Occupational Requirements Survey

Bureau of Labor Statistics

ORS Collection

Manual

Production

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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 procedures manual may be updated periodically and supplemented by ORS Technical Memoranda and other guidance.

Background Information

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 data for use in SSA's disability programs. SSA chose the BLS, specifically the National Compensation Survey (NCS), primarily because the NCS collects quality data on work characteristics in the modern economy.

In FY 2013, economists from the NCS program began feasibility testing that included collecting data on primary physical attributes, environmental conditions, and vocational preparation requirements of occupations within establishments representative of the broader economy. BLS added mental and cognitive demands of work to the data collection in FY 2014. In FY2015, BLS completed pre-production testing.

The focus of this manual is to provide clear survey definitions and procedures to ensure consistent application during production data collection. This manual outlines fundamental collection concepts and technical procedures for collecting the data elements, including: task lists, specific vocational preparation, mental and cognitive elements, physical demands, and environmental conditions.

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Chapter 1: Collection Strategies

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1_01 Overview

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. This familiarity helps field economists get in the door and obtain quality information for both ORS and NCS.

The following tactics, explained further in this chapter, can help make a field economist successful:

- Collecting job description and other descriptive documents ahead of time.
- Identifying a collection approach.
- Identifying potential data elements ahead of time.
- Prioritizing collection for accuracy and efficiency.
- Taking advantage of opportunities to observe workers on jobs.

1_02 Collect job descriptions and other descriptive documents ahead of time

Use descriptive documents to improve data quality and shorten appointment times.

Use job descriptions to:

- Validate information provided by the respondent.
- Identify overlooked information.
- Fill gaps in respondent-provided information.
- Launch discussions on occupational task lists, ORS data elements, and leveling.
- Provide information on job codes, work schedules, supervisory information, and educational requirements.

Job descriptions may not be useful as a primary information source because they are not always current or accurate.

Other establishment documents, such as organizational charts, can provide valuable collection information. All establishment documents are valuable tools in expediting collection, provided field economists confirm their accuracy with respondents.

1_03 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:

- One quote at a time
- Multiple quotes, concurrently
- A portion of the interview for one quote and a portion for multiple quotes, concurrently

1_04 Identify potential data elements ahead of time

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

Invest in research ahead of time to identify:

- Standard Occupational Classification (SOC) coding decisions
- Task list information
- Leveling information
- Educational, training, licensure, and experience requirements for Specific Vocational Preparation (SVP)
- Mental and cognitive information
- Incidence of physical demand elements (e.g., writing is present, so 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 on. Resolve discrepancies with the respondent.

1_05 Prioritize collection for accuracy and efficiency

Efforts must be made to collect **all** data for occupations. Sometimes that is not possible due to respondent constraints. In those situations, apply the following collection priorities.

These three elements inform the conversation and coding for all of the other elements. Collect these elements first:

- Task Lists
- SVP
- Cognitive

Collect strength elements next:

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

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

1_06 Take advantage of opportunities to observe workers on jobs

- Notice workers and what they are doing while walking to and from the respondent's office.
- Accept offers for a company tour.
- Ask about seeing the work if the respondent is unsure of answers.
- Document how your observations affect coding selections.

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Chapter 2: Fundamentals

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2_01 Understanding Work as Generally Performed

ORS collection captures work as the workers in the surveyed occupations generally perform it. Work as generally performed may be different from one establishment to another.

How to apply the concept 'work as generally performed':

1. Obtain clarification on tasks during the establishment interview.
    - Confirm the tasks an occupation performs in a typical day.
    - Determine how workers perform these tasks.
    - Identify the tools and equipment workers need to perform these tasks.
    - Determine if all workers in the occupation are expected and required to perform these tasks.
2. Categorize important tasks performed daily, occasionally, or infrequently. This optional step helps determine appropriate duration coding later.
3. Exclude:
    - Activities that are specific to a worker and are not an expectation or function of the occupation.
    - Activities that occur by chance or are voluntary.
4. Document:
    - When data is contradictory and upheld by the respondent.
    - When data is inconsistent with the expected occupational duties and supported by additional probing

Examples of Types of Tasks

Example	Include work as generally performed			Exclude voluntary/ chance activity
	Daily task	Occasional task	Infrequent task	
Accountant at a small leasing office	Handles company bookkeeping, payroll and tax reporting.	Replaces toner on her personal printer.	Along with other staff, shows units, gives keys to new tenants, and performs unit upkeep as needed.	Changes the network printer toner while the IT Tech is at lunch.
Receptionist at a chamber of commerce	Performs reception duties.	Orders and picks up snacks for staff meetings as directed.	Attends and preps facilities for town festival once a year.	Voluntarily brings in donuts. Staff rotate bringing treats.
Human Resource Specialist	Writes documents and corresponds by email.	Lifts boxes of recruiting materials for job fair.	Conducts orientation for new employees twice annually.	Lifts the water bottle onto the office cooler.
Evidence Clerk	Files evidence.	Packages and mails items of property or evidence, when necessary.	Drives a vehicle to pick up bulk property or evidence items.	Voluntarily waters plants in common areas.
Delivery Truck Unloader	Loads and unloads packages.	Cleans the truck twice a month.	Drives the truck to a maintenance garage.	Cleans personal materials out of the glove compartment.
Outside Salesperson	Uses a laptop computer to document sales calls and send bids.	Attends networking meetings.	Mentors a new employee.	Follows LAN instructions on replacing a broken laptop keyboard.

2_02 Understanding Job Definition

Occupations can vary based on characteristics other than Union/Non-Union, Time/Incentive, or Full-time/Part-time. This can happen within a detailed SOC (6 digits) or O*NET SOC-8 digit grouping.

When ORS elements vary within a job title, identify the reasons and how the employees are assigned to the work.

Reasons ORS variations may occur include work preferences, different tasks assigned on a regular basis, and the same tasks are performed at known different frequencies.

Collect and code the full range of ORS element variation within the company job title when the differences are due to individual employee preference, routine workload differences, or the employees are assigned by the company to rotate through all situations.

When employees within an establishment job title are assigned to a specific situation and do not rotate regularly, identify the narrowest job and follow the hit for ORS collection.

Examples: Narrowly defined jobs

Scenario	Action	Reason
A company has day and night shift janitors. During PSO, ‘janitor’ was hit twice, one for the day, and one for the night shift. The NCS leveling is the same, but the physical demands for lifting and push/pull are different.	Collect and code these janitors separately.	Job characteristics are different
A company hires crews of ‘landscapers’ that can be grouped as generic crew workers and crew leaders. All crewmembers perform the same general work, but crew leaders have higher responsibility and decision-making. During PSO, three ‘landscapers’ were hit – two of which were generic crew and one was a crew leader.	Collect and code the full ORS element range experienced by crew workers. Collect the generic crew as one narrowly defined job and crew leader as a separate narrowly defined job.	Job characteristics are different

2_03 Understanding Duration

Collect both the presence of an element and its duration. Duration is the total time a worker experiences a physical demand or exposure to an environmental condition. Collection of duration is extremely important, and coding “Present Duration Unknown” should occur only after all fallback approaches have been tried.

Calculate duration using an interval of time (e.g. daily, weekly, quarterly) and work schedule.

If the respondent indicates that an element is not experienced, and duration is zero, code: “NP” (not present).

Note: Lifting/Carrying is an exception to duration coding. See section 7_03.

How to choose the correct method for collecting Duration

There are two preferred methods and two fallback methods. Preferred methods result in detailed statistics.

Preferred Methods:

1. **Hours spent performing an activity** – Use this method when the respondent can provide the actual hours spent on an activity.

   Example: A registered nurse stoops 3 hours per 12-hour shift. Code ‘3 hours of stooping’ in CIERA.

2. **Percent of time spent performing an activity** - Use this method when the respondent can provide:

   - A percentage of time spent on an activity, or
   - The number of hours spent on an activity during a larger time-period.

   This method may be helpful when a worker has an unusual or variable work schedule.

   Example: A factory worker sits 4 hours per month during required company safety training. All other work time is spent standing. The work schedule is 8/40/52.

   4 hrs. sitting/month / 173.33 hours/month = 2.31%

Fallback Methods:

1. **Range of time, or range of percentage of time, spent performing an activity** – Use this method when the respondent is unable to provide specific hours or percentages. The range of time must be equal to a half a day or less (e.g. 2 to 4 hours of an 8-hour day).

2. **SSA Duration Scale** – Use this method when there is no other means of obtaining the data. Have the respondent identify the appropriate classification for the activity duration.
    - 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

    Note: This method is preferred to coding duration unknown.

How to collect important tasks that occur less than daily

If a task or environmental condition occurs annually, seasonally, monthly, or weekly, calculate the hours or percent of time spent performing an activity and collect duration.

Example:

Once per week the clerk drives to the post office to buy stamps. It takes 10 minutes each way to drive there. The clerk works 8/40/52.

Foot/leg control coding = 10 minutes x 2 (there and back) = 20 minutes/5 days = 4 minutes/day/60 minutes/hour = .07 hours.

Do not collect one-time physical demands, unusual environmental exposures, or environmental conditions that are not part of work as generally performed.

How to proceed when respondent answers are incomplete

Use the task list as a reference to probe unknown answers with the respondent.

If a respondent is unable to provide the duration of an element, but is able to verify the element is present, code “PDU” (present, but duration unknown).

Only use “PDU” after trying all other methods to establish a duration.

If incidence is unknown, code “UNK” (unknown).

Note*:* The “UNK” option is available for all questions in CIERA.

References for collecting Duration

CIERA does not accept time entered in minutes. Use the conversion chart and duration formula for conversions.

