workers are Sitting.

7_02 Collecting Sitting vs. Standing/Walking

There are three components to this element:

- Sitting
- Standing/Walking
- Sitting/Standing at Will



A worker is always either sitting or standing/walking. When coding sitting vs. standing/walking, code for the full work schedule. While ORS elements are coded based on critical job functions, sitting vs. standing/walking is based on a typical work day.

Sitting is present when one of three conditions exists:

- Workers remain in a seated position. This includes active sitting. For instance, bicyclists sit but pushes/pulls with their feet/legs.
- Workers are inactive and seated or prone. For instance, a medical resident on call for a thirty-hour shift taking a strategic nap is sitting.
- Workers may choose between sitting and standing for a given task. For example, office workers can choose a standing desk.

Standing/Walking is present whenever workers are not sitting or prone. Include time spent stooping, crawling, kneeling, crouching, or climbing.

Examples - Sitting vs. Standing/Walking

Sitting	An over-the-road truck driver drives a tractor- trailer.
	A police officer rides a bicycle to patrol traffic.
	A landscaper mows a residential lawn with a seated mower.
Standing/Walking	A pest control worker crawls in an attic to apply pesticides.
	A landscaper stands on a zero-turn-mower to mow residential lawns.

Collecting duration for Sitting vs. Standing/Walking

Collect the actual daily hours that workers spend sitting OR standing/walking. The total amount of time coded for sitting and standing/walking *must* add up to the daily work schedule.

Example:

Most tellers sit for 3 hours per day while working at the drive-thru window. The rest of the day, tellers are either standing at the counter, stooping from a standing position to access the under-counter safe, or walking to escort customers to safety deposit boxes. The work schedule is 8/40/52.

Collect:

Sitting: 3 hours per day

Standing/Walking: 5 hours per day

Total: Sitting for 3 hrs. + Standing for 5 hrs. = 8 hour work day.

If a job spends a portion of the day sitting and the rest standing, but the respondent can only provide a range, use the mid-point of the range to calculate hours spent between Sitting and Standing/Walking.

Example:

Dental hygienists sit while cleaning patients' teeth and entering information into computer system. They must stand/walk between patients' rooms and to retrieve dental supplies. Respondent states dental hygienists spend 2-3 hours standing/walking and the rest of the time sitting. The work schedule is 8/40/52.

Collect:

Standing/Walking: 2.5 hours per day (Midpoint of range of 2-3 hours)

Sitting: 5.5 hours per day (Subtract hours spent standing/walking from daily total hours).

Total: Sitting for 5.5 hrs. + Standing for 2.5 hrs. = 8 hour work day.

Collecting Sitting/Standing at Will

Collect the presence (yes/no) of **Sitting/Standing at Will**.

The ability to alternate between sitting and standing/walking at will is present for a job when *all* of the following conditions exist:

- Workers typically have the flexibility to choose between sitting and standing throughout the day.
- There is no assigned time during the day to sit or stand/walk.
- No external factors determine whether workers must sit or stand/walk.

When collecting for this element, consult the job's documented task list to determine whether any of the critical tasks assigned would preclude the ability to sit/stand at will. Time sitting or standing/walking during scheduled breaks is excluded from determining the ability to sit/stand at will.

The ability to sit/stand at will can be present even when there are specific critical tasks that require workers to be sitting or standing/walking. If workers can determine/schedule when to perform that specific task, then they may still have the ability to sit/stand at will. Driving is an example of a task that is commonly performed while seated. If workers can control when the driving must be performed, then it is still possible for Sitting/Standing at Will to be present.

Examples of Sitting/Standing At Will	Collect As	Reason
An office clerk can choose when to file and typically stands while filing invoices.	At Will is 'Yes'	Worker's choice
A pharmaceutical sales rep driving to clients can choose when to make trips and additional stops.	At Will is 'Yes'	Worker's choice
An elementary teacher may sit or stand to instruct students and while monitoring them on duties.	At Will is 'Yes'	Worker's choice
An over-the-road truck driver must meet a delivery schedule. He stops to refuel and for weigh stations.	At Will is 'No'	Worker does not choose
An event parking lot attendant must stand when cars are entering the parking lot to accept payment and direct cars.	At Will is 'No'	External factors
A security guard chooses to sit or stand, except when she walks to investigate suspicious situations.	At Will is 'No'	External factors

7_03 Collecting Lifting/Carrying

Lifting is raising or lowering an object from one level to another. This includes upward pulling.

Example:

Assembly line workers lift cans, jars, or bottles from cardboard boxes and places them on a conveyor.



Carrying is transporting an object, usually by holding it in the hands or arms, or wearing it on the body, usually around the waist or upper torso.

Example:

Construction workers wear tool belts to carry hammers, flat bars, screwdrivers and other hand tools.

How to collect Lifting/Carrying:

1. Collect the presence and duration of any lifting/carrying needed to carry out the critical tasks performed to accomplish the critical job function. See [Overall Coding Threshold for All ORS Elements](#). Do not include lifting/carrying that workers “may” perform, or perform for [incidental](#) tasks.
2. Use the duration levels to categorize the data. The duration levels are:
 - Seldom: up to 2% of the day
 - Occasional: 2% up to 1/3 of a day
 - Frequent: 1/3 up to 2/3 of a day
 - Constant: 2/3 or more of a day
3. Document when lifting/carrying an object does not require hands. For example, workers wearing tool belts experience gross manipulation when lifting the belt and zero gross manipulation while carrying it. Collect all time spent wearing the tool belt toward the lifting/carrying element and document the presence/absence of gross manipulation.
4. Do not assume weight listed on job descriptions is the amount of weight the job normally carries/lifts to perform their critical tasks. Weights listed in job descriptions may be an arbitrarily determined maximum number of pounds included for workers’ compensation and other insurance purposes.
5. Ask the following questions when collecting data:

What is the most weight ever lifted/carried by the job to perform the critical tasks?

It takes more strength to lift something for longer lengths of time, so the weight that workers lift ‘up to 2% of the day’ is often heavier than that lifted more

frequently. It is important to probe when the maximum weight lifted seems excessive given the critical tasks performed. Ask, “What do workers lift that weighs that much?” If the item identified does not relate to critical tasks, ask for the next highest weight workers lift.

How often is this weight lifted/carried?

Consider the duration of other critical tasks performed by the job and physical demand elements experienced. Probe further if the duration for lifting/carrying conflicts with the duration of other physical demand elements.

What is the most weight lifted/carried [at each duration level]?

As the frequency of lifting/carrying increases, the maximum weight lifted by workers should decrease, i.e., the more often something is lifted/carried, the greater the chance it weighs less. Document items lifted/carried whenever workers are required to lift/carry *any* amount constantly, including ‘negligible.’

6. Use the Weight and Duration Chart below to code the weight lifted/carried by duration. Always round weight up to a whole number.

Weight and Duration Chart

Constantly (2/3 or more)	Frequently (1/3 up to 2/3)	Occasionally (2% up to 1/3)	Seldom (Up to 2%)
None	None	None	None
Negligible (up to 1 lb.)	Negligible (up to 1 lb.)	Negligible (up to 1 lb.)	Negligible (up to 1 lb.)
1 to 10 lbs.	1 to 10 lbs.	1 to 10 lbs.	1 to 10 lbs.
11-20 lbs.	11 to 25 lbs.	11-20 lbs.	11-20 lbs.
>20 lbs.	26 to 50 lbs.	21 to 50 lbs.	21 to 50 lbs.
	>50 lbs.	51 to 100 lbs.	51 to 100 lbs.
		>100 lbs.	>100 lbs.

The most weight lifted ever will be the same as the most weight lifted seldom. Using the duration chart, select the appropriate weight range in the **Seldom** column and code this in the ‘Up to 2%’ category in CIERA.

Code the most weight lifted/carried **Constantly** in the ‘2/3 or more’ category in CIERA. This will be the same or less than the amount collected at the **Frequently** duration level.

Code the most weight lifted/carried **Frequently** in the ‘1/3 up to 2/3’ category in CIERA. This weight will be the same or less than the amount collected for **Occasionally**.

Code the most weight lifted/carried **Occasionally** in the ‘2% up to 1/3’ category in CIERA. This weight will be the same or less than the amount collected for **Seldom**.

Example 1:

Workers seldom lift 50 lbs. This is the most they ever lift. They spend 4 hours of every eight-hour day lifting 20 lbs., but never lift anything constantly.

Lifting/Carrying (Max Weight Lifted...)				
Ever	2/3 or more	1/3 up to 2/3	2% up to 1/3	up to 2%
50 Lbs	None	11-25 lbs	11-20 lbs	21-50 lbs

Example 2:

As part of a landscape crew, workers operate either weed trimmers or leaf blowers while performing detail trim and clean-up work. Workers lift/carry the 12-pound gas-powered lawn equipment the entire day. Three times per day, for 10 minutes, the workers must lift portable fuel tanks to refuel equipment. The portable fuel tanks hold 5 gallons of gas and weigh approximately 30 pounds. The workers do not need to lift or carry anything else. The work schedule is 8 hours/day, 40 hours/week, 52 weeks/year.

Lifting/Carrying (Max Weight Lifted...)				
Ever	2/3 or more	1/3 up to 2/3	2% up to 1/3	up to 2%
30 Lbs	11-20 lbs	11-25 lbs	21-50 lbs	21-50 lbs

When to use ‘Negligible’ and ‘None’

Use the terms ‘negligible’ and ‘none’ when collecting weight across all duration categories.

‘None’ means there is no weight lifted or carried.

‘Negligible’ means the weight is so small that measurement is not meaningful. For instance, the weight of a pen, or a few sheets of paper, is not meaningful. If an object weighs more than one pound, it is NOT ‘negligible’.

Use professional analysis and probing questions when a respondent states that lifting/carrying, even of a negligible weight, are required frequently or constantly. Keep in mind that the activity must occur for more than 5 hours and 20 minutes in an 8 hour day to be coded as constant. Such a high rate of occurrence will typically be seen in repetitive production-type work or when workers wear the weight (tool belts, safety equipment). Activities coded at this frequency should always be documented.

Example 3:

Sales representatives, while visiting customers throughout a typical day, lift pens and paper. Sometimes representatives needs to lift cabinet samples, weighing six pounds each, to show potential clients design and color choices. The cumulative time spent lifting the cabinet samples is less than 2 hours and 40 minutes per day or 1/3 of the day.

The sales reps also lift boxes of display materials while setting up a booth at the annual sales show. The boxes weigh 30 pounds each and the total time spent lifting these is 10 minutes. Besides the annual sales show, the sales reps don’t lift anything more than 10 pounds.

Sales reps do not lift any object for more than 5 hours and 20 minutes in a day. The work schedule is 8 hours/day, 40 hours/week, 52 weeks/year.

Weight and Duration Chart

2/3 or more	None
1/3 up to 2/3	Negligible
2% up to 1/3	1 to 10 pounds
Up to 2%	1 to 10 pounds
Max Weight	6 pounds*

*Exclude weight of boxes lifted for the annual sales show from lifting/carrying duration coding because this is an [incidental task](#) (it is unusual and not in support of the critical job function).

7_04 Collecting Pushing/Pulling

Pushing is exerting force upon an object so that the object moves away from the origin of the force.

Pulling is exerting force upon an object so that the object moves toward the origin of the force.



Understanding thresholds for Pushing/Pulling

Pushing/Pulling is a measure of strength, not dexterity. Force or exertion must meet a threshold for Pushing/Pulling to be present.

Only collect and code the presence and duration of pushing/pulling when critical tasks performed meet one of the following thresholds:

- A worker uses ten **force** pounds or more, **or**
- A worker uses any amount of **force** 2/3 or more of the day (constant or **production rate**).

A **production rate** includes a constant repetition of a negligible amount of force, requiring considerable strength at any weight.

Force is an interaction that changes the motion of an object. Factors affecting the amount of force needed are:

- Weight of object(s) being pushed/pulled
- Friction, specifically pushing/pulling on a smooth vs. coarse surface
- Incline

Example:

The amount of force required for a worker to push/pull a dolly with a weight on it across a flat surface or a 30-degree incline is (approximately):

Weight	Flat Surface	Incline
25 lbs.	2 force pounds	11 force pounds
50 lbs.	6 force pounds	14 force pounds
100 lbs.	11 force pounds	18 force pounds

Documentation, including examples of items pushed/pulled, must be provided to support the coding.

Meeting the Threshold of Pushing/Pulling

Examples	Meets the Threshold	Reason
Pulls down a garage door manually.	Yes	Meets the force threshold
Pulls open large drawers containing cadavers in the county morgue.	Yes	Meets the force threshold
Pushes a patient in a wheelchair.	Yes	Meets the force threshold
Pushes/pulls a chipper/shredder machine.	Yes	Meets the force threshold
Pushes/pulls a commercial floor waxing machine	Yes	Meets the force threshold
Pushes a treadle when using an industrial sewing machine 80% of the day.	Yes	Meets the production rate threshold
Pulls open an office desk drawer, occasionally.	No	Does not meet either threshold
Pushes gas/brake pedals in a passenger vehicle, driving for 50% of day.	No	Does not meet either threshold
Pushes an IV stand across a patient's room, occasionally.	No	Does not meet either threshold
Pushes open a typical household door, occasionally.	No	Does not meet either threshold

How to collect Pushing/Pulling

Collect the presence and duration of pushing and pulling together.

- Code the duration of critical tasks which involve pushing/pulling equal to ten or more force-pounds. This meets **force** threshold.
- Code the duration of critical tasks which involve pushing/pulling any force-pounds if the pushing/pulling occurs more than 2/3 of the day. This meets the **production rate** threshold.
- Code pushing/pulling as ‘Not Present’ when pushing/pulling duration is less than 2/3 of the day and involves less than ten pounds of force. This does not meet either threshold for pushing/pulling.
- When pushing/pulling force amounts vary above and below the force threshold, code total duration experience if the sum of all tasks involving pushing/pulling are present for more than 2/3 of the day. If total duration is less than 2/3 of the day, code only the duration for tasks requiring over ten pounds of force.
- Code ‘Present Duration Unknown’ only when a critical task requires force clearly exceeding ten pounds and the duration is not known. Do not code ‘Present Duration Unknown’ based solely on the knowledge a task requiring pushing/pulling *may* exist from a job description or other written source, *unless verified by a respondent*.
- If the force threshold cannot be determined, code ‘Unknown’ *unless* it can be verified that duration exceeds 2/3 of the day (production rate threshold). Force is not a consideration above 2/3 of the day.

Separate pushing and pulling based on the part of the body used. Collect as:

- **Hands/Arms**, when the upper body is used.
- **Feet/Legs**, when the lower body is used.
- **Feet Only**, when the pushing is done primarily by the feet from a seated position and upper leg muscles do not create the force.

Most pushing and pulling that occurs while walking uses arms and legs to apply force. Types of Pushing/Pulling using arms and legs include:

- Wheelchairs
- Commercial carpet cleaners
- Carts
- Walk-behind lawn mowers

For each type of pushing and pulling, code whether the critical task performed requires one or both hands/arms (feet/legs). See [7_01 Coding One or Both](#) for guidelines.

If a task that requires a worker to operate foot/leg controls meets the force or production rate threshold for pushing/pulling, code duration in *both* Pushing/Pulling- ‘Feet Only’ and Manipulation-Foot/Leg Controls.

Example: When driving is done for 2/3 or more of the day, code for use of the pedals as both Pushing/Pulling- ‘Feet Only’ and Manipulation-Foot/Leg Controls.

Exclude pushing/pulling actions involved while workers ascend or descend ropes, ladders, or scaffolding, as the time spent pushing/pulling when performing this physical demand is included in the Climbing Ropes, Ladders, or Scaffolding element.

Examples of Pushing/Pulling	Collect One/Both	Collect Duration
Technicians sit and push, with one hand, a 100 lbs.-equipment cart. The total time pushing is 30 min. per day.	One hand/arm only. No legs, because the workers sit.	2% up to 1/3
Librarians walk behind and push heavy two-shelf cart full of books for 3 hours per day.	Hands/arms and feet/legs; both sides of the body for each.	1/3 up to 2/3
Swim instructors swim 4 hours out of an 8-hour day.	Hands/arms and feet/legs; both sides of the body for each.	1/3 up to 2/3
Textile workers stand at a commercial loom pushing/pulling with two hands to weave fabric for 7 hours of an 8-hour day.	Both hands/arms. A rare example of pushing/pulling from a non-seated position with hands/arms only.	2/3 or more
Police officers patrol on a bicycle for 1 hour of an 8-hour day.	Both feet/legs. A rare example of push/pull feet/legs; no hands/arms.	2% up to 1/3
Excavating machine operators use both arms and legs to operate controls and pedals (clutch) for 6 hours of an 8-hour shift.	Hands/arms and feet only; both sides of the body for each.	2/3 or more
Bus drivers operate gas/brake pedals for automatic transmission buses, driving for 1 hour and 45 minutes of 2 hour shift.	Feet only; one side of body.	2/3 or more

7_05 Collecting Reaching

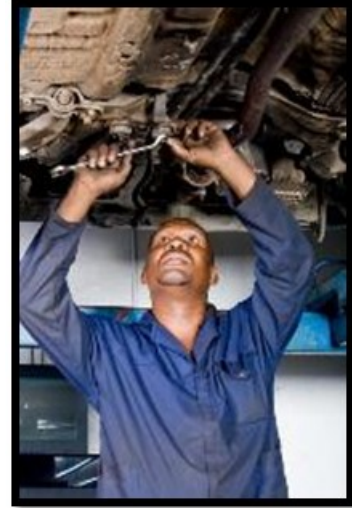
Reaching is extending the hand(s) and arm(s) in any direction.

Reaching requires the straightening and extension of the arm and elbow and the engagement of the shoulder. A worker can bend his arm at any time while reaching.

Collect the duration for the entire range of motion for Reaching, not just the time at full extension.

There are two types of Reaching:

- Overhead Reaching
- At/Below the Shoulder Reaching



Overhead and At/Below the Shoulder Reaching can be present in the same task.

Overhead Reaching is extending the arm(s) with the hand higher than the head AND one of two conditions:

Condition 1:

- A person bends the elbows, and the angle at the shoulders is about 90 degrees or more.

Condition 2:

- A person keeps the elbow extended, and the angle at the shoulder is about 120 degrees or more.

If workers can stand as needed to avoid overhead reaching, collect the task as At/Below the Shoulder Reaching. Standing is the only means of avoiding overhead reaching that should be considered.

At/Below the Shoulder Reaching is present when there is Reaching, but it does not meet the threshold for Overhead.

For each type of reaching, code whether the task requires one or both hands/arms. See [7_01 Coding One or Both](#) for guidelines.

Note:

Operating a steering wheel of a standard vehicle does not meet the requirement of Reaching. See [7_10 'Driving'](#).

To avoid overstatement, do not collect duration for reaching performed when crawling or while ascending/descending ladders, ropes, or scaffolding. However, include duration for any reaching performed while working on ladders, ropes, or scaffolding (for instance, painters reach to apply paint on walls while on top of a ladder).

Examples of Reaching:	Collect As:	Reason
Picking apples from the tops of mature trees.	Overhead	Meets the threshold
Spotting children on uneven bars.	Overhead	Meets the threshold
Hanging an IV bag on a stand.	Overhead	Meets the threshold
Opening and closing stage curtains with a rope and pulley.	Overhead	Meets the threshold
Pruning trees and shrubs.	Both types of Reaching	Meets all criteria
Attaching drywall to studs.	Both types of Reaching	Meets all criteria
Filing folders in overhead cabinets. Worker can stand.	At/Below Shoulder	Present, below threshold for Overhead Reaching
Checking a car's oil.	At/Below Shoulder	Present, below threshold for Overhead Reaching
Reaching in bins for sandwich ingredients.	At/Below Shoulder	Present, below threshold for Overhead Reaching
Loading a commercial dishwasher.	At/Below Shoulder	Present, below threshold for Overhead Reaching
Reaching for the control to open a bus door.	At/Below Shoulder	Present, below threshold for Overhead Reaching
Reaching across a desk for the handset to answer a telephone in cubicle.	Not Present	Workers' able to move phone closer to avoid reaching.

7_06 Collecting Manipulation

There are three types of Manipulation:

- Gross Manipulation
- Fine Manipulation
- Foot/Leg Controls



Gross Manipulation is seizing, holding, grasping, turning, or otherwise working with the hand(s). It is present when lifting involves the hands.

For Gross Manipulation, fingers are involved only to the extent that they are an extension of the hand to hold or operate an object or tool, such as hammer.

Example: Workers use whole hand to shift automobile gears.

Collect the presence and duration of gross manipulation. Code the use of one or both hands.