Minutes to Hours Conversion Chart	
Minutes	Hours
5	.08
10	.17
15	.25
20	.33
25	.42
30	.50
35	.58
40	.67
45	.75
50	.83
55	.92

Duration Formula:

Percent of Time = [(# of repetitions per time period x time to perform each repetition/time period]

Example:

A receptionist spends 5% of the day reaching to sort mail, and also answers about 50 phone calls per day. He reaches ten seconds each time to retrieve and replace the phone. The receptionist works an 8/40/52 schedule.

Calculation (Time Spent Answering Phones):

Number of Repetitions = 50 calls/day x (1 retrieve/call + 1 replace/call) = 100 repetitions

Duration = 100 repetitions x 10 seconds/repetition

= (1000 seconds) / (3600 seconds/hour)

= .2778 hours

= .2778 hours/8 hours per day

= 3.47% of 8-hour day

Total reaching for the two tasks would be 8% of the day.

2_04 Understanding Accommodation

Accommodations are modifications that an employer makes to meet the needs of an individual worker with a disability or other work constraints. Accommodations enable people with disabilities to compete equally in the workplace. Not all employers can offer the same accommodations.

ORS collects data elements based on required job duties as generally performed by all workers in the occupation. Collect how work is performed **without** accommodation.

Examples	Accommodation	Reason
Allowing a worker to avoid an important task for the job.	Yes	Employer modification for one worker
Allowing selective standing for a job performed sitting	Yes	Employer modification for one worker
Providing selective access to elevators	Yes	Employer modification for one worker
Providing selective seating for a job performed standing	Yes	Employer modification for one worker
Reassigning an important task for the job	Yes	Employer modification for one worker
Allowing all workers the option to stand for a job generally performed sitting	No	Offered to all workers
Allowing workers to use building stairs or elevators	No	Offered to all workers
Stool offered to all workers	No	Offered to all workers
Tools such as eyeglasses, contacts, hearing aids	No	Employer does not provide or restrict these

2_05 Understanding Mitigation

Workers may need to use protective gear or devices that modify or lessen exposure to environmental conditions.

If an employer installs devices or requires protective equipment, measure exposure as it is actually experienced.

If, according to the respondent, protective equipment or devices eliminate exposure, document the use of protective equipment and code the occupation as having no exposure.

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 as no exposure to hazardous dust.

2_06 Understanding Thresholds

A threshold is the level at which something will take place and below which it will not. Some ORS data elements must meet a threshold level before they can be collected.

If the data element does not meet the associated threshold, code as not present. If the data element meets or exceeds the threshold, collect and code the duration.

Thresholds for Environmental Conditions	
Environmental Condition	Threshold
Outdoors	None (must meet requirements in definition)
Extreme Cold (indoor and job related outdoor exposure 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 (indoor and job related outdoor exposure 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	Heavy vibration (not light vibration) and Must cause 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)

See sections 7_04 Collecting ‘Pushing/Pulling’ and 7_05 Collecting ‘Reaching’ for information on thresholds for these elements.

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Chapter 3: Occupational Information

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3_01 How to collect combination jobs

Some workers perform jobs that span more than one occupation. These combination jobs are difficult to classify in one SOC code.

When classifying a combination job:

Follow NCS procedures for SOC selection.

- Select the SOC that matches the highest skill level and/or primary duties of the job.
- If there are two skills present that are equal, classify the SOC based on the duties performed most often.

Document the correct secondary SOC code and associated duties.

- Collect and code ORS elements based on how the worker generally performs the entire job.

Examples	Combination Job	Reason	Action
Receptionist/Secretary handles phones, reception, correspondence, and scheduling.	Yes	Time is evenly split	Select secretary SOC, as this is the higher skill level. Document and collect all duties.
Teacher/janitor teaches shop during the school year; cleans the school during the summer.	No	Primarily a teacher	Split the jobs at PSO.

3_02 Collecting non-levelable NCS jobs

In NCS collection, eighteen jobs cannot be leveled. Those jobs are not excluded from ORS collection.

When collecting non-levelable jobs, code the ORS data elements based on how a worker generally performs the job.

See 5_06 Coding a non-levelable job for examples on how to collect.

Non-levelable NCS Jobs	
SOC Code	Occupational Title
11-1031	Legislators
23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers
23-1022	Arbitrators, Mediators, and Conciliators
23-1023	Judges, Magistrate Judges, and Magistrates
27-1013	Fine Artists, including Painters, Sculptors, and Illustrators
27-2011	Actors
27-2012	Producers and Directors
27-2021	Athletes and Sports Competitors
27-2022	Coaches and Scouts
27-2023	Umpires, Referees, and Other Sports Officials
27-2031	Dancers
27-2032	Choreographers
27-2041	Music Directors and Composers
27-2042	Musicians and Singers
27-2099	Entertainers and Performers, Sports and Related Worker, All Others
27-3011	Radio and Television Announcers
27-3012	Public Address Systems and Other Announcers
41-9012	Models

3_03 How to collect traveling occupations

When occupations require work-related travel, collect the presence and duration of all activities involved in work as generally performed.

Include:

- Driving to an airport
- Walking through an airport
- Driving required for work that is not a regular commute
- Lifting/carrying or pushing/pulling work-related displays, sales materials, or equipment
- Sitting on a plane
- Outdoor exposure while working

Exclude:

- Commuting to a job
- Lifting or pushing/pulling personal luggage

Examples	Include Durations for:	Exclude Durations for:
A computer consultant travels by car and plane to client sites, carrying a laptop in a shoulder bag and wheeled personal luggage.	Sitting while flying Walking between airport and car, client sites and car, and around airport Driving elements - sitting, gross manipulation, far visual acuity, foot/leg controls Lifting/carrying laptop Outdoor exposure between client sites, car and airport	Pushing/pulling personal luggage
A pharmaceutical sales rep drives to doctors' offices carrying sample cases.	Driving elements -- sitting, gross manipulation, far visual acuity, foot/leg controls Walking to and from the car while working Lifting/carrying sample cases Outdoor exposure between car and doctors' offices	Getting to and returning from work office as part of commute to and from residence

3_04 How to collect occupational characteristics

The definitions for Full-time/Part-time, Union/Non-Union, and Time/Incentive are the same as NCS.

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Chapter 4: Task Lists

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4_01 Overview

A task list itemizes the typical tasks performed within an occupation. A **task** is a distinct activity in the logical and necessary steps of work performed by an individual that results in a meaningful outcome.

Task lists are similar to job duties used in NCS leveling and the information used to select SOCs for occupations. For guidance on how to collect task lists, draw on prior experience with NCS. Steps for creating a task list:

1. Identify important tasks.
2. If the selected quote is a combination job, include all duties assigned.
3. Document typical tasks.

4_02 How to use questions to identify important tasks

Ask the following questions:

Why does the job exist?

This question identifies the function of the job or the reason that the job is present within the organization.

What tasks do the workers in this occupation perform?

This question determines the action of the occupation.

How are these tasks performed?

This question clarifies the manner in which a worker executes a task. The answer to this question may be more significant at some locations than others. For example, “moves materials by manually pushing carts” provides additional information related to the physical demands required by the job.

With what do workers in an occupation work?

The types of data, tools, and/or equipment may have implications for a worker’s tasks.

For example, Linus and Lucy are both research assistants, but Linus conducts survey research using computers and analytical software. Lucy works in a biology lab using robotic liquid handling systems and bio analyzers.

Without the additional detail on the type of equipment used, the two jobs may seem similar.

With whom do workers in an occupation work?

Learning about the people with whom workers interact helps inform cognitive data elements.

For example, if a worker is primarily interacting with a mentor, the job may be entry level. If the worker is coordinating with staff, the job may be supervisory.

When do workers perform tasks?

This question helps identify the frequency at which workers perform tasks and clarifies the description of a worker's day.

From where are the materials/information coming?

This question addresses the source of materials or information used in work, and may provide insights into some of the physical tasks performed by the occupation. Is the worker gathering the materials needed to complete the job or is someone delivering them?

To where are the materials/information going?

This question addresses the destination of the materials or information used in work, and provides insight into some of the physical tasks performed by the occupation.

Is the worker delivering the product to the next location? Is the location of the work the product's final destination? Does the product go to another location by another means?

4_03 How to document tasks

Field economists are not required to follow a certain format when documenting tasks, but 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.
- Include considerable information.
- Enter task lists on the Task List 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, restrooms, and some outside areas. One of the biggest jobs is emptying the waste receptacles throughout the building. This includes emptying all of the classroom trashcans as well as the large cans in the hallways and cafeteria daily.

Additionally, he/she has to empty recycle containers throughout the building as needed. The janinitor 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/she 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 maintains and makes minor repairs to the boiler system as needed.

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

Sample Task List Documentation:

- Empties all building waste receptacles daily, including large cans in the cafeteria.
- Empties all building recycle bins as needed.

- Vacuums all building spaces routinely using a commercial vacuum.
- Maintains and makes minor repairs to boilers as directed by Maintenance Supervisor.
- Waxes building floors using a buffer as directed by Maintenance Supervisor.
- Spot cleans as needed.
- Clears snow from building entry using snow blower and/or shovel.

Note: In this example, the janitor interacts with the supervisor, but has few interactions otherwise. In other jobs, where working with others is an important part of duties, indicate these interactions in the task list.

4_04 Collecting ‘Driving’

Driving is the operation of a passenger vehicle or other conveyance. A passenger vehicle is an automobile, van, or bus.

Collect the type of vehicle (passenger or other).

If the vehicle type is “other,” document the type of vehicle. Other vehicles may include equipment (e.g. forklifts), trains, or aircraft.

Driving may affect the following physical demand data elements:

- Far Visual Acuity. Far Visual Acuity is assumed when Driving is present.
- Near Visual Acuity and peripheral vision. Workers often need these to drive, but do not assume their presence.
- Gross Manipulation and foot/leg controls. Time spent driving will be the base duration for Gross Manipulation and foot/leg controls.
- Pushing/Pulling, if the minimum threshold is met. Secure verification from the respondent and document.
- Reaching, if the minimum threshold is met.

Do not *assume* the presence or duration of any physical demand based upon vehicle type. Many modern large trucks, buses, and equipment may require little or no more physical exertion than driving a passenger car.

4_05 How to compare task lists to the O*NET

Comparing collected task lists to the O*NET helps aid in the SOC selection process and provides verification that the best 8-digit SOC has been selected. After the appointment, do the following:

1. Identify the eight-digit SOC for the occupation and locate the O*NET task list.
2. Compare the list provided by the respondent to the first ten items on the O*NET list.
3. Identify any unexpected tasks.

NOTE: The task lists collected can be used as part of SOC verification. If the task list provided by the respondent is significantly different from the O*Net list, review the SOC coding.

O*NET tasks are *very* detailed and will likely be more detailed than the ORS task list. Use professional judgment to determine whether a specific O*NET task reasonably falls within a broader task obtained during collection. For ORS, it is not necessary to capture tasks at the same level of detail as O*NET.

Chapter 5: Specific Vocational Preparation

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5_01 Overview

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 facility needed for average performance in a specific job/worker situation.

We collect the following four elements:

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

SVP does not measure the type of knowledge required, only the vocational preparation time.

If a company provides a range of time or several combinations of education, training, or experience, collect the option that involves the least amount of time.

Note: All four elements are needed to calculate SVP. If a respondent cannot provide information on one of the SVP elements, probe further before coding "Unknown."

5_02 How to collect ‘Minimum Education’

‘Minimum Education’ measures the minimum level of formal coursework required of an occupation.

If an establishment requires a diploma or degree, collect:

- The degree requirement
- Vocational time to complete coursework relevant to the occupation

Exclude the portion of time for general 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 years are general education for undergraduate
Master's	All post-graduate years (usually 1 to 2 years)	All time is vocational
Professional	All post-graduate years (usually 2 to 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.*

If no formal education is required, collect the requirements for reading and writing. The ability to read and write includes any language used in the establishment.

Verify reading and writing requirements, even when a driver's license is required – not all states require a written driver's license test.

Examples of 'Minimum Education'	Action	Reason
An accountant at a manufacturing facility is required to have a 4-year Bachelor's degree in Accounting.	Collect 2 years of vocational 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.	Collect 2 years, Bachelor's + 3 years, PhD coursework + 1 year, dissertation.	1 year for dissertation - count only the minimum time required

5_03 How to collect ‘Pre-employment Training’

‘Pre-employment Training’ is the amount of time needed to complete required training before being hired.

Include:

- Formal apprenticeship training
- Vocational training
- Training required prior to a licensure or certification test
- Licensure and certification classes

Exclude:

- Licensure or certification examination time
- Time spent on optional exam preparation classes
- Licenses or certifications that require no classroom time

If the same pre-employment training occurs in different lengths of time or configurations, collect the pre-employment training time in hours. See the example of the after-school childcare workers, below.

Examples of ‘Pre-employment Training’	Action	Reason
The company hires journey-level welders. The union requires that welders complete 3-months of classroom training and a 4-year apprenticeship to be designated journey-level.	Collect all 51 months pre-employment training time	Meets criteria
After-school childcare workers are required to complete a 5-hour CPR/Lifesaving course prior to employment. The course is typically offered in one 5 hr. class, or 5 one-hour classes.	Collect 5 hours as pre-employment training time	Meets criteria
The state requires all restaurant servers be certified food handlers. Certification involves a written test and no class time.	Do not collect	Certification is a test only
A fundraiser pursues certification from a professional association. Certification is not required for her job.	Do not collect	Certification is not a job requirement

5_04 How to collect ‘Experience’

‘Experience’ measures the 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.

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

Examples	Action	Reason
An office requires that secretaries have at least one year of prior clerical experience.	Collect one year	Meets criteria
A police captain must have one-year of experience as a sergeant and one year of experience as a patrol officer.	Collect two years	Meets criteria
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_05 How to collect ‘Post-employment Training’

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

Include:

- Time an employee takes to learn basic job tasks while being actively taught by a supervisor or more experienced employee.
- This includes on-the-job training with verbal and written instruction, demonstration and observation, hands-on practice, or imitation.
- Coursework - 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

Examples	Action	Reason
A meat cutter is required to take a one-week food safety course during the first month of employment.	Collect 1 week	Meets criteria
A newly hired custodian shadows a lead worker for one day to learn how to operate a buffing/waxing machine and use chemicals.	Collect 1 day	Meets criteria
New restaurant servers receiving OJT from experienced servers on a 3-hour lunch shift.	Collect 3 hours	Count only time spent in training
New teachers are assigned an experienced teacher as a mentor that provides guidance throughout the new teacher's first year.	Do not collect	No active training occurs
New and experienced firefighters are required to do 3 hours of training per shift on an ongoing basis.	Do not collect	Continuing education

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.

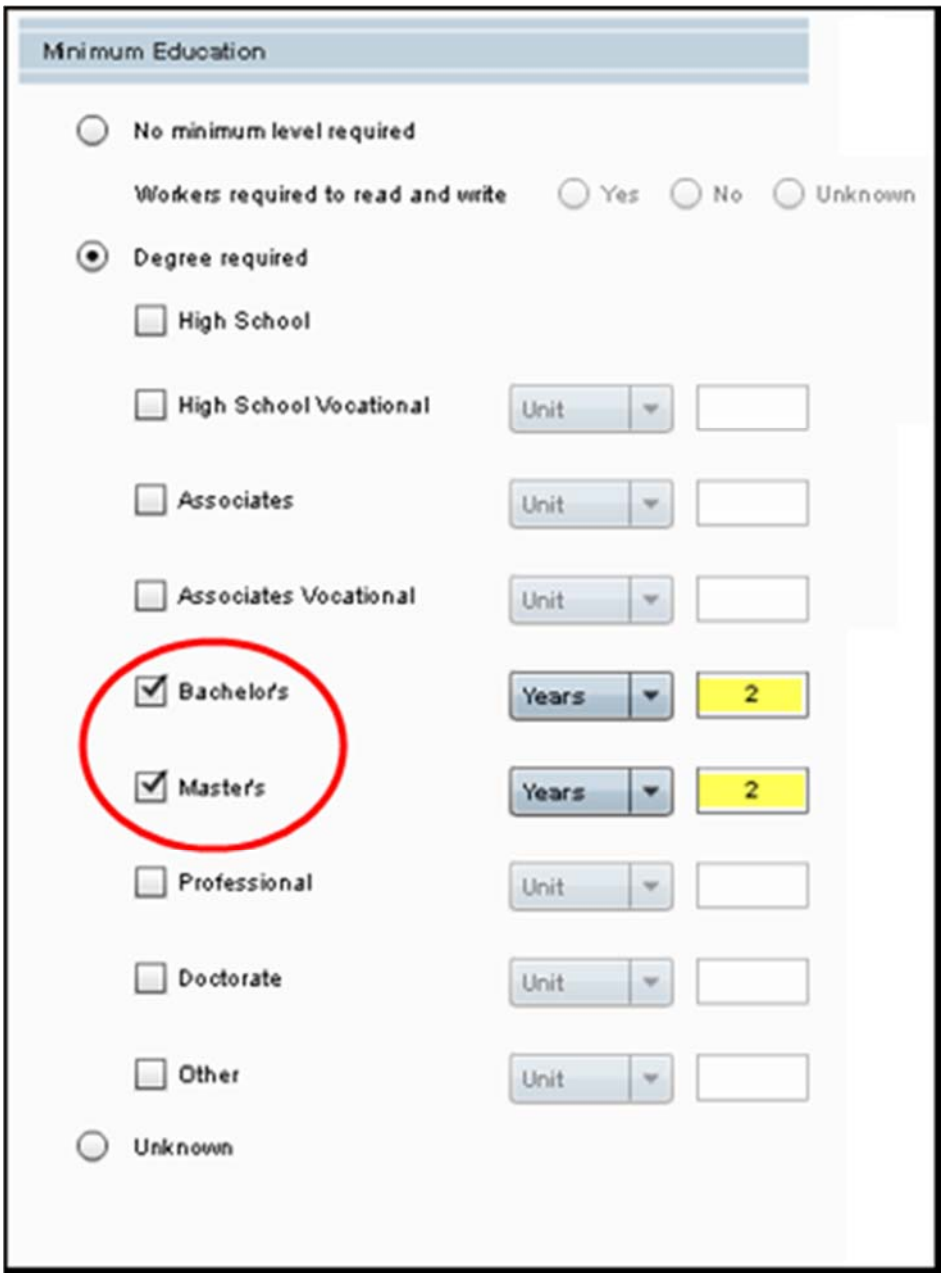
Coding post-employment training: standard vs. non-standard schedules

Training	Full Time (8/40/52) Code As	Full Time (12/36/52) Code As	Part Time (4/20/52) Code As
1 week	1 week	36 hours	20 hours
1 day	1 day	12 hours	4 hours
2 weeks	2 weeks	72 hours	40 hours

5_06 Avoiding errors that can result in over- or understatement

Coding minimum education when post-graduate degrees are required

If a Master's, Professional, and/or Doctorate degree are present, a Bachelor's degree must also be coded.



When to use "Unknown" and "Not required"

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

If an SVP component cannot be determined or is unavailable, code it "unknown" in CIERA.

If an SVP component is not present, code it as "not required" in CIERA.

WARNING: 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.

Coding a non-levelable job

If a job is non-levelable and it is not possible to collect an SVP element 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 and 2 yrs. on-the-job experience.	Bachelor's degree – 2 years; Experience – 7 years

How to collect 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 overlapping time between 'Pre-employment Training' and 'Experience' as 'Experience'.