When coding 'One' or 'Both' hands for Gross Manipulation, include the manipulation demands necessary for critical tasks only. Code 'Both' if *any* critical task *requires* the use of both hands.

Exclude:

- Gross Manipulation involved in Keyboarding or the use of a mouse
- Gross Manipulation involved while Climbing Ladders, Ropes, and Scaffolds (during ascending/descending of ladders, ropes, and scaffolds only)
- Lifting/Carrying that involves a part of the body other than hands

Fine Manipulation is touching, picking, pinching, or otherwise working primarily with fingers rather than with the whole hand or arm, as in Gross Manipulation.

Collect the presence and duration of Fine Manipulation. Code the use of one or both hands.

When coding 'One' or 'Both' hands for Fine Manipulation, include the manipulation demands for critical tasks only. Code 'Both' if *any* critical task *requires* the use of both hands.

Some tasks require simultaneous gross manipulation and fine manipulation, like writing. Code duration for tasks requiring simultaneous fine and gross manipulation in both elements.

Example:

A worker grasps a tape roll with one hand and pinches the tape lead with the other.

Include time spent performing data-entry using electronic devices such as touchscreens, hybrid cash registers, and other electronic devices as Fine Manipulation including:

- Tablet computers
- Touch screen mobile phones
- Touch screen point of sale devices
- Cash Registers
- Portable Scanners

Exclude any time spent performing data entry on traditional keyboards or 10-Key pads from the duration of Fine Manipulation. Code duration for these types of keyboards as Keyboarding.

Foot/Leg Controls is the use of one or both feet or legs to move controls on machinery or equipment. Controls include, but are not limited to, pedals, buttons, levers, and cranks.

If time operating foot/leg controls meets the threshold for pushing/pulling, collect it for Foot/Leg Controls *and* Pushing/Pulling. See [section 7.04](#).

Examples of Manipulation

Gross	Handling a conventional phone receiver.
	Holding lumber and handling tools when building cabinetry.
	Lifting and moving packages.
	Driving a delivery van using a steering wheel.
	Using a pipe wrench.
Fine	Pushing buttons on a copy machine.
	Counting coins and paper money.
	Pinning and hand sewing garments.
	Separating groups of documents with paper clips.
	Inserting small parts on a production line.
	Adjusting calibration equipment.
	Sorting through bins of eyeglass screws.
	Stringing small beads on a wire to make a bracelet.
Collecting tickets and handing-out receipts.	
Gross and Fine	Writing.
	Playing a guitar.
	Cutting with scissors.
	Using a screwdriver.
Foot/Leg	Stepping on a lever to lower and raise salon chairs.
	Pressing a floor button to raise a dental chair.
	Pressing a gas pedal to drive a passenger vehicle.
	Pressing a knee lever to operate a sewing machine.

7_07 Collecting Keyboarding

Keyboarding is entering text or data into a computer or other machine by means of a keyboard, using a repetitive motion requiring the use of the whole hand.

How to collect Keyboarding

Collect the presence and duration of Keyboarding for the following devices:

Traditional Keyboard – a panel of keys used as the primary input device on a computer, typographic machine or 10-Key numeric keypad. Include:

- Stenographer's machines
- Typewriters
- Laptops
- All aspects of using a desktop computer, including a mouse
- Adding machines
- Calculators

Do not include keyboarding or the use of a mouse in the duration for Gross or Fine Manipulation, or Reaching.

Collect durations for the use of *any other* keyboarding devices not listed above as [Fine Manipulation](#). Examples of other keyboarding devices that should be coded as Fine Manipulation include tablets, smartphones, cash registers, and retail scanners.

If a worker must use a computer monitor or a screen on another electronic device, then code Near Visual Acuity- 'Yes' as a default.



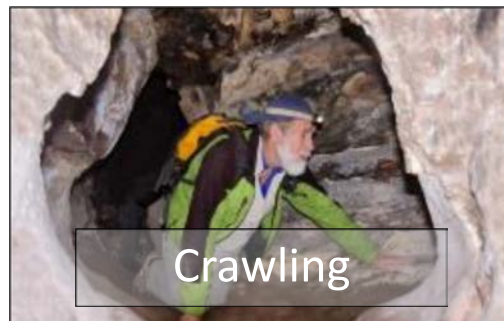
Examples of Keyboarding	Code As
Customer service reps enter information into an order system on a desktop computer.	Traditional keyboard
Accounting clerks use adding machines to settle accounts.	Traditional keyboard
A receptionist at a spa uses a typing motion on a touchscreen device to book services and send customized messages to clients.	Fine Manipulation
Bartenders enters drink orders into a touchscreen order-system	Fine Manipulation
Salespeople communicate with customers using a Blackberry.	Fine Manipulation
Cashiers at a retail store use registers with a hybrid keyboard that has 72 flat keys and a 10-key pad.	Fine Manipulation
Musicians playing pianos and organs	Fine Manipulation

7_08 Collecting Stooping, Crouching, Kneeling, and Crawling

There are four posture positions:

- Stooping
- Crouching
- Kneeling
- Crawling

Workers may use these postures to lower themselves, position themselves over something, or get closer to the ground. A worker cannot stoop, crouch, kneel, or crawl at the same time.



Stooping is bending the body forward and down while bending the spine at the waist 45 degrees or more either over something below waist level or down towards an object on or near the ground. Stooping should be significant enough that when bending, if arms were extended, workers' hands would be at or below the knees.

Stooping must be performed by standing. Exclude stooping performed while workers are sitting.

If workers can position objects higher as needed in order to avoid stooping, do not collect the presence and duration of Stooping for that task. Examples include storing items on a higher shelf, raising the dental chair, and adjusting a patient's bed upwards.

Include:

- A mechanic stoops over a car engine while making repairs.
- A janitor stoops while emptying small desk trashcans.
- A hairstylist stoops while washing hair.

Exclude:

- Teacher leans over to look at a student's paper. The teacher could be handed the paper by the student and read it standing upright.
- Clerical employee bends slightly at the waist while sitting to retrieve a document from the bottom drawer of his desk. Stooping must be done while standing.
- Accountant stoops to pick up a dropped item or to plug in a computer monitor. Both of these are [incidental tasks](#) and are excluded.

Crouching is bending the body downward and forward by bending the legs and spine.

Examples:

- A bricklayer crouches to spread mortar and position bricks on lower parts of walls.
- A medical records clerk crouches when filing in the lower drawers of file cabinets.
- An HVAC repairperson crouches to inspect a malfunctioning air conditioner.
- A physical education teacher crouches to demonstrate the catcher position while playing softball.

Kneeling is bending the legs at the knees to come to rest on the knee or knees.

Examples:

- A carpet installer kneels while pressing carpet firmly in place over tack strips, using hand tools.
- An electrician kneels to connect wiring to fixtures located in cramped places.
- A plumber kneels while installing piping for a radiant floor heating system.
- A pest control worker kneels while placing live traps under a deck.

Crawling is moving about on hands and knees or hands and feet.

Examples:

- A concrete worker crawls while smoothing and finishing the surface of poured concrete sidewalks.
- An HVAC repairperson crawls through narrow spaces to reach all parts of a furnace.

- An insulation installer crawls through a home's crawlspace.

The demands of a job may dictate, or the establishment may require, the use of a specific movement. In some cases, workers may choose the position they assume to perform tasks.

When workers choose their body position, collect the position generally used to perform the job. If it is not possible to determine the position generally used, code each 'present duration unknown.'

The time spent in these postural positions is usually minimal, and respondents tend to overstate the total. Be sure the duration provided corresponds to the critical tasks of the critical job function.

7_09 Collecting Climbing

Climbing is the act of ascending or descending stairs, ramps, ladders, ropes or scaffolding and similar structures using feet, legs, hands, and/or arms.

There are two types of climbing:

- Climbing Ramps or Stairs
- Climbing Ladders, Ropes, or Scaffolds

If the type of climbing present does not directly correspond to either of the two data elements, select the element that most closely resembles the action performed by the workers and document accordingly.

Collecting Climbing Ramps or Stairs

Climbing Ramps or Stairs is present when a worker ascends or descends ramps or stairs primarily using feet and legs. A worker may use arms and hands for balance only, as in holding a stair railing. Include only work related ramps that are part of equipment or machinery. Do not include handicap access ramps when coding this element.

When Climbing Ramps or Stairs is present, determine if it is **work related** or **structure related**, and code accordingly.

Work related: performing the critical tasks would require climbing regardless of the building structure. Climbing generally is due to stairs/ramps on machinery and equipment, or the use of step ladders to reach higher materials and shelving.

Structure related: the stairs are part of the building structure. Performing the critical tasks would not require climbing if the workplace was one level. Structure related climbing includes climbing steps to enter/exit residential structures as well as climbing full stair flights.

A job may perform both work related and structure related climbing. Collect the presence of each and the duration of any **work related** climbing.

Note: Exclude climbing steps to enter and exit public buildings and non-residential structures from *both* work and structure related climbing. Federal law requires the availability of handicap access ramps at entrance of these structures; therefore, climbing steps to enter and exit public and non-residential buildings is voluntary.



Examples	Action	Type
A machine operator climbs stairs to access the machine platform.	Collect	Work Related-include duration
Delivery drivers climb a ramp to load and unload material from a delivery truck.	Collect	Work Related-include duration

Retail sales workers climb movable stairs to obtain merchandise from high shelves	Collect	Work Related-include duration
Bus drivers climb steps into bus	Collect	Work Related-include duration
Delivery drivers climb stairs while making residential deliveries or during home visits	Collect	Structure Related –include presence only
Visiting nursing aides climb stairs while visiting clients at their homes	Collect	Structure Related –include presence only
An office manager must use stairs to access files and supplies located on another floor.	Collect	Structure Related –include presence only
A teacher escorts children up and down stairs in a three-story building.	Collect	Structure Related –include presence only
Attorneys visiting courthouses	Do not collect	Public building –climbing stairs during entry/exit into structure is voluntary
Nursing assistants push patients up handicap-access ramps.	Do not collect	Handicap-access ramps are excluded from both types of Climbing Ramps and Stairs
Pharmaceutical sales representatives visit doctors’ offices and health clinics	Do not collect	Public buildings –climbing stairs during entry/exit into structure is voluntary
An apartment property manager ascends steep driveways while maintaining rental properties.	Do not collect	Steep driveways do not count as ramps or stairs.