Code the presence of the certification or license requirement.

Example 1: Concurrent time, experience, pre-employment

Scenario: To get a job as a police detective in a small municipality, a worker needs a minimum of two years prior experience as a police officer. At the same time, candidates must complete coursework and a written exam.

Code: The candidate completes the coursework concurrently with the two years of prior experience as a police officer. Indicate the requirement for prior experience, and code '2 years' for experience time. Code 'Yes' for pre-employment training and code '0' for training time**.** Written exams do not count for SVP.

Example 2: Concurrent time, overlapping experience, certification

Scenario: To be hired as a project manager, a worker needs a minimum of five years prior experience in project management. Candidates must also be PMP certified, which requires at least 3 years prior experience and 35 hours of training to sit for the exam.

Code: The candidate completes the certification hours within the 5 years of experience. Code '5 years' for experience time. Indicate the presence of a certification requirement and code '0' for training time.

Example 3: Concurrent time, overlapping training, post-employment

Scenario: A BLS field economist (FE) spends 6 months completing on-the - job training. During this period, the FE takes one week of National Office collection training.

Code: The week of training happens during the 6-month OJT period. Code '6 months.' There is no separation of post-employment training types.

5_07 Computing SVP Level

Field economists do not need to calculate the overall SVP level of an occupation. 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 elements is coded as "Unknown," the system cannot compute an overall SVP level.

Understanding SVP levels and job skill levels

It is essential to have a conceptual understanding of how each element 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:

- Need 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

Experience = 6 Months = 26 Weeks SVP

Pre-Employment Training = None = 0 SVP

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

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

0 + 26 + 0 + 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.

Chapter 6: Cognitive Elements

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6_01 Overview

The 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
- Supervision
- Pace
- Adaptability
- Work related personal interactions

6_02 Collecting 'Decision-making'

Ask the respondent about the type of decision-making required to perform the tasks of an occupation.

Collect the highest *level* of decision-making used, NOT the *number* of decisions that a worker is required to make in a work period.

Levels of decision-making vary by the amount of independent judgment a worker uses to form a decision. A worker may use one of four different levels of decision-making:

1. Little or no decision-making. A worker performs routine tasks with little or no variation or need for judgment.
2. Makes straightforward decisions from a set of choices in familiar situations. The worker experiences familiar situations and chooses from a limited number of appropriate actions. The worker is trained to recognize facts, identify situations, and respond appropriately using a limited amount of information. The specific action the employee needs to take is predetermined. (If A, then B).
3. Makes straightforward decisions by assessing situations and possible outcomes. A worker must identify familiar situations and choose between various options to respond. Information to make decisions is available, but the worker must use a degree of judgment to determine the best possible response. (If A, then B or C).
4. Makes decisions by assessing uncertain or conflicting situations. This last level is broad and covers many different types of decision-making. At this level, a worker must consider the facts that are immediately present and use judgment to evaluate the choices and consequences of each option. Include any decision-making that meets or exceeds this description in this level.

Examples of Decision-Making for Positions within Occupations

Decision-making	Job Title	Description
Little or No Decision-making	Nursing Aide	Changes linens, delivers and removes food trays, and records basic information as instructed.
	Billing and Collections Clerk I	Enters invoicing and billing data and generates reports.
Straightforward Decisions from Set Choices	Nursing Assistant I	Takes vital signs, collects specimens, and requests information from the patient based on the diagnostic tests scheduled.
	Billing and Collections Clerk II	Notifies customers of delinquent accounts. Posts payments, prepares statements, and refers delinquent accounts to collections.
	Guard	Checks identification and grants access to guests as they enter the premises. Makes phone calls as necessary for authorization. Denies entry to unauthorized visitors, and calls for assistance if needed.
Assessing Situations and Possible Outcomes	Nursing Assistant II	Recognizes differences between patient's conditions, ability for self-care, and varies the nursing care accordingly.
	Billing and Collections Clerk III	Approves new credit accounts. Resolves invoicing and payment issues. Provides management with short-term accounts receivable collection forecasts.
	Security Guard I	Determines when and how situations require additional resources for response, including type of assistance (EMT, Police, Fire). Also, directs responders once they arrive and monitors the situation.
	Community Health Nurse	Performs home visits, provides nursing services, and identifies counseling, referral, and follow-up care for adults and families.

Assessing Uncertain or Conflicting Situation	Billing and Collections Clerk IV	Manages portfolio of accounts, works with internal and external groups to resolve payment issues, advises all parties of any action due and assists in the month-end accounting close.
	Security Guard II	Is trained to deal with a variety of situations, and actively decides the best course of action for any situation that arises. Takes an active role in controlling the situation until emergency services arrive.

6_03 Collecting ‘Supervision’

This question refers to work direction and review received. Does the supervisor monitor the occupations very closely and/or give verbal instructions?

There are four levels of supervision:

1. **Detailed instruction and help are always provided**. A worker receives frequent and thorough review of work, including basic reminders on how to perform routine tasks. Work is thoroughly checked for accuracy or completeness. In some cases, this check may be automated, but a supervisor receives quality reports and provides feedback.
2. **Detailed instruction and help are provided when needed**. Review of work may be frequent, but emphasizes the quality of completed assignments rather than monitoring each detailed step necessary to complete the work.
3. **General instructions are provided and help is given when requested.** Review of work is occasional and emphasizes accomplishments of broad work objectives.
4. **Only broad objectives are provided**. Review of work is infrequent and focuses on effectiveness.

Examples of 'Supervision'

Supervision	Job Title	Description
Detailed Instruction and Frequent Review	Telemarketer	Works under constant monitoring to ensure adherence to law and policy.
	Production worker helper	Works under constant monitoring. Assist production workers by supplying and holding materials or tools.
Detailed Instruction and Review of Quality for Completed Assignments	Factory Worker	Receive instruction when beginning job, results are often evaluated in the product not on an individual basis.
	Wait Staff	Receives standards and expectations for customer service, table service, and food delivery. Restaurant manager verifies standards are being followed.
General Instruction and Review of Broad Work Objectives	Junior Sales Representative	Receives instructions then determines how to meet objectives. The supervisor ensures objectives are met.
Broad Objectives Provided and Review of Results Only	Factory Plant Director	Is made aware of objectives, and is only evaluated on the efficiency and achievement of those objectives.
	Senior Sales Representative	Receives assignments and overall timelines. Performance is reviewed based on response rates and overall quality achieved.

6_04 Collecting ‘Pace’

Pace of work is the speed needed for performing the 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.

An example of an occupation where repetitious tasks drive the pace is a production line worker. An example of an occupation that must respond quickly to a variety of tasks is an operations manager.

There are two components to ‘Pace’:

- Pace of Work
- Control of Work Pace

How to collect ‘Pace of the Work’

Collect the rate at which a worker performs tasks. There are four rates:

1. A slow pace is unhurried and the workload is constant. A worker may have sufficient time between tasks to complete the previous one and may spend time observing or waiting.
2. A moderate pace is steady and the workload is constant. On rare occasions, there may be episodes of faster paced work.
3. A fast pace is rapid and the workload is constant. A worker has little downtime between completing a task and performing another task or receiving a new assignment.
4. A variable pace means that the pace changes repeatedly throughout the day or from day-to-day. There are frequent and markedly faster and slower periods of work driven by changing workload demands.

Pace of Work	Job Title	Description
Slow Pace	Security guard A	Watches over property or people. Large portions of time are spent waiting and monitoring from a stationary location.
	Lab technician	Monitoring experiments and tests, assists in running equipment and endures long pauses while testing proceeds
Moderate Pace	Security Guard B	Screens employees and visitors entering the facility; and walks standard patrols on a rotating basis with other guards
	High school teacher	Teaches classes, prepares lesson plans, and sponsors school organization. The teacher maintains a regular schedule of classes.
Fast Pace	Stock exchange floor trader	Constantly makes inquiries into stock prices; and buys and sells stocks in a bustling environment.
	Customer service representative	Answers incoming calls from an automated queue. Calls are constant and productivity is monitored.
Variable Pace	Tollbooth cashier	Collects tolls and makes change. The pace of work depends on the number of vehicles using the road
	Police officer	Monitors the police band, fills out paperwork, and responds to calls. The work is a mix of occasional fast-paced situations and slow-paced duties.
	Event planner	Makes logistical arrangements for clients, contacts vendors, and supervises events. The pace of work varies at each stage of logistics.

How to collect the 'Control of Work Pace'

The 'Control of Work Pace' captures what controls the rate of work. There are two options:

1. **Work-driven.** Work process drives the pace and the worker must keep up and continuously meet production standards. Typically one of the following conditions exists:
    - The worker has limited or no ability to control the work pace.
    - The worker must complete tasks with little or no influence on the timeline.
    - The worker in a production environment interacts with moving parts, assembly lines, and machines whose speed cannot be controlled by a single worker.
    - The worker performs tasks in response to an external demand, such as a customer placing a counter order.
2. **Worker-driven.** Worker controls the pace. Typically the following conditions exist:
    - Tasks are worker-driven when the worker has flexibility in how assignments are completed.
    - The worker can adjust when and how quickly tasks are completed.
    - There may be tight, broad, or no deadlines, but the worker has some control over the amount of work completed within any specific period.

If the employee has some control over certain tasks and not over others, code this as 'Work Driven.'

Examples of 'Control of Pace'

	Collect As	Reason
A firefighter responds to emergency calls received.	Work-driven	External demand
A retail sales person responds to customer needs.	Work-driven	External demand
A website technician prepares, uploads, and creates links to content within 4 hours of receiving assigned material.	Work-driven	Task is completed on a predetermined timeline
An assembler is expected to complete at least 16 widgets per shift.	Work-driven	Production environment
A sales representative determines whether to schedule appointments or write up schedules, number of calls per day, etc. to meet goals.	Worker-driven	Worker controls the daily pace within larger timeline
A researcher determines the overall project timeline, tasks, and work accomplished on specific days.	Worker-driven	Worker controls the schedule

6_05 Collecting ‘Adaptability’

Some occupations require adaptation to changes in work routines. An occupation’s **work routine** consists of its work tasks, work schedule, and work location as generally performed.

The need to adapt is measured through the frequency and the source of change. Change does not have to be unpredictable to be counted as a change to work routine.

Collect a separate answer for each element of the work routine: work tasks, work schedule, and work location.

Work Tasks are the regular duties of an occupation. Changes in work tasks include new work assignments, tasks that occur infrequently throughout the year or irregular tasks. Do not consider a supervisor changing priorities from one normal job task to another as a change in work tasks.

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.

Work Schedule is the regular work hours and days for the occupation. A change in work schedule includes unscheduled overtime, unexpected weekend hours, or an unexpectedly shortened workday. Do not consider standard variable or rotating shifts, such as those experienced by nurses or police, as changes to the work schedule.

Work Location is the site where a worker performs typical duties of an occupation. Include location changes that are required by the job, such as when emergency workers respond to calls or construction workers change sites. Changes in work location may accompany changes in work tasks or schedule.

Do not consider moves to different buildings located in the same vicinity (such as a single corporate campus), unless the move to a different building is not part of the regular routine.

How to collect the change in Work Routine:

Determine the frequency at which work tasks, schedule, and location change for an occupation. Collect a separate answer for each.

There are four rates of change:

- Rarely or never changes. There is no change, unless it is a permanent change.
- Sometimes changes. There are changes several times a year to meet business needs, including temporary changes and seasonal variations. Include changes that occur on a predictable basis throughout the year.
- Often changes. Changes occur on an unpredictable basis to meet business needs. Changes are forces internal to the organization.
- Always changes. Change to the work routine is frequent and driven by forces external to the organization. For example, a psychologist working with a natural disaster response team experiences changes to work location and schedule.

Examples of how to collect Adaptability			
Job Description	**Work Task**	**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. Winter and spring concerts may be held at other locations.	Rarely or never changes	Rarely or never changes	Sometimes changes
A cashier at a local grocery store works the register on shifts that frequently change. When staff is short, the cashier also helps with stocking shelves and unpacking deliveries.	Sometimes changes	Often changes.	Rarely or never changes
A landscaping crewmember rotates between the lawnmower, string trimmer, and leaf blower at different work sites throughout the day. Shifts vary seasonally.	Rarely or never changes	Sometimes changes	Often changes
A firefighter fights fires in high-rise commercial buildings or private residences. Through the course of the year, the firefighter rotates through various roles on the truck and may assist with forest fires.	Sometimes changes	Sometimes changes	Always changes

6_06 Collecting ‘Work-Related Personal Interactions’

Interaction is the ability to cooperate with others, handle conflict, and respond to social cues, requests, and criticism.

‘Work-Related Personal Interactions’ measures both the frequency and type of work-related verbal interactions, while distinguishing between regular and other types of contacts.

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

- Co-workers with whom the worker regularly works
- Clients, customers or students seen on a regular basis
- All other contacts with whom the occupation 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	Collect As
An accountant works with a clerk assigned to his/her department.	Regular
A treasurer works with the same CPAs for two weeks, twice annually, to complete audits.	Regular
An elementary teacher works with students in his/her class.	Regular
A non-local builder goes to the city council to get a variance for a housing development plan.	Other
A professor of law and professor of psychology both work on the same campus for the same large public university, but do not work together.	Other

How to collect frequency of contact

Collect the frequency of work-related verbal contact with 'Regular contacts' and 'Other contacts.' Exclude exchanges that are optional social contact, not required to perform the work. If the frequency of contact changes during the workday, code the most frequent level experienced. Use the following frequency categories:

- **Ongoing** (Constantly, every few minutes)
- **Several times an hour** (More than once per hour, but not constantly)
- **Hourly or Semi-Hourly** (More than once per day, but not more than once per hour)
- **Daily or Less** (No more than once per day; includes never)

How to collect the type of interaction

Collect the type of work-related verbal interaction the occupation has with 'Regular contacts' and 'Other contacts.' If there is variation, use the following categories:

- **Very structured** (Exchanging straightforward, factual information)
- **Structured** (Coordinating work with others, solving recurring problems with cooperative parties)
- **Semi-structured** (Some gentle persuading, soft selling, discussing)
- **Unstructured** (Influencing, hard selling, asserting control in situations)
- **Very unstructured** (Resolving controversial or long-range issues, defending, negotiating)

Type of Interaction	Job Title	Description
Very Structured	Fast food worker	Notifies another worker that customer food orders are ready.
Structured	Shift manager	Coordinates the tasks and breaks of fast food crewmembers.
Semi-structured	Store manager	Resolves worker issues, and discusses strategies for meeting franchise sales goals with shift managers and crewmembers.
Unstructured	Regional manager	Increases sales by engaging store managers and staff in new sales strategies; leads meetings to explain policy changes; and implements changes.
Very Unstructured	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’

	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.	Regular contacts (supervisor, co-workers)	Daily or Less	Structured
	Other contacts (public)	Ongoing	Very Structured
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)	Hourly or semi-hourly	Semi-structured
	Other contacts (one-time clients)	Daily or Less	Semi-structured

Chapter 7: Physical Demands

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7_01 Overview

Physical Demands are the physical activities required of an occupation. We collect the following ten categories:

- Sitting vs. Standing/Walking
- Lifting/Carrying
- Pushing/Pulling
- Reaching
- Keyboarding
- Manipulation
- Stooping, Crouching, Kneeling, Crawling
- Climbing
- Vision
- Communication

Concurrent Physical Demands

There are many situations where an occupational task includes more than one physical demand. While it is important to look at the total amount of time coded for an occupation, it is not automatically "wrong" if the total adds up to more than the daily work hours.

Examples:

- Writing involves both gross manipulation and fine manipulation.
- Pushing a heavy cart while standing up includes, among other things, pushing with hands/arms, pushing with feet/legs, gross manipulation, and standing/walking.
- Making a phone call may include holding the receiver (gross manipulation) with one hand while dialing the phone with the other (fine manipulation and communicating verbally).

How to collect Physical Demands

1. Collect presence and duration. See section 2_03 for details on calculating duration.
2. Certain elements have unique collection guidelines:
   - Lifting/Carrying has unique collection guidelines. See section 7_03.
   - Climbing Ramps/Stairs - Structure has unique collection guidelines. See section 7_09.
   - Do not collect duration for Vision or Hearing.
3. Apply thresholds to Pushing/Pulling and Reaching Overhead.
4. Do not collect the physical demands related to a worker's commute.
5. 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

   Collect work as generally performed. Exclude accommodations.

   If any task requires BOTH hands/arms (feet/legs), code as BOTH.

   Code as ONE only if all of the work can be completed using one hand/arm (foot/leg).
6. To avoid overstatement, do not break the Physical Demands elements into narrower individual components.

   For example, code an Administrative Assistant typing on a computer as Keyboarding, only, and do not include this time in Gross and Fine Manipulation.

7_02 Collecting ‘Sitting’ vs. ‘Standing/Walking’

There are three components to this element:

- Sitting
- Standing/Walking
- Sitting vs. Standing/Walking at Will

A worker is always either ‘sitting’ or ‘standing’.

How to collect ‘Sitting’ vs. ‘Standing/Walking’

‘Sitting’ is present when one of three conditions exists**:**

- A worker remains in a seated position. This includes active sitting. For instance, a bicyclist sits but pushes/pulls with his feet/legs.
- A worker is inactive and seated or prone. For instance, a medical resident on call for a thirty-hour shift taking a strategic nap is sitting.
- The worker may choose between sitting and standing.

‘Standing/Walking’ is present whenever a worker is not sitting or prone.

Collect the actual daily hours that a worker spends sitting OR standing/walking. **The total amount of time coded for these two elements must add up to the daily work schedule.**

Example: A teller chooses whether to sit or stand for 3 hours per day while working at the drive-thru window. The rest of the day the teller is either standing at the counter, stooping 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.

Examples - Choosing Between ‘Sitting’ and ‘Standing/Walking’	
Sitting	An OTR 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.

When to collect ‘Sitting vs. Standing/Walking At Will’

Collect the presence (yes/no) of ‘Sitting vs. Standing/Walking at Will.’

The ability to alternate between sitting and standing/walking at will is present when the following conditions exist:

- A worker has the flexibility to choose between sitting and standing throughout the day.
- There is no assigned time during the day to sit or stand.
- No external factors determine whether an employee must sit or stand.

When collecting for this element, include documentation for the activities described in the typical day.

Exclude scheduled breaks and lunch breaks.

Note: Driving does not necessarily negate the ability to sit/stand at will. If the employee may stop as needed, the ability to alternate between sitting and standing at will is present.

Examples of ‘Standing At Will’	Collect As	Reason
A pharmaceutical sales rep driving to clients can choose when to make trips and additional stops.	At Will is ‘Yes’	Meets criteria
An office clerk can choose when to file and typically stands while filing invoices.	At Will is ‘Yes’	Meets criteria
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 he walks to investigate suspicious situations.	At Will is ‘No’	Worker does not choose
An over-the-road truck driver must meet a delivery schedule. He stops only for fuel and weigh stations.	At Will is ‘No’	Worker does not choose

7_03 Collecting 'Lifting/Carrying'

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

Example: An assembly line worker lifts 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, arms, or on the shoulders.

Example: A construction worker carries lumber around the worksite by hand and uses a tool belt to carry a hammer, flat bar, screwdriver and other hand tools.