Collecting Climbing Ladders, Ropes, or Scaffolds

Climbing Ladders, Ropes, or Scaffolds is present when a worker ascends or descends ladders, scaffolding, ropes, or poles, using feet/legs and hands/arms.

A worker typically uses both upper body and lower body in some capacity when climbing ladders, ropes, or scaffolds.

If workers must climb something that requires the use of both the upper and lower body to climb, include it in this element.

Note: Do not include the time spent *ascending or descending* ladders, ropes, or scaffolds in gross manipulation, pushing/pulling, and reaching durations. These physical demands are contained within the climbing element.

Examples:

- Ascending poles to install or repair power lines.
- Climbing scaffolding to plaster a ceiling.
- Climbing a short ladder using arms and legs to reach the cab of a (semi) truck.

- Using arms and legs to scale the rock wall at a gym.

Determining the type of Climbing with Stools and Ladders

There are many different types of stools and ladders. The movements involved in using each type as well as their visual appearance varies.

Categorize stools and ladders as follows:

Type	Description	Collect As
Single Step Stool	A small stool with one-step often used to reach a higher-level cabinet in a kitchen or used to access the top shelf in a library. A worker does not need to use the upper body.	Climbing ramps/stairs
Household Double Step Stool	A stool that folds out into two stair-like steps. Ascent is forward and up rather than vertical. A worker does not need to use the upper body.	Climbing ramps/stairs
Step Ladder	A ladder, typically between eight and twelve feet tall, with steps that fit most of the foot. Ascent is vertical rather than stair-like. A worker must use the upper and lower body.	Climbing ladders, ropes, or scaffolds
Traditional ladder	Ladders, including extension ladders, designed to reach the tops of structures, with rungs rather than steps. A worker must use both the upper and lower body.	Climbing ladders, ropes, or scaffolds

7_10 Collecting Driving

Driving, a type of task, is the operation of a motorized passenger vehicle or other conveyance.

Collect the presence of driving only when it is confirmed that driving is a [critical task](#) for the job.

Include passenger vehicles such as automobiles, vans, or light trucks, and other vehicles such as tractor trailers, buses, equipment (e.g. forklifts), trains, or aircraft.

Include a description of *all* types of vehicles driven in the task list documentation.

Exclude non-motorized conveyances, such as riding an animal or bicycle.

Driving involves multiple physical demands:

- Far Visual Acuity: Far Visual Acuity is assumed when Driving is present.
- Peripheral Visual Acuity: Peripheral Visual Acuity is assumed when Driving is present.
- Gross Manipulation: Time spent driving will be the base duration for Gross Manipulation.

Driving when operating a passenger vehicle with automatic transmission and power brakes also includes the following physical demand elements:

- Manipulation- 'Foot/Leg Controls'
- Pushing/Pulling- 'Feet Only', if time operating 'Foot/Leg Controls' meets the [production rate threshold](#).

Driving when operating a passenger vehicle with automatic transmission and power brakes *does not include*:

- Pushing/Pulling- 'Feet/Legs'. Operating the gas and brake pedals in this type of standard passenger vehicle does not meet the force threshold.
- Reaching. Operating a steering wheel does not meet the requirement of Reaching. When driving a passenger vehicle, the steering wheel is close enough that the driver does not extend the arms enough to engage the shoulder.

Driving may also include:

- Near Visual Acuity

Except for the above guidance, do not assume the presence or duration of any physical demand based upon vehicle type. Large or specialized vehicles may have different controls, so always confirm expectations with the respondent and code based on the



actual equipment. Many modern large trucks, buses, and equipment may require little physical exertion or no more than is needed for driving a passenger car.

7_11 Collecting Communicating Verbally and Hearing Requirements

Communicating Verbally is 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.

Only include communicating verbally when speaking is a primary component needed to perform critical tasks.

When Communicating Verbally is present, collect the amount of time workers are actually speaking. Do not include the time workers spend listening during a conversation. Exclude speaking that is social in nature between co-workers or with the public.



Examples	Include duration	Reason
A TV news anchor reports news in a pleasant, well-controlled voice.	Yes	Expressing oral information accurately for a critical task
A hospital nurse, discharging patients, answers questions while providing instructions.	Yes	Conveying detailed instructions to general public for a critical task
A human resources manager explains benefits to a new employee	Yes	Conveying detailed instructions to other workers for a critical task
A cashier asks customers whether they will pay with cash or credit	Yes	Expressing oral information to general public for a critical task
A bartender asks for customer's drink orders	Yes	Expressing oral information to general public for a critical task
An IT help desk technician provides instructions to end-user	Yes	Expressing oral information to other workers for a critical task
A bartender talks to customers about their lives because it generates more tips	No	Exclude socializing
A human resources managers sends new employees benefits booklets via email	No	Communication must be verbal

A sales representative listens to potential customer's questions	No	Time spent listening included with 'Hearing'
A team assembler indicates to another team member that the line stopped.	No	Exclude since machinery malfunction is incidental-chance occurrence and speaking is not primary component needed to perform critical tasks.

Hearing Requirements are the ability to hear, understand, and distinguish speech and/or other sounds, such as machinery alarms or medical codes/alarms. Collect the presence of Hearing Requirements needed to complete critical tasks.

Exclude hearing for any conversation or sounds that are:

- Social in nature – between co-workers or with the public.
- Public announcements and public safety alarms, such as fire, tornado, weather, and other public safety alerts.
- Related to incidental tasks

There are five types:

- **One-on-one (in person).**
- **Group or conference (in person).**
- **Telephone (and similar remote communication devices such as radios, walkie-talkies, intercoms, and public address systems).** Include the ability to hear a ringing telephone, or similar device, before it is answered. Include only hearing required to perform critical tasks.
- **Passage of hearing test.** This refers to a job requirement to pass a hearing test prior to employment in order to perform occupational duties. Exclude hearing tests that simply determine pre-employment hearing levels.
- **Other sounds.** Captures hearing of other sounds outside of words/language that are related to critical job functions. Include hearing items such as machinery alarms and equipment sounds, etc.

Examples of Hearing Requirements	
One-on-One	Cashiers listen to customers' requests.
	Guidance counselors listen to students' concerns
	A hospital nurse, discharging patients, listens to questions about the instructions.
Group/Conference	A secretary takes minutes during a board meeting.
	A politician participates in a town hall style debate and responds to audience comments.
Telephone	A dispatcher answers 911 calls and sends help to the given location.
	A bus driver uses a walkie-talkie to communicate with her operator regarding the route status.
	Mechanics must hear requests/instructions through shop public address system.
Hearing Test	A pilot must pass a hearing test prior to hire.
Other Sound	A veterinary tech identifies problems by listening to sounds from animals under care.
	An RN must hear and respond to patient alarms.
	A machine operator listens for alarms to stop the machine and clear jams.
	A day care center worker listens for a crying baby.
Do Not Collect	A teacher must be able to hear a tornado alarm to get children to safety.
	A teacher must be able to hear the bell signaling that it's time to change classes. Bell is a public announcement for everyone in the school.
	Workers must be able to hear and respond to a hurricane warning.
	Assemblers listen to small talk while working on production line.
	A factory worker takes a hearing test prior to start and then annually to measure work-related hearing loss.

7_12 Collecting Vision

There are three vision elements:

- Near Visual Acuity
- Far Visual Acuity
- Peripheral Vision



Near Visual Acuity is clarity of vision at approximately 20 inches or less, as when working with small objects or reading small print. Always collect near visual acuity when the job uses a computer in support of a critical job function, regardless of distance.

Examples:

- A watch repairperson must see small parts within the watch.
- A payroll clerk enters information in HR software.
- A technician must read small numbers printed on electronic parts such as circuit board components.

Far Visual Acuity is clarity of vision at 20 feet or more. This includes the ability to see a person or object at a distance and to recognize features.

Examples:

- A park ranger observes a forest from a remote fire lookout station.
- A delivery truck driver drives a truck in city traffic.
- A surveyor must see distances to locate property lines.

Code 'Yes' for near visual acuity and far visual acuity when a worker is required to see with clarity at designated distances.

Code 'No' for near visual acuity and far visual acuity when a worker is required to have vision but not clarity.

Always code Far Visual Acuity when driving is performed as a critical task.

Exclude far visual acuity required for [incidental tasks](#). For example, bank tellers would not need far visual acuity in the case of robbery because this is a chance occurrence.

Peripheral Vision is what is seen above, below, to the left or right by the eye while staring straight ahead.

Examples:

- Security guards watch all doors and TV monitors to look for unusual activities
- Heavy equipment operators must keep watch in all directions
- Bus drivers operate school buses on public roadways

Always code 'Peripheral Vision' when driving is performed as a critical task.

Chapter 8: Environmental Conditions

Environmental conditions are the surroundings and/or conditions experienced by workers as they perform [critical tasks](#). We collect ten conditions:

- [Outdoors](#)
- [Extreme cold](#)
- [Extreme heat](#)
- [Wetness](#)
- [Humidity](#)
- [Hazardous contaminants](#)
- [Proximity to moving mechanical parts](#)
- [Heavy vibration](#)
- [High, exposed places](#)
- [Noise intensity level](#)



8_01 Collecting Environmental Conditions

Code exposure to environmental conditions only when workers experience the condition while carrying out critical tasks of the jobs.

See [Overall Coding Threshold for All ORS Elements](#).

Conditions meet any of the specified **thresholds** listed below.

Personal protective equipment (PPE) required by the employer only partially [mitigates](#) exposure. PPE is equipment used or worn to minimize exposure to serious workplace injuries and illnesses.

Thresholds for Environmental Conditions	
Environmental Condition	Threshold
Outdoors	Critical tasks are performed outdoors Must be unprotected and exposed to elements
Extreme Cold (non-weather only)	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
Extreme Heat (non-weather only)	Above 90 degrees in a dry environment, or Above 85 degrees in a humid environment
Wetness (non-weather only)	Any contact with water or liquids and/or working in a wet area
Humidity (non-weather only)	Must be oppressive atmosphere
Hazardous Contaminants	Exposure that negatively affects the respiratory system, eyes, skin, or other living tissue via inhalation, ingestion, or contact
Proximity to Moving Mechanical Parts	Must present a risk of bodily injury
Heavy Vibration	Exposure to shaking or vibration that causes a strain on the body or extremities
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
Noise Intensity Level	None (must meet requirements in definition)

How to collect Environmental Conditions

Collect the duration of exposure for all environmental conditions, except ‘Noise Intensity Level’.

Collect and code the presence of PPE for *all* elements. Measure exposure as the workers experience it using personal protective equipment (PPE). Document the use and type of PPE and how it mitigates.

The presence of PPE for the following environmental conditions requires special coding in CIERA:

- Hazardous Contaminants
- Proximity to Moving Mechanical Parts
- High, Exposed Places
- Noise Intensity Level

If an employer installs devices or requires protective equipment, collect the duration of exposure as it is actually experienced.

If, according to the respondent, protective equipment or devices eliminate exposure, document the use of PPE and code the occupation as fully mitigated.

Examples	Action
A ramp agent loads and unloads plane cargo on a tarmac with exposure to loud noise. The company requires the worker to wear noise-cancelling headsets.	Collect Noise Intensity Level as ‘Quiet’ or ‘Moderate,’ depending on the level of mitigation provided by PPE.
Workers wear fully enclosed protective suits while identifying and disposing of asbestos in buildings.	Collect time (or duration) exposed to Hazardous Contaminants as ‘Fully Mitigated’ and ‘Yes’ for PPE.

8_02 Collecting Outdoors

Outdoors is present when two conditions exist:

Condition 1

- Workers perform critical tasks outdoors

Condition 2

- Workers are unprotected and exposed to the elements.



Note: A work site is considered protected when it has a roof and at least three sides.

Exclude outdoor exposure related to [traveling between job sites or commuting](#).

Examples	Action	Reason
A teacher watches children while outdoors for recess.	Collect	Meets both conditions
A groundskeeper mows lawns and trims shrubs.	Collect	Meets both conditions
Servers wait on tables located outdoors.	Collect	Meets both conditions
Hospital transporters wheel patients to vehicles.	Collect	Meets both conditions
A fast food crew member takes trash to a dumpster behind the restaurant throughout the day.	Collect	Meets both conditions
A pharmaceutical sales rep walks to and from the car with each client visit.	Do not collect	Doesn't meet condition 1, exposure related to traveling/commute only
An employee commutes to and from the workplace.	Do not collect	Doesn't meet condition 1, exposure related to traveling/commute
A miner works in an underground mine.	Do not collect	Doesn't meet condition 1 or 2
An archaeologist inspects artifacts in a three-sided tent at the dig site.	Do not collect	Doesn't meet condition 2

8_03 Collecting Extreme Cold

Extreme Cold is present when two conditions exist:

Condition 1

- Workers' exposure is related to critical tasks and not due to weather

Condition 2

- Workers are exposed to 40 degrees F or colder temperatures for 2/3 or more of the workday, or
- Workers are exposed to 32 degrees F or colder temperatures for less than 2/3 of the workday



Examples	Action	Reason
A meat cutter works in a 40 degree cooler to carve beef carcasses for more than 3/4 of the day.	Collect	Meets conditions
A freeze tunnel operator, wearing protective clothing, works for short periods in -34 degree F temperatures.	Collect	Meets conditions
A building maintenance worker shovels snow from sidewalks in 10-degree temperatures.	Collect as Outdoors	Weather-related
A mining machine operator drives a shuttle car to transport materials in an underground mine that is 58 degrees.	Do not collect	Does not meet the threshold
A forklift operator works in an unheated warehouse that is always below 40 degrees in the winter.	Do not collect	Weather-related
Restaurant wait staff enter upright freezer for supplies whenever cooks and food preparation workers are busy	Do not collect	Incidental task for servers

8_04 Collecting Extreme Heat

Extreme Heat is present when two conditions exist:

Condition 1

- Workers' exposure is related to critical tasks and not due to weather

Condition 2

- The atmosphere is dry with temperatures above 90 degrees F, or
- The atmosphere is humid with temperatures above 85 degrees F. **Humid** means a high level of water vapor in the air.



The presence or absence of humidity affects the way that extreme heat is experienced.

Extreme Heat includes localized sources of heat that change atmospheric temperatures to levels that exceed the threshold.

Most jobs do not have outdoor exposure to hot, non-weather temperatures. When it is present, collect the duration of exposure and document.

Examples	Action	Reason
An asphalt machine operator spreads hot asphalt on streets and roads. The machine produces intense heat.	Collect and document	Meets conditions
A commercial laundry worker reaches into dryers. Dryers create humidity and raise temperatures above 85 degrees.	Collect	Meets conditions
A restaurant cook works close to a hot commercial stove and oven in a kitchen.	Collect	Meets conditions
An airline ramp agent loads and unloads baggage on a hot tarmac.	Collect as Outdoors	Weather-related
A salon worker is exposed to steam, hot wax, and hot towels while giving facials and waxings.	Do not collect	Does not meet the threshold
A warehouse worker moves freight and stock in a warehouse that is not climate controlled and is above 90 degrees.	Do not collect	Weather-related

8_05 Collecting Wetness

Wetness is present only when the following two conditions exist:

Condition 1

- The worker has any contact with water or liquid, including working in a wet environment.

Condition 2

- The worker's exposure is related to critical tasks and not due to weather.

The use of gloves may or may not mitigate exposure to wetness. Document when workers use gloves to mitigate exposure to Wetness.



Examples	Action	Reason
A dishwasher cleans pots, pans, and trays by hand.	Collect	Meets conditions
A cannery worker reaches under jets of water when feeding food products into a washing machine that preps the items for cooking and canning.	Collect	Meets conditions
A nurse washes hands between patients.	Collect	Meets conditions
A waiter wipes down tables with a wet rag and does not use a glove.	Collect	Meets conditions
A dog walker works in rainy weather.	Collect as Outdoors	Weather-related
A pharmaceutical sales rep walks from a physician's office to the car in snow.	Do not collect	Weather-related

8_06 Collecting Humidity

Humidity is present when three conditions exist:

Condition 1

- Workers' exposure is related to critical tasks and not due to weather.

Condition 2

- Workers experience air containing a high amount of water or water vapor.

Condition 3

- The atmosphere is **oppressive**. An oppressive atmosphere must be very uncomfortable and could affect breathing.



Examples	Action	Reason
A garment presser uses a pressing machine that discharges steam to iron damp clothing.	Collect	Meets conditions
A gym attendant works in and around a sauna.	Collect	Meets conditions
A bicycle police officer patrols pedestrian areas during humid, summer months.	Collect as Outdoors	Weather-related
A server retrieves orders from a restaurant kitchen where food preparation and dishwashing activities generate humidity. The kitchen has a commercial ventilation system.	Do not collect	Mitigated, not oppressive
A warehouse worker moves freight and stock in a warehouse that is not climate controlled and is above 90 degrees and humid in summer months.	Do not collect	Weather-related

8_07 Collecting Hazardous Contaminants

Hazardous Contaminants are present when the following condition is met:

Condition 1

- Workers are exposed to substances that may have a negative impact upon respiration, eyes, skin, or other living tissue.
- Exposure may be through inhalation, ingestion, or physical contact.

Exposure needs to be present, but does not have to be from critical tasks. Workers may be exposed to contaminants produced by other workers producing contaminants in the proximity. Document cases when workers are exposed to hazardous contaminants not related to their own critical tasks.

Employers may have protective procedures in place when these hazards exist. Collect the presence and type of personal protective equipment when the employer provides it.

Household cleaners do not present the level of negative impact needed to be considered hazardous. Do not include biohazards such as blood and other bodily fluids in this element.

Note: For a list of potential hazards, see [List of Potential Hazards](#) in Appendix 1. This list is not exhaustive and typically, respondents will not know or provide these chemical names as listed. Collect Material Safety Data Sheets from the employer, if available, and document the chemical(s) present.



Examples	Action	Reason
An automotive mechanic breathes fumes from grease, oil, gas, and engine exhaust while working.	Collect	Meets conditions
A casino worker is exposed to second hand smoke from tobacco that contains benzene, arsenic, carbon monoxide, chromium metal, lead, and nicotine	Collect	Meets conditions
A cosmetologist applies strong chemicals such as bleach, dye, and tint to color hair.	Collect	Meets conditions
A farm worker, stacking hay and grain with a pitchfork, inhales large amounts of dust.	Collect	Meets conditions
An equipment operator tends machines that clean semiconductor wafers using cleaning solutions made of sulfuric acid and hydrochloric acid. Operators are not required to wear protective clothing.	Collect	Meets conditions

A textile dye-machine operator works without protective clothing, tending equipment that mixes strong acids and anhydrous ammonia for use in bleaching and finishing carpets.	Collect	Meets conditions
A glassworker at a historical museum uses old-fashioned methods to apply acids to etch glass.	Collect	Meets conditions
A worker in a busy open-air tollbooth breathes auto exhaust all day.	Collect	Meets conditions
An industrial metal finishing worker, wearing a respirator, pours pigments, paint paste, and thinner into cans and stirs with a paddle.	Do not collect duration; Code as Fully Mitigated	Mitigated by PPE. Does not meet threshold
A tank truck driver drives trucks to deliver industrial application gases to customers.	Do not collect	Does not meet the threshold
A paint store clerk breathes fumes while mixing small amounts of latex, low-VOC paint in a retail store.	Do not collect	Does not meet the threshold
A teacher inhales chalk dust while using the blackboard.	Do not collect	Does not meet the threshold
A hotel housekeeper cleans rooms using common household cleaning agents, such as window cleaner, tile cleaner, and furniture polish.	Do not collect	Does not meet the threshold
Registered nurses must use hand sanitizers and other disinfectants such as isopropyl alcohol swaps.	Do not collect	Does not meet the threshold
A lifeguard works in a chlorinated swimming pool.	Do not collect	Does not meet the threshold

8_08 Collecting Proximity to Moving Mechanical Parts

Moving mechanical parts refers to moving materials, mechanical parts, settings, or any moving objects that could cause bodily injury when used properly.

Proximity to Moving Mechanical Parts are present when one of the following conditions exists:

Condition 1

- Equipment operated by workers presents a risk of bodily injury when used properly.

Condition 2

- Machinery, equipment or any moving object near workers could cause bodily injury.



Exclude any vehicles (including automobiles, forklifts, etc.) being driven by or near workers as responsibility for their proper operation is on the driver. When guards or other safety equipment are present such that a worker would not face risk under normal conditions, do not include.

Collect the presence and type of personal protective equipment when the employer provides it.

Risks associated with standard office equipment, such as shredders and copiers, also do not meet the threshold.