How to collect Lifting/Carrying:

1. Collect the presence and duration of task-related lifting/carrying that occurs as work is generally performed. 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
2. Document when a lifting/carrying an object does not require hands. For example, a worker carrying a tool belt experiences gross manipulation when lifting the belt and zero gross manipulation while carrying it. Collect this as lifting/carrying and document the gross manipulation.
3. Ask the following questions when collecting data:

   What is the most weight ever lifted/carried by the occupation?

   It takes more strength to lift something for longer lengths of time, so the weight that a worker lifts 'up to 2% of the day' is often heavier than that lifted more frequently.

   How often is this weight lifted/carried?

   Verify that the weight lifted and duration are an expectation of the occupation and are not by chance or voluntary.

   What is the most weight carried at every other duration level?

   As the frequency of a task increases, workers often carry less weight. The maximum weight collected may decrease as duration increases.

4. 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	Negligible (up to 1 lbs.)	Up to 10 lbs.	Up to 10 lbs.
Negligible (up to 1 lbs.)	Up to 10 lbs.	11-20 lbs.	11-20 lbs.
Up to 10 lbs.	11 to 25 lbs.	21 to 50 lbs.	21 to 50 lbs.
11-20 lbs.	26 to 50 lbs.	51 to 100 lbs.	51 to 100 lbs.
>20 lbs.	>50 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 collected **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 **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 **Occasionally** in the '2% up to 1/3' CIERA category. This weight will be the same or less than the amount collected for **Seldom**.

Example:

A worker seldom lifts 50 lbs. This is the most he ever lifts. He spends 4 hours of every eight-hour day lifting 20 lbs., but never lifts 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:

As part of a landscape crew**,** workers, performing detail trim and clean-up work, operate either weed trimmers or leaf blowers. 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

<u>When to use 'Negligible' and 'None'</u>

Use the terms 'negligible' and 'none' when collecting weight for specific duration categories.

'None' means there is no weight lifted or carried. Use this only when coding weight lifted 2/3 of the time or more.

'None' is not an option for the 'frequently' range. If a worker is not lifting or carrying anything frequently (that is, between 1/3 and up to 2/3 of the time), code this as 'negligible.'

'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 'negligible' only when coding weight lifted 1/3 of the time or more.

Example:

A sales representative, while visiting customers throughout a typical day, lifts pens and paper. Sometimes the representative 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 2.67 hours per day.

The sales representative must 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. The representative does 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.

Duration	**Max Weight Collected**
2/3 or more	None
1/3 up to 2/3	Negligible
2% up to 1/3	6 pounds
Up to 2%	30 pounds

7_04 Collecting 'Pushing/Pulling'

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

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

Pushing/Pulling is present when one of two conditions exist**:**

1. A worker uses ten pounds of force or more
2. A worker uses any amount of force at a **production rate** 2/3 or more of time

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

Any pushing or pulling done for less than 2/3 of time requires greater force to meet the push/pull threshold. Any use of less than ten pounds of force that occurs less frequently than a production rate fails to meet the threshold for pushing/pulling.

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 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

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 a brake pedal in a passenger vehicle, driven occasionally.	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.

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.

Note: 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

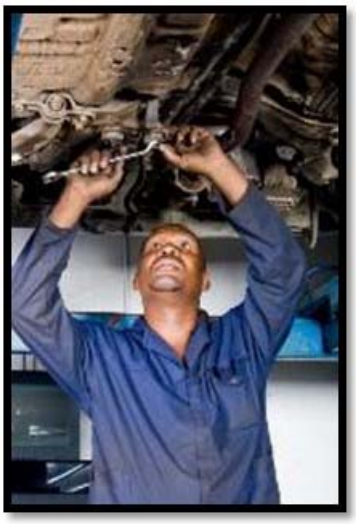
Exclude pushing/pulling actions involved in climbing ropes, ladders or scaffolding.

If a task that requires a worker to operate foot/leg controls meets the minimum threshold for pushing/pulling, collect as 'Pushing/Pulling.'

If pushing/pulling involves varying amounts of force, some of which do not meet the threshold, probe to get information on the type and duration of pushing/pulling. If the total is more than 2/3 of the workday, submit an SO-70 for further guidance. Code only the duration for the higher-level force when it is less than 2/3 of the day. Document how duration coding was determined.

Examples of ‘Pushing/Pulling’	Collect One/Both	Collect Duration
A technician sits and pushes, with one hand, a 75 lbs.-equipment cart. The total time pushing is 30 min. per day.	One hand/arm only. No legs, because the worker sits.	30 minutes
A librarian walks behind and pushes a very heavy two-shelf cart full of books.	Hands/arms and feet/legs; both sides of the body for each.	3 hours
A swim instructor swims 4 hours out of an 8-hour day.	Hands/ arms and feet/legs; both sides of the body for each.	4 hours
A textile worker stands 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 standing/walking with hands/arms only; no feet/legs and no sitting.	7 hours
A police officer patrols a very hilly city on a bicycle for 6 hours of an 8-hour day.	Both feet/legs. A *rare example* of push/pull feet/legs; no hands/arms.	6 hours
An excavating machine operator uses arms and legs to operate controls and pedals (clutch) for 6 hours of an 8-hour shift.	Both arms and both legs	6 hours

7_05 Collecting ‘Reaching’



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

There are two types of ‘Reaching’:

- Overhead Reaching
- At/Below the Shoulder Reaching

‘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.

‘Overhead Reaching’ is present when the hand goes higher than the head AND one of these conditions exists:

1. A person bends the elbows, and the angle at the shoulders is about 90 degrees or more.
2. A person keeps the elbow extended, and the angle at the shoulder is about 120 degrees or more.

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

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

To avoid overstatement, do not collect reaching that is involved in ‘Crawling’ or ‘Climbing Ladders, Ropes, and Scaffolding’.

Examples:	Collect As:	Reason
Picking apples from the tops of mature trees.	Overhead	Meets the threshold
Filing folders in uppermost overhead cabinets.	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
Reaching across a desk to answer the phone.	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’
Inserting screws into widgets.	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’
Pruning trees and shrubs.	Both types of Reaching	Meets all criteria
Attaching drywall to studs.	Both types of Reaching	Meets all criteria

7_06 Collecting ‘Keyboarding’

‘**Keyboarding**’ is entering text or data into a computer or other machine by means of a keyboard.

Although ‘Keyboarding’ requires both ‘Fine’ and ‘Gross Manipulation’, it is a *separate element*.

‘Keyboarding’ is a measure of repetitive motion requiring the use of the whole hand. For example, collect typing as ‘Keyboarding’.

How to collect the four types of ‘Keyboarding’

Traditional Keyboard. Include using a stenographer’s machines, typewriters, laptops, computer mouse, and all aspects of using a desktop computer.

Example: A customer service rep spends 5 hours per day entering information into an order system on a desktop computer.

10-Key Pad. Include 10-key number pads, adding machines, and other devices with a numeric keypad. Exclude traditional phone, fax, and copy machines.

Example: An accounting clerk uses an adding machine to settle accounts.

Touch Screen Device. Include tablet computers; touch screen mobile phones; devices used by delivery drivers; and touch screen systems used in restaurants, bars, and fast food restaurants.

Examples:

- A bartender puts an order into a touch screen order-system.
- A delivery driver records deliveries on a handheld device.

Other. Include keyboarding devices that do not fit into one of the other three categories. When collecting ‘Other’ keyboarding devices, include documentation in the remarks section.

Examples:

- A salesperson communicates with customers using a Blackberry.
- A cashier at a grocery store uses a register with a hybrid keyboard that has 72 flat keys and a 10-key pad.

If a worker uses multiple devices, capture the duration for each device.

If the respondent cannot identify the type of device used, OR the respondent cannot break out the duration between devices, collect duration as ‘Traditional Keyboard’ if this is one of the devices. Code as “Other” in remaining cases.

If a worker must use a computer monitor or a screen on another electronic device, then code Near Visual Acuity “yes” as a default.

Exclude:

- Activities that require hitting only a few keys and do not involve multiple fingers on the hand, such as key entries on traditional phone, fax, copy, and time-clock machines. Include these activities in Fine Manipulation.
- Tasks collected as a part of ‘Reaching’, ‘Fine Manipulation’, or ‘Gross Manipulation’.

7_07 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 often 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 a tool such as tin snips or scissors.

Example: A worker uses fingers to turn a switch or shift automobile gears.

Collect the presence and duration of gross manipulation for one or both arms.

To avoid overstatement, do not include keyboarding, the use of a mouse, or the gross manipulation involved in ‘Climbing Ropes, Ladders, and Scaffolds’.

Lifting that involves a part of the body other than hands is not considered “Gross Manipulation.’

‘Fine Manipulation’ is 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 for one or both hands.

A worker can use both gross manipulation and fine manipulation while performing a task.

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

To avoid overstatement, do not collect keyboarding or the use of a mouse as “Fine Manipulation.’

Note: ‘Fine Manipulation’ involved in driving is rare. If it is present, collect it and document the circumstances.

‘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.

Do not include time operating foot/leg controls in the duration of pushing/pulling with legs/feet unless it also meets the minimum exertion threshold of pushing/pulling.

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.
	Grasping combs and scissors in a salon.
	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 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.
Foot/Leg	Pressing a gas pedal in a delivery truck.
	Stepping on a lever to lower and raise salon chairs.
	Pressing a floor button to raise a dental chair.
	Pressing a knee lever to operate a sewing machine.

7_08 Collecting ‘Stooping’, ‘Crouching’, ‘Kneeling’, and ‘Crawling’

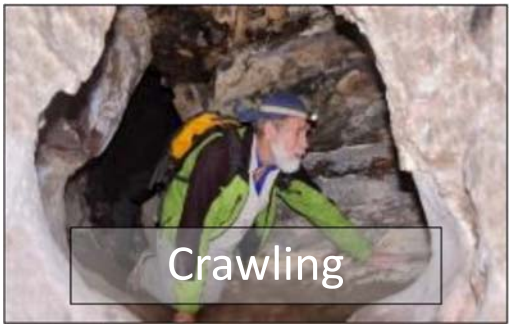
There are four posture positions:

- 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.