Examples	Action	Reason
A deli worker operates a slicer to cut meats and cheeses. Even with required safety guards in place, injury is possible.	Collect	Meets conditions
A landscaper uses a chipper/shredder to mulch branches and tree debris.	Collect	Meets conditions
The off-bearer of production machinery works close and could be injured while off-loading when machine is in motion	Collect	Meets conditions
Mechanics working on running engines and moving vehicle parts while performing repairs	Collect	Meets conditions
An accountant uses a crosscut shredder. Snagged clothing could cause injury.	Do not collect	Does not meet the threshold

A cafeteria cook operates industrial mixers, with impenetrable protective guards, to prepare food items for lunch.	Do not collect duration; Code as Fully Mitigated	Mitigated by PPE. Does not meet the threshold
Food preparation workers use chef knives to chop and dice food.	Do not collect	Does not meet the threshold
A cashier in a grocery store works around a conveyor belt that moves grocery items.	Do not collect	Does not meet the threshold

8_09 Collecting Heavy Vibration

Heavy Vibration is present when two conditions exist:

Condition 1

- Exposure to a shaking object or surface causes a strain on the body or extremities.

Condition 2

- Vibration is heavy.

Office machines, hair clippers and other small hand tools do not meet the threshold.



Examples	Action	Reason
A jackhammer operator runs a compressed air, rock-drilling machine that has continuous vibration.	Collect	Meets conditions
A printing press operator uses a cylinder type press that has continuous vibration while running.	Collect	Meets conditions
A bulldozer operator experiences intense vibration when the blade hits the ground and the bulldozer moves forward.	Collect	Meets conditions
A janitor operating a floor buffer in commercial buildings	Do not collect	Does not meet the threshold
A barber uses small clippers to trim hair along the neck.	Do not collect	Does not meet the threshold
A residential maintenance worker performs routine repairs with a handheld drill.	Do not collect	Does not meet the threshold
A teacher uses an electric pencil sharpener.	Do not collect	Does not meet the threshold

8_10 Collecting High, Exposed Places

High, Exposed Places is present when two conditions exist:

Condition 1

- Workers' center of gravity is at least five feet off the ground, or
- Workers are at ground level and at risk of falling several feet below ground level.

Condition 2

- Workers are exposed and at risk of bodily injury from falling.
- There are no walls or railings surrounding workers to lessen the possibility of falling.

Collect the presence and type of personal protective equipment when the employer provides it. Safety harnesses or tethers do not remove the possibility of injury.



Examples	Action	Reason
A painter works from ladders or scaffolding.	Collect	Meets conditions
A lineperson repairs power lines, working from the bucket of a cherry picker or climbing the pole.	Collect	Meets conditions
A tree trimmer cuts branches using canopies and truck-mounted lifts.	Collect	Meets conditions
Loading-dock workers are exposed and at risk of falling five feet or more.	Collect	Meets conditions
A retail sales clerk uses a step stool to reach items on upper shelves.	Do not collect	Does not meet the height threshold
A construction superintendent performs site inspections at high-rise construction projects. Not all walls or railings are complete but the superintendent never walks near the edges.	Do not collect	Not exposed
A lifeguard, in a tower, is surrounded by a 5-foot railing.	Do not collect	Not exposed

8_11 Collecting Noise Intensity Level

Noise Intensity Level is the amount of noise that workers experience while working. All work environments have a noise level. Collect the incidence of any hearing protection. Consider the examples provided below for each level of intensity.

Quiet

- Private office
- Mortuary
- Golf course
- Art museum

Moderate

- Business office
- Department store
- Fast food restaurant
- Grocery store

Loud

- Can manufacturing department
- Large earth moving equipment
- Heavy traffic

Very Loud

- Rock concert
- Jackhammer work
- Rocket engine testing area



Actual noise levels may not always match expectations (for example, a loud library). Collect actual levels that workers experience while performing critical tasks.

If noise levels vary within the work environment, collect the typical level. Do not automatically code the loudest level.

Collect the presence of personal protective equipment when the employer provides it. If a worker is required to use equipment that lessens *all* exposure, collect exposure as quiet.

Examples	Action
An accountant works in a private office with minimal noise and few interruptions.	Collect as quiet
A librarian works in a library that is quiet when no activities are taking place, but moderate during children’s story hour, adult book club, and summer reading program. Activities occur more than half of each day.	Collect as moderate
A stone quarry worker hears explosions and heavy machinery throughout the day. Even with required hearing protection, sounds are loud.	Collect as loud
A landscaper uses chainsaws, chipper/shredders, and wet saws to cut pavers. The landscaper is not required to wear hearing protection.	Collect as very loud

Appendix 1

List of Potential Hazards

Air Contaminants

Acetaldehyde	Benzyl chloride	Chlorine
Acetic acid	Beryllium and	Chlorine dioxide
Acetic anhydride	Beryllium compounds	Chlorine trifluoride
Acetone	Beta-Chloroprene	Chloroacetaldehyde
Acetonitrile	Beta-Naphthylamine	Chlorobenzene
Acetylene	Beta-Propiolactone	Chlorobromomethane
Acetylene dichloride;	Biphenyl; see Diphenyl	Chlorodiphenyl
Acetylene tetrabromide	Bis(Chloromethyl)	Chlorodiphenyl
A-Chloroacetophenone	Bismuth telluride	Chloroethane (DDT)
Acridine, chrysene	Boron oxide	Chloroethylene
Acrolein	Boron trifluoride	Chloroform
Acrylamide	Bromine	Chloromethyl methyl
Acrylonitrile	Bromoform	Chlorophenoxyacetic
Aldrin	Butadiene	Chloropicrin
Allyl alcohol	Butanethiol	Chloropropane (DBCP)
Allyl chloride	Butyl mercaptan	Chromates (as CrO(3))
Allyl glycidyl ether	Butylamine	Chromic acid
Allyl propyl disulfide	Butyl-m-cresol	Chromium (II) compounds
Alpha-Alumina	Butyraldehyde (butanal)	Chromium (III)
Alpha-Methyl styrene	Cadmium (as Cd)	Chromium (VI) compounds
Alpha-Naphthylamine	Calcium Carbonate	Chromium metal
Aluminum Metal (as Al)	Calcium hydroxide	Chrysene; see Coal tar
Ammonia	Calcium oxide	Clopidol
Ammonium sulfamate	Calcium silicate	Coal dust
Aniline and homologs	Calcium sulfate	Coal tar pitch
Anisidine	Camphor, synthetic	Cobalt metal, dust
Anthracene, BaP	Carbaryl (Sevin)	Coke oven emissions
Antimony and compounds	Carbinol	Copper
ANTU (alpha)	Carbinol	Cotton dust (e)
Arsenic, inorganic	Carbon black	Crag herbicide (Sesone)
Arsenic, organic	Carbon dioxide	Cresol, all isomers
Arsine	Carbon disulfide	Cristobalite
Asbestos	Carbon monoxide	Crotonaldehyde
Azinphos-methyl	Carbon tetrachloride	Crystalline silica
Barium sulfate	Carbon tetrachloride	Cumene
Barium, soluble	Cellosolve acetate	Cyanides (as CN)
Benomyl	Cellulose	Cyclohexane
Benzene	Ceramic fibers	Cyclohexanol
Benzidine	Chlordane	Cyclohexanone
Benzo(a)pyrene	Chlorinated camphene	Cyclohexene
Benzoyl peroxide	Chlorinated diphenyl	Cyclopentadiene

Decaborane	Ethanolamine	Heptachlor
Demeton (Systox)	Ether (IGE)	Heptane (n-Heptane)
Diacetone alcohol	Ethyl acetate	Heptanone
Diatomaceous earth	Ethyl acrylate	Hexachloroethane
Diazomethane	Ethyl alcohol (Ethanol)	Hexachloronaphthalene
Diborane	Ethyl amyl ketone	Hexamethylene diisocyanate
Dibutyl phosphate	Ethyl benzene	Hexone (Methyl)
Dibutyl phthalate	Ethyl bromide	Hydrazine
Dichlorodifluoromethane	Ethyl butyl ketone	Hydrogen bromide
Dichlorodiphenyltri-	Ethyl chloride	Hydrogen chloride
Dichloroethyl ether	Ethyl ether	Hydrogen cyanide
Dichloromethane; see	Ethyl formate	Hydrogen fluoride
Dichloromonofluoro-	Ethyl mercaptan	Hydrogen peroxide
Dichlorotetrafluoro-	Ethyl mercaptan	Hydrogen selenide
Dichlorvos (DDVP)	Ethyl silicate	Hydrogen sulfide
Dicyclopentadienyl iron	Ethylamine	Hydroquinone
Dieldrin	Ethylene chlorohydrin	Iodine
Diethyl ether	Ethylene chlorohydrin	Iron oxide fume
Diethylamine	Ethylene dibromide	Isobutyl acetate
Difluorodibromomethane	Ethylene dibromide	Isobutyl alcohol
Diglycidyl ether (DGE)	Ethylene dichloride	Isobutyl ketone
Dihydroxybenzene	Ethylene dichloride	Isocyanate (MDI)
Diisobutyl ketone	Ethylene glycol	Isomyl acetate
Diisobutyl ketone	Ethylene glycol methyl	Isomyl alcohol
Diisopropylamine	Ethylene oxide	Isophorone
Dimethoxymethane	Ethylenediamine	Isopropanol
Dimethyl acetamide	Ethyleneimine	Isopropyl acetate
Dimethyl sulfate	Ethylidene chloride	Isopropyl alcohol
Dimethyl-1,2-dibromo-2	Ferbam	Isopropyl ether
Dimethylamine	Ferrovandium dust	Isopropyl glycidyl
Dimethylaminobenzene	Flour dust (inhalable)	Isopropylamine
Dimethylaniline	Fluorides (as F)	Kaolin
Dimethylbenzene	Fluorine	Ketene
Dimethylformamide	Fluoromethane	Lead inorganic (as Pb)
Dimethylphthalate	Fluorotrichloromethane	Limestone
Dinitrate	Formaldehyde	Lindane
Dinitrobenzene	Formic acid	Lithium hydride
Dinitro-o-cresol	Fume (as Cu)	LPG (Liquified)
Dinitrotoluene	Fume (as V2O5)	Magnesite
Dioxane	Fume and insoluble	Magnesium oxide fume
Diphenyl (Biphenyl)	Furfural	Malathion
Diphenylmethane	Furfuryl alcohol	Maleic anhydride
Dipropylene glycol	Glycerin (mist)	Malononitrile
Di-sec octyl phthalate	Glycidol	Manganese compounds
Dust	Glycol monoethyl ether	Manganese fume (as Mn)
Dusts and mists	Grain dust (oat, wheat)	Marble
Emery	Graphite, natural	Metalworking fluids aerosol
Endrin	Graphite, synthetic	Mercaptan
Epichlorohydrin	Guthion	Mercury (aryl)
EPN	Gypsum	Mercury (organo) alkyl
Ethaneithiol	Hafnium	Mercury (vapor) (as Hg)

Mesityl oxide	Naphthylthiourea	Perchloroethylene
Metal	N-Butyl alcohol	Perchloromethyl
Methane	N-Butyl glycidyl ether	Perchloryl fluoride
Methanethiol	N-butyl ketone	Petroleum distillates
Methoxychlor	N-Butyl-acetate	Petroleum gas
Methyl acetate	N-Ethylmorpholine	Phenanthrene
Methyl acetylene	N-Hexane	Phenol
Methyl acrylate	Nickel carbonyl (as Ni)	Phenyl ether, vapor
Methyl alcohol	Nickel, metal	Phenyl ether-biphenyl
Methyl amyl alcohol	Nickel, soluble	Phenyl glycidyl ether
Methyl bromide	Nicotine	Phenylethylene
Methyl butyl ketone	Nitramine	Phenylhydrazine
Methyl cellosolve	Nitric acid	Sodium hydroxide
Methyl cellosolve	Nitric oxide	Stoddard Solvent
Methyl chloride	Nitrobenzene	Styrene
Methyl chloroform	Nitroethane	Tetrafluoroethylene
Methyl ether	Nitrogen dioxide	Tin, organic compounds
Methyl ethyl ketone	Nitrogen trifluoride	Titanium dioxide
Methyl formate	Nitroglycerin	Toluene
Methyl hydrazine	Nitromethane	Toxaphene
Methyl iodide	Nitrotoluene	Tremolite
Methyl isoamyl ketone	Nitrotrichloromethane	Tributyl phosphate
Methyl isobutyl	N-Nitrosodimethylamine	Trichloroethylene
Methyl isobutyl ketone;	N-Propyl acetate	Trichloromethane
Methyl isocyanate	N-Propyl alcohol	Trichloronaphthalene
Methyl mercaptan	N-Propyl nitrate	Tridymite
Methyl methacrylate	O-Chlorobenzylidene	Triethylamine
Methyl n-amyl ketone	Octachloronaphthalene	Trifluorobromomethane
Methyl nitramine	Octane	Triorthocresyl
Methyl propyl ketone	O-Dichlorobenzene	Triphenyl phosphate
Methylal	Oil mist, mineral	Tripoli (as quartz)
Methylamine	O-isomer	Turpentine
Methylcyclohexane	O-Methylcyclohexanone	Uranium (as U)
Methylcyclohexanol	Osmium tetroxide	Vanadium
Methylene bisphenyl	O-Toluidine	Vegetable oil mist
Methylene chloride	Oxalic acid	Vinyl benzene
Mica (respirable)	Oxide dust	Vinyl chloride
Mica; see Silicates	Oxides (as Sn)	Vinyl cyanide
M-isomer	Oxyacetic acid	Vinyl toluene
Mixture, vapor	Oxygen difluoride	Warfarin
MOCA 4, 4'-Methylenebis#2-	Ozone	Wood dust, all species except
chloroaniline#	Paraquat, respirable	Western Red Cedar
Molybdenum (as Mo)	p-Benzoquinone	Xylenes
Monomethyl aniline	p-Dichlorobenzene	Xylidine
Monomethyl hydrazine	Pentaborane	Yttrium
Morpholine	Pentachloride	Zinc chloride fume
N-Amyl acetate	Pentachloronaphthalene	Zinc oxide
Naphtha (Coal tar)	Pentachlorophenol	Zinc oxide fume
Naphthalene	Pentaerythritol	Zinc stearate
	Pentane	Zirconium compounds

Toxic Substances

Benzene	Ethylene dichloride	MOCA 4,4'-Methylenebis#2-
Beryllium and beryllium compounds	Fluoride as dust	chloroaniline#
Butyraldehyde (butanal)	Formaldehyde	Organo (alkyl) mercury
Cadmium fume	Gasoline	Styrene
Cadmium dust	Hydrogen fluoride	Sulfuric Acid
Carbon disulfide	Hydrogen sulfide	Tetrachloroethylene
Carbon tetrachloride	Mercury	Tetrahydrofuran
Chromic acid and chromates	Methyl chloride	Toluene
Ethylene dibromide	Methylene Chloride	Trichloroethylene

Mineral Dusts

Silica
Crystalline
Quartz
Cristobalite
Amorphous
Silicates
Mica
Soapstone
Talc
Tremolite
Asbestiform
Graphite
Coal Dust

Derived from <https://www.osha.gov/SLTC/hazardoustoxicsubstances/index.html>

Appendix 2

Common Objects and Their Weights

Weight (lbs.)	Description
½	Upholstery hammer
1	Claw hammer
2	Framing hammer
4-7	Laptop computer
9	Gallon of milk
10	2" x 4" x 8' Douglas Fir lumber
12	1 gallon of interior house paint (Glidden Brilliance Interior Flat)
16	2" x 6" x 8' Douglas Fir lumber
17	Household gas grill propane tank (empty)
20	Sledge hammer
21	2" x 8" x 8' Douglas Fir lumber
23	Mid-size passenger car tire (Ford Fusion; Michelin Pilot HX MXM4 P225/50R17)
24	40" LED television (Samsung 5000 Series TV with stand)
33	Household gas grill propane tank (full)
37	8" x 8" x 16" common cement block
39	Light truck tire (Ford F-150; Goodyear Wrangler SR-A P275/65R18)
45	8' x 4' x ½" Sheet of plywood
51	8' x 4' x ½" Sheet of drywall
52	12" x 8" x 16" common cement block
52	Case of copy paper (standard thickness)
60	5 gallons of interior house paint (Glidden Brilliance Interior Flat)
60	Standard bag of concrete mix
60	1/6 keg of beer

62	Pre-mixed all-purpose joint compound (5 gallons)
68	8' x 4' x 3/4" Sheet of plywood
72	60" Plasma television (Samsung 6500 Series Smart TV with stand)
80	Large bag of concrete mix

Appendix 3

List of Professional and Doctorate Degrees

Professional degrees may be awarded in the following 11 fields (not exhaustive):

- Doctor of Chiropractic (D.C. or D.C.M.)
- Doctor of Dental Surgery (D.D.S.) or Doctor of Dental Medicine (D.M.D.)
- Doctor of Jurisprudence or Juris Doctor (J.D.)
- Doctor of Medicine (M.D.)
- Doctor of Optometry (O.D.)
- Doctor of Osteopathic Medicine/Osteopathy (D.O.)
- Doctor of Pharmacy (Pharm.D.)
- Doctor of Podiatric Medicine/Podiatry (D.P.M., D.P., or Pod.D.)
- Master of Divinity (M.Div.), Master of Hebrew Letters (M.H.L.), or Rabbinical Ordination (Rav)
- Doctor of Veterinary Medicine (D.V.M.)
- Doctor of Psychology (Psy.D or D.Psych)

Doctorate degrees may be awarded in the following 24 fields (not exhaustive):

- Doctor of Arts (D.A.)
- Doctor of Business Administration (D.B.A.)
- Doctor of Church Music (D.C.M.)
- Doctor of Canon Law (J.C.D./D.C.L.)
- Doctor of Design (D.Des.)
- Doctor of Education (Ed.D.)
- Doctor of Engineering (D.Eng./D.E.Sc./D.E.S.)
- Doctor of Fine Arts (D.F.A.)
- Doctor of Hebrew Letters (D.H.L.)
- Doctor of Industrial Technology (D.I.T.)
- Doctor of Juridical Science (J.S.D./S.J.D.)
- Doctor of Music (D.M.)
- Doctor of Musical/Music Arts (D.M.A.)
- Doctor of Music Education (D.M.E.)
- Doctor of Modern Languages (D.M.L.)
- Doctor of Nursing Science (D.N.Sc.)
- Doctor of Philosophy (Ph.D.)
- Doctor of Public Administration (D.P.A.)
- Doctor of Physical Education (D.P.E.)
- Doctor of Public Health (D.P.H.)
- Doctor of Sacred Theology (S.T.D.)
- Doctor of Science (D.Sc./Sc.D.)

- Doctor of Social Work (D.S.W.)
- Doctor of Theology (Th.D.)

List derived from:

<http://www.ed.gov/about/offices/list/ous/international/usnei/us/doctorate.doc>

Glossary

Accommodation

Are changes to tasks or the work environment that an employer makes to meet the needs of an individual worker with a disability or other work constraints.

Adaptability

Measures the characteristics of an occupation that cause a worker to adjust to changes in work routine.

Associate's Degree

An undergraduate academic degree (Associate of Arts or Associates of Science) awarded upon completion of a course of study usually lasting two years. Only one of the two years is vocational education and counted toward SVP as the other year is considered general education. This is in contrast with vocational associate's degrees in which both years are vocational in nature and are included in SVP.

At Will

Timing of performing an activity is dictated by the employee's discretion.

Carrying

Transporting an object, usually by holding it in the hands, arms or on the shoulders.

Certification

Issued by a certification body or industry/professional association, acknowledges that occupation specific skills and abilities exist, and expires if not renewed.

Change in Work Location

A change to a new worksite or from a discontinued work site.

Change in Work Task

The worker must remember new instructions, procedures, or similar information. This includes new work assignments, tasks that occur infrequently throughout the year, and irregular/variable tasks.

CIERA

The Compensation Information Entry and Review System is the data entry system for ORS.

Climbing Ladders/Ropes/Scaffolding

Ascending or descending ladders, scaffolding, ropes, poles and the like using feet and legs and/or hands and arms.

Climbing Ramps/Stairs

Ascending or descending ramps and/or stairs using feet and legs. Hands and arms may be used for balance (i.e., to hold a railing).

Combination Jobs

Jobs that encompass two or more distinct sets of duties. Requires the coding of a primary SOC and the documentation of a secondary SOC.

Communicating Verbally

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.

Constant

2/3 or more of the time

Controlling Workflow

A worker can prioritize work tasks or can adjust the amount of time it takes to complete them.

Crawling

Moving about on hands and knees or hands and feet

Crouching

Bending the body downward and forward by bending legs and spine.

Credit-hour

A semester unit is equivalent to one credit hour. Three credit hours equals one class and nine credit hours equals a full course load for one semester.