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.

If workers may choose their body position, then collect the position typically used to perform the job.



‘Stooping’ is bending the body forward and down, bending the spine at the waist and leaning down towards an object or the ground. Stooping requires the full use of the lower extremities and back muscles.

Examples:

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

‘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 clerk crouches when using 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 strips without tacks, 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.

7_09 Collecting ‘Climbing’

‘Climbing’ is the act of ascending or descending stairs, ramps, ladders, ropes or scaffolding and similar structures using feet and legs, or hands/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 worker and document accordingly.

Note: Do not include the use of hands, arms, and legs associated with climbing in the durations for gross manipulation, pushing/pulling, and reaching. These physical demands are contained within both types of ‘Climbing’.

How to collect ‘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.

When ‘Climbing Ramps or Stairs’ is present, determine if it is **work related** or **structure related**, and code accordingly. Work related means that the job would require climbing regardless of the company’s building.

Climbing is work related if**:**

- A worker would need to climb ramps or stairs to perform occupational duties in a single-level workplace.
- A worker climbs ramps or stairs while making deliveries, home visits or visiting other businesses.
- A worker uses a stepladder with wide treads and low rise, similar to stairs, to access materials on upper shelves.

When climbing is work related, collect duration.

If work related climbing is present for an occupation that typically works in only one place, document how the climbing relates to work.

Examples:

- A home health worker climbs stairs to enter a home or access different floors within the home of a patient.

- An apartment property manager ascends steep driveways while maintaining rental properties.
- A machine operator climbs stairs to access the machine platform.
- A worker climbs a ramp to load and unload material from a truck.

Climbing is structure related if a single-level workplace would eliminate the need to climb ramps or stairs.

If climbing is structure-related, collect presence. Do NOT collect duration.

Examples:

- A teacher escorts children up and down stairs in a three-story building.
- An office manager must use stairs to access files and supplies located on another floor.

How to collect '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.

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 ‘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 using a computer, 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’ for driving.

‘Peripheral Vision’ is what is seen above, below, to the left or right by the eye while staring straight ahead. Peripheral vision may be present with driving. If it is, confirm its presence with the respondent and document.

Examples:

- A security guard watches all doors and TV monitors to look for unusual activities.
- A warehouse worker must stay clear of forklifts.
- A heavy equipment operator must keep watch in all directions to ensure safety.

7_11 Collecting 'Communicating Verbally' and 'Hearing Requirements'

'Communicating Verbally' is using the spoken word to exchange information with clients, the public, or coworkers.

Include:

- The ability to give detailed spoken instructions to other workers accurately, loudly or rapidly.
- One directional speaking, such as lectures, broadcasts and other public speaking activities.

When 'Communicating Verbally' is present, collect the amount of *total* conversation time, not just the time in which the worker is actually speaking.

Examples:

- A TV news anchor reports news in a pleasant, well-controlled voice.
- A human resources manager explains benefits to a new employee.

'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 work as generally performed. There are five types:

1. **One-on-one** (in person).
2. **Group or conference** (in person).
3. **Telephone** (and similar remote communication devices). Include the ability to hear a ringing telephone, or similar device, before it is answered.
4. **Passage of hearing test**. This refers to an occupational 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.
5. **Other sounds**. Collect job-related safety alarms on machinery in 'Other Sounds.' Exclude alarms that are not job-related, such as fire, tornado, weather, and other public safety alarms.

Examples of Hearing Requirements	
One-on One	A pollster talks with a respondent to collect data.
	A sales representative hears a customer's request.
	A hospital nurse, discharging patients, listens to and answers questions while providing 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.
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.
	Workers in a Florida company must be able to hear and respond to a hurricane warning.
	A factory worker takes a hearing test prior to start and then annually to measure work-related hearing loss.

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Chapter 8: Environmental Conditions

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8_01 Overview

Collect the following Environmental Conditions:

Environmental conditions are the surroundings in which a job is performed. 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

When to collect duration for Environmental Conditions:

- A worker experiences the condition while performing typical occupational duties.
- Conditions meet any of the specified thresholds.
- Personal protective equipment (PPE) required by the employer only partially mitigates exposure.

How to collect Environmental Conditions

Collect the duration of exposure for all environmental conditions, except ‘Noise Intensity Level’. Measure exposure as the worker experiences it with protective equipment. Document the use and type of protective equipment

A threshold is a level at which something begins or changes. Thresholds vary for each condition.

Thresholds for Environmental Conditions	
Environmental Condition	Threshold
Outdoors	None (must meet requirements in definition)
Extreme Cold (indoor and job related outdoor exposure 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 (indoor and job related outdoor exposure 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	Heavy vibration (not light vibration) Must cause 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)

8_02 Collecting ‘Outdoors’

‘Outdoors’ is present when two conditions exist:

Condition 1

- A worker performs typical job duties outdoors, or
- A worker moves between different work sites during the workday.

Condition 2

- A worker is unprotected and exposed to the elements**.**

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

Examples	Action	Reason
A teacher watches children while outdoors for recess.	Collect	Meets conditions
A groundskeeper mows lawns and trims shrubs.	Collect	Meets conditions
A pharmaceutical sales rep walks to and from the car with each client visit.	Collect	Meets conditions
An employee commutes to and from the workplace.	Do not collect	Not work-related
A miner works in an underground mine.	Do not collect	Not outdoors
An archeologist inspects artifacts in a tent at the dig site.	Do not collect	Not exposed

8_03 Collecting ‘Extreme Cold’

‘Extreme Cold’ is present when two conditions exist:

Condition 1

- 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.

Condition 2

- The worker’s exposure is related to job duties and not due to weather, or
- Workers are indoors in locations that are not climate controlled.

Most jobs will not have outdoor exposure to cold, non-weather related temperatures. When it is present, collect for the element, and document.

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 forklift operator works in an unheated warehouse that is always below 40 degrees in the winter.	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

8_04 Collecting ‘Extreme Heat’

‘Extreme Heat’ is present when two conditions exist:

Condition 1

- 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.

Condition 2

- The worker’s exposure is related to job duties and not due to weather, or
- Workers are indoors in a location that is not climate controlled.

‘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 warehouse worker moves freight and stock in a warehouse that is not climate controlled and is above 90 degrees.	Collect	Meets conditions
A restaurant cook works close to a hot commercial stove and oven in a kitchen with no air conditioning.	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

8_05 Collecting ‘Wetness’

‘Wetness’ is present when 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 job duties and not due to weather.

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.	Collect as ‘Outdoors’	Weather-related

8_06 Collecting ‘Humidity’

‘Humidity’ is present when three conditions exist:

Condition 1

- The worker’s exposure is related to job duties and not due to weather.

Condition 2

- The worker experiences air containing a high amount of water or water vapor.

Condition 3

- The atmosphere is oppressive.

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

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 primary job functions.

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 the Appendix. Note 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 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	Mitigated by personal protective equipment
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

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.

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

Condition 1

- Equipment operated by the worker presents a risk of bodily injury.

Condition 2

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

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

The mere presence of equipment in a work area, such as forklifts, cars, or other moving objects, does not meet the threshold. In such cases, the operator of the equipment bears primary responsibility for safe operation and protecting others from the associated hazard.

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 to the machine and could be injured if he lost consciousness.	Collect	Meets conditions
An accountant disposes of sensitive documents using 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	Mitigated

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 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

- The worker’s center of gravity is at least five feet off the ground, or
- The worker is at ground level and at risk of falling several feet below ground level.

Condition 2

- The worker is exposed and at risk of bodily injury from falling.
- There are no walls or railings surrounding a worker 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 a worker experiences 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.

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
Acetic acid
Acetic anhydride
Acetone
Acetonitrile
Acetylene
Acetylene dichloride;
Acetylene tetrabromide
A-Chloroacetophenone
Acridine, chrysene
Acrolein
Acrylamide
Acrylonitrile
Aldrin
Allyl alcohol
Allyl chloride
Allyl glycidyl ether
Allyl propyl disulfide
Alpha-Alumina
Alpha-Methyl styrene
Alpha-Naphthylamine
Aluminum Metal (as Al)
Ammonia
Ammonium sulfamate
Aniline and homologs
Anisidine
Anthracene, BaP
Antimony and compounds
ANTU (alpha)
Arsenic, inorganic
Arsenic, organic
Arsine
Asbestos
Azinphos-methyl
Barium sulfate
Barium, soluble
Benomyl
Benzene
Benzidine
Benzo(a)pyrene
Benzoyl peroxide
Benzyl chloride
Beryllium and
Beryllium compounds
Beta-Chloroprene
Beta-Naphthylamine
Beta-Propriolactone
Biphenyl; see Diphenyl
Bis(Chloromethyl)
Bismuth telluride
Boron oxide
Boron trifluoride
Bromine
Bromoform
Butadiene
Butanethiol
Butyl mercaptan
Butylamine
Butyl-m-cresol
Butyraldehyde (butanal)
Cadmium (as Cd)
Calcium Carbonate
Calcium hydroxide
Calcium oxide
Calcium silicate
Calcium sulfate
Camphor, synthetic
Carbaryl (Sevin)
Carbinol
Carbinol
Carbon black
Carbon dioxide
Carbon disulfide
Carbon monoxide
Carbon tetrachloride
Carbon tetrachloride
Cellosolve acetate
Cellulose
Ceramic fibers
Chlordane
Chlorinated camphene