Critical Job Function

The main purpose of the job. Consists of critical tasks that are integral to the job. The job would not exist without the critical job function(s), which are the primary pay factors for the job.

Critical Tasks

Activities workers must perform to carry out their critical job function. A task is considered critical when it is a primary and required component of the critical job function and/or when a job spends more than 10% of work day or work week performing it.

Decision-making

A measure of the type and scope of decisions a worker in an occupation is expected to make.

Dictionary of Occupational Titles (DOT)

An occupational classification system developed by the U.S. Department of Labor's Employment Training Administration (ETA) used by the Social Security Administration in their disability programs.

Doctorate Degree

Are research oriented and require a dissertation or similar independent research effort. The Doctor of Philosophy (Ph.D.) and research doctorate are equivalent in title.

Driving

Driving is the operation of a motorized passenger vehicle or other conveyance. Includes passenger vehicles such as cars, vans, or light trucks, and other vehicles such as tractor trailers, equipment (e.g. forklifts), trains, or aircraft.

Duration

Measures the cumulative time spent performing a physical demand or exposure to an environmental condition. Both the interval (daily, weekly, quarterly) and work schedule contribute to duration.

Duration Scale

A scale measuring the duration of an activity being performed. Scale: Seldom (up to 2%), Occasionally (2% up to 1/3 of the time), Frequently (1/3 up to 2/3 of the time), and Constantly (2/3 or more).

Educational Certificate

Issued by an educational institution (or a training provider), certifies that an occupation specific program of study was completed, and typically does not expire.

Exertion

The physical effort that a worker uses to complete a task.

Experience

Measures the amount of prior relevant work activity.

Extreme Cold

40 degrees or below when exposed constantly (greater than or equal to 2/3 of the day) and 32 degrees or below when exposed frequently or less (less than 2/3 of the day). Include only non-weather, job related exposure.

Extreme Heat

Above 85 degrees with humidity and above 90 degrees in a dry atmosphere. Include only non-weather, job related exposure.

Far Visual Acuity

Clarity of vision at 20 feet or more. Not just the ability to see a person but to be able to recognize their features.

Fine Manipulation

Picking, pinching, or otherwise working primarily with fingers rather than the whole hand or arm as in Gross Manipulation.

Force

An interaction that changes the motion of an object.

Foot/Leg Controls

The use of one or both feet or legs to move controls on machinery or equipment. Controls include, but are not limited to, pedals, buttons, levers, and cranks.

Frequent

From 1/3 up to 2/3 of the time.

Gross Manipulation

Seizing, holding, grasping, turning or otherwise working with hand(s). Fingers are involved only to the extent that they are an extension of the hand.

Hazardous Contaminants

Exposure that negatively affects the respiratory system, eyes, skin, or other living tissue via inhalation, ingestion or contact.

Hearing Requirements

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).

Heavy Vibration

Exposure to a shaking object(s) or surface(s) that causes a strain on the body or extremities

High, Exposed Places

Exposure to possible bodily injury from falling.

High School Vocational Education

Only count half of the time spent in high school vocational education towards SVP. A high school student spending six months at vo-tech would count for three months of SVP.

Humidity

Exposure to air that contains a high amount of water or water vapor in which the atmosphere is oppressive. Include only non-weather, job related exposure.

Incidental Tasks

Are excluded from ORS collection. The task does not support a critical function of a job, or is not a primary or required component of the critical function of a job.

Interaction

The ability to cooperate with others, handle conflict, and respond to social cues, requests, and criticism.

Job

Represents all workers in an establishment with the same or similar tasks such that they may be analyzed collectively. In ORS, a sampled quote represents a job.

Job Demands

Job demands are the knowledge, cognitive abilities, and physical actions required to perform critical tasks, as well as environmental conditions experienced while completing critical job tasks.

Keyboarding

Entering text or data into a computer or other machine by means of a keyboard, using a repetitive motion requiring the use of the whole hand.

Kneeling

Bending legs at knees to come to rest on knee(s).

License

Issued by a government agency, constitutes a legal authority to perform a specific occupation, and expires if not renewed.

Lifting

Raising or lowering an object from one level to another. This includes upward pulling.

Minimum Education

Measures the minimum level of formal coursework required of an occupation, excluding general education

Mitigation

When the employer installs devices, or requires the use of personal protective equipment that fully or partially eliminates potentially hazardous conditions or exposures.

Near Visual Acuity

Clarity of vision at approximately 20 inches or less, including use of computers.

Negligible Weight

So small an amount that measurement is not meaningful (e.g., a pen, a few sheets of paper).

Noise Intensity Level

The amount of noise that a worker experiences while working.

Observable Behaviors

Actions that can be observed such as typing, driving, standing, lifting, reaching, etc.

Occasional

From 2% up to 1/3 of the time.

Occupation

A broad term representing a defined set of responsibilities, skills, and tasks not specific to a company.

Occupation Specific Credentials

Credentials such as licenses, certifications, and educational certificates which only apply to a specific occupation (or small group of occupations). Occupation specific credentials may be the same for a broad occupation group (digits 4 and 5 of the SOC code), but would rarely cross major SOC groups.

Oppressive (Humidity)

Atmosphere must be very uncomfortable and could affect breathing.

Other Credential

Credential issued by a standardized body, may be relevant for a wide variety of jobs and occupations, and may expire or be valid for life.

Outdoors

Exposure to weather-related atmospheric conditions such as heat, cold, rain, snow, or wind.

Overhead Reaching

Extending the arms with the hand goes higher than the head and, either the person bends the elbows with the shoulders at an angle of 90 degrees or more, or the person keeps the elbow extended, and the angle at the shoulder is 120 degrees or more.

Pace

The physical and cognitive speed needed to perform work tasks.

Pace of Work

The rate at which a worker must process new or incoming information or take physical action based on new information.

Peripheral Vision

Observing an area that can be seen up and down or to the right or left while eyes are fixed on a given point.

Personal Protective Equipment (PPE)

Equipment used or worn to minimize exposure to serious workplace injuries and illnesses.

Post-employment Training

Measures the amount of training time occurring after an employee has been hired.

Pre-employment Training

The amount of time needed to complete training required as a condition for hiring.

Professional Degree

Is a graduate degree that is required to work in a specific career/profession. Professional degrees do not require a Master's degree, and typically fall into three main fields (medical, law, and religion).

Production Rate

Constant repetition of pushing/pulling requiring considerable strength or exertion at any weight.

Proximity 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 when used properly.

Pulling

Exerting force upon an object so that the object moves toward the force.

Pushing

Exerting force upon an object so that the object moves away from the force.

Reaching

Extending the hand(s) and arm(s) in any direction.

Reaching At/Below Shoulder

Reaching that is present but does not meet the threshold for Overhead Reaching.

Regular Contacts

Those people with whom a worker has an established working relationship.

Revised Handbook for Analyzing Jobs (RHAIJ)

A guiding document for writing occupational descriptions created by the U.S. Department of Labor's ETA used in developing the 1991 revision of the Dictionary of Occupational Titles.

Seldom

Up to 2% of the time.

Semester

Is one-half of an academic year and is equal to 15 weeks.

Semester Unit

Is equivalent to one credit hour. Three credit hours equals one class and nine credit hours equals a full course load for one semester.

Skill Level

Work classification that divides occupations into unskilled, semi-skilled, or skilled work.

Semi-skilled Work

Work that requires some skill but does not require complex duties. Generally SVP of 3 or 4.

Sitting

A worker is either active or inactive in a seated position or prone. Active sitting involves pushing or pulling with feet/legs. A worker that is not standing/walking, must be sitting.

Sitting/Standing at Will

Workers have the flexibility to choose between sitting and standing throughout the day, there is no assigned time during the day to sit or stand, and no external factors determine whether an employee must sit or stand.

Skilled Work

Work requiring high levels of judgment and adaptability; setting of realistic goals or independent planning; understanding, carrying out, and remembering of complex instructions; and often encompasses abstract ideas and problem solving. Generally SVP of 5 or greater.

Specific Vocational Preparation (SVP)

The amount of preparation time required by a typical worker to learn the techniques, acquire the information, and develop the facility needed for average performance in a specific job. (See *Revised Handbook for Analyzing Jobs* 8-1).

Standing

Remaining on one's feet in an upright position without moving about; a worker walks about; or a worker is not sitting or prone.

Stooping

Bending the body forward and down while bending the spine at the waist 45 degrees or more either over something below waist level or down towards an object on or near the ground. Stooping should be significant enough that when bending, if arms were extended, workers' hands would be at or below the knees. Stooping must be performed by standing. Exclude stooping performed while workers are sitting.

Strength

The capacity for exertion or endurance.

Task

A distinct activity assigned to or performed by workers who are carrying out job duties that result in a specific outcome.

Task List

A list of the detailed activities workers perform to accomplish the critical job function. A task list connects the critical job function with ORS element coding.

Threshold

A magnitude or intensity that must be met or exceeded for a certain condition to occur.

Touchscreen Keyboard

A touch sensitive keyboard display on a computer or other electronic device that uses repetitive finger or thumb motion, using the whole hand, for data entry.

Unobservable Behaviors

Actions which cannot be observed such as learning and applying knowledge, perception, problem solving, etc.

Unskilled Work

Work that requires little or no judgment for simple duties that can be learned on the job in a short time period. Generally SVP of 1 or 2.

Vocational Associate's Degree

Count all two years for SVP as all time is usually vocational. This contrasts with a regular associate's degree where usually only one of the two years of time is vocational education so only one year counts towards SVP. Completion of a two-year technical or vocational program often results in an Associates of Applied Science degree.

Walking

Moving about on foot.

Wetness

Any contact with water or other liquids and/or working in a wet area.

Work as Generally Performed

Refers to the ways in which most workers carry out the critical tasks associated with the critical job function of their occupation.

Work-Related Personal Interactions

The requirement of the worker in an occupation to cooperate with others, handle conflict, and respond to social cues, requests, and criticisms.

Work Review

Measures the frequency at which a machine, supervisor, or lead worker checks an individual's work to ensure performance standards are being met.

Work Location

The physical site where a worker performs the critical duties of the occupation.

Work Schedule

The regular recurring work hours and days for the occupation set by the employer.

Work Task

The regular duties of an occupation.

Worker

An employee who is assigned a specific set of tasks. The term worker is equivalent to the term 'position,' historically used in the *Dictionary of Occupational Titles* and the *Revised Handbook for Analyzing Jobs*.