Chlorinated diphenyl
Chlorine
Chlorine dioxide
Chlorine trifluoride
Chloroacetaldehyde
Chlorobenzene
Chlorobromomethane
Chlorodiphenyl
Chlorodiphenyl
Chloroethane (DDT)
Chloroethylene
Chloroform
Chloromethyl methyl
Chlorophenoxyacetic
Chloropicrin
Chloropropane (DBCP)
Chromates (as CrO(3))
Chromic acid
Chromium (II) compounds
Chromium (III)
Chromium (VI) compounds
Chromium metal
Chrysene; see Coal tar
Clopidol
Coal dust
Coal tar pitch
Cobalt metal, dust
Coke oven emissions
Copper
Cotton dust (e)
Crag herbicide (Sesone)
Cresol, all isomers
Cristobalite
Crotonaldehyde
Crystalline silica
Cumene
Cyanides (as CN)
Cyclohexane
Cyclohexanol
Cyclohexanone
Cyclohexene
Cyclopentadiene
Decaborane
Demeton (Systox)
Diacetone alcohol
Diatomaceous earth
Diazomethane
Diborane
Dibutyl phosphate
Dibutyl phthalate
Dichlorodifluoromethane
Dichlorodiphenyltri-
Dichloroethyl ether
Dichloromethane; see
Dichloromonofluoro-
Dichlorotetrafluoro-
Dichlorvos (DDVP)
Dicyclopentadienyl iron
Dieldrin
Diethyl ether
Diethylamine
Difluorodibromomethane
Diglycidyl ether (DGE)
Dihydroxybenzene
Diisobutyl ketone
Diisobutyl ketone
Diisopropylamine
Dimethoxymethane
Dimethyl acetamide
Dimethyl sulfate
Dimethyl-1,2-dibromo-2
Dimethylamine
Dimethylaminobenzene
Dimethylaniline
Dimethylbenzene
Dimethylformamide
Dimethylphthalate
Dinitrate
Dinitrobenzene
Dinitro-o-cresol
Dinitrotoluene
Dioxane
Diphenyl (Biphenyl)
Diphenylmethane
Dipropylene glycol
Di-sec octyl phthalate
Dust
Dusts and mists
Emery
Endrin
Epichlorohydrin
EPN
Ethanethiol
Ethanolamine
Ether (IGE)
Ethyl acetate
Ethyl acrylate
Ethyl alcohol (Ethanol)
Ethyl amyl ketone
Ethyl benzene
Ethyl bromide

Ethyl butyl ketone
Ethyl chloride
Ethyl ether
Ethyl formate
Ethyl mercaptan
Ethyl mercaptan
Ethyl silicate
Ethylamine
Ethylene chlorohydrin
Ethylene chlorohydrin
Ethylene dibromide
Ethylene dibromide
Ethylene dichloride
Ethylene dichloride
Ethylene glycol
Ethylene glycol methyl
Ethylene oxide
Ethylenediamine
Ethyleneimine
Ethylidene chloride
Ferbam
Ferrovanadium dust
Flour dust (inhalable)
Fluorides (as F)
Fluorine
Fluoromethane
Fluorotrichloromethane
Formaldehyde
Formic acid
Fume (as Cu)
Fume (as V2O5)
Fume and insoluble
Furfural
Furfuryl alcohol
Glycerin (mist)
Glycidol
Glycol monoethyl ether
Grain dust (oat, wheat)
Graphite, natural
Graphite, synthetic
Guthion
Gypsum
Hafnium
Heptachlor
Heptane (n-Heptane)
Heptanone
Hexachloroethane
Hexachloronaphthalene
Hexamethylene diisocyanate
Hexone (Methyl)
Hydrazine
Hydrogen bromide
Hydrogen chloride
Hydrogen cyanide
Hydrogen fluoride
Hydrogen peroxide
Hydrogen selenide
Hydrogen sulfide
Hydroquinone
Iodine
Iron oxide fume
Isobutyl acetate
Isobutyl alcohol
Isobutyl ketone
Isocyanate (MDI)
Isomyl acetate
Isomyl alcohol
Isophorone
Isopropanol
Isopropyl acetate
Isopropyl alcohol
Isopropyl ether
Isopropyl glycidyl
Isopropylamine
Kaolin
Ketene
Lead inorganic (as Pb)
Limestone
Lindane
Lithium hydride
LPG (Liquified)
Magnesite
Magnesium oxide fume
Malathion
Maleic anhydride
Malononitrile
Manganese compounds
Manganese fume (as Mn)
Marble
Metalworking fluids aerosol
Mercaptan
Mercury (aryl)
Mercury (organo) alkyl
Mercury (vapor) (as Hg)
Mesityl oxide
Metal
Methane
Methanethiol
Methoxychlor

Methyl acetate
Methyl acetylene
Methyl acetylene
Methyl acrylate
Methyl alcohol
Methyl amyl alcohol
Methyl bromide
Methyl butyl ketone
Methyl cellosolve
Methyl cellosolve
Methyl chloride
Methyl chloroform
Methyl ether
Methyl ethyl ketone
Methyl formate
Methyl hydrazine
Methyl iodide
Methyl isoamyl ketone
Methyl isobutyl
Methyl isobutyl ketone;
Methyl isocyanate
Methyl mercaptan
Methyl methacrylate
Methyl n-amyl ketone
Methyl nitramine
Methyl propyl ketone
Methylal
Methylamine
Methylcyclohexane
Methylcyclohexanol
Methylene bisphenyl
Methylene chloride
Mica (respirable)
Mica; see Silicates
M-isomer
Mixture, vapor
MOCA 4,4'-Methylenebis#2-chloroaniline#
Molybdenum (as Mo)
Monomethyl aniline
Monomethyl hydrazine
Morpholine
N-Amyl acetate
Naphtha (Coal tar)
Naphthalene
Naphthylthiourea
N-Butyl alcohol
N-Butyl glycidyl ether
N-butyl ketone
N-Butyl-acetate
N-Ethylmorpholine
N-Hexane
Nickel carbonyl (as Ni)
Nickel, metal
Nickel, soluble
Nicotine
Nitramine
Nitric acid
Nitric oxide
Nitrobenzene
Nitroethane
Nitrogen dioxide
Nitrogen trifluoride
Nitroglycerin
Nitromethane
Nitrotoluene
Nitrotrichloromethane
N-Nitrosodimethylamine
N-Propyl acetate
N-Propyl alcohol
N-Propyl nitrate
O-Chlorobenzylidene
Octachloronaphthalene
Octane
O-Dichlorobenzene
Oil mist, mineral
O-isomer
O-Methylcyclohexanone
Osmium tetroxide
O-Toluidine
Oxalic acid
Oxide dust
Oxides (as Sn)
Oxyacetic acid
Oxygen difluoride
Ozone
Paraquat, respirable
p-Benzoquinone
p-Dichlorobenzene
Pentaborane
Pentachloride
Pentachloronaphthalene
Pentachlorophenol
Pentaerythritol
Pentane
Perchloroethylene
Perchloromethyl
Perchloryl fluoride
Petroleum distillates
Petroleum gas
Phenanthrene
Phenol

Phenyl ether, vapor
Phenyl ether-biphenyl
Phenyl glycidyl ether
Phenylethylene
Phenylhydrazine
Sodium hydroxide
Stoddard Solvent
Styrene
Tetrafluoroethylene
Tin, organic compounds
Titanium dioxide
Toluene
Toxaphene
Tremolite
Tributyl phosphate
Trichloroethylene
Trichloromethane
Trichloronaphthalene
Tridymite
Triethylamine
Trifluorobromomethane
Triorthocresyl
Triphenyl phosphate
Tripoli (as quartz)
Turpentine
Uranium (as U)
Vanadium
Vegetable oil mist
Vinyl benzene
Vinyl chloride
Vinyl cyanide
Vinyl toluene
Warfarin
Wood dust, all species except Western Red Cedar
Xylenes
Xylidine
Yttrium
Zinc chloride fume
Zinc oxide
Zinc oxide fume
Zinc stearate
Zirconium compounds

Toxic Substances

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

Weights of Common Objects

Weight (lbs.)	Description
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)
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

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Glossary

Accommodation

A modification or adjustment to a job or change in the work environment that enables a person with a disability to compete equally or carry out the position's work (e.g., tasks, duties, responsibilities) as generally performed.

Adaptability

Measures the frequency and source of changes in the work schedule, tasks and location.

Alternate Sit/Stand or Stand/Walk At Will

Worker is allowed the flexibility to stand, walk, or sit with a degree of choice (at will), where this need cannot be accommodated by the scheduled breaks and a lunch period.

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.

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 set 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

Crawling

Moving about on hands and knees or hands and feet

Crouching

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

Carrying

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

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.

Driving

Driving is the operation of a passenger vehicle or other conveyance. A passenger vehicle is an automobile, van, or bus. Other vehicles may include trains and airplanes.

Duration

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

Duration Formula

Percent of Time = [(#repetitions per time period x time to perform each repetition/time period]

Duration Scale

Scale used to measure the duration of an activity being performed. Used in the collection of lifting/carrying (i.e., weight) and as a fallback for all other data elements. 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).

Exertion

The physical effort that a worker uses to complete a task. A worker will have great levels of exertion when lifting for longer periods or higher frequencies, even when the weight is light. Similarly, pushing and pulling an item with little resistance at a high frequency requires greater exertion, even though the force is minimal.

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). Indoor and job-related exposure only.

Extreme Heat

Above 85 degrees with humidity and above 90 degrees in a dry atmosphere. Indoor and job-related exposure only.

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

Manipulation with the foot or leg as opposed to the exertion of force.

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.

Interaction

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

Job

A group of workers in an establishment that have the same position. The term job refers to a single position in a single company, whereas occupation refers to a profession or trade. Example: “waiters at Smith’s Restaurant” is a job, whereas “waiters” is an occupation.

Keyboarding

Entering text or data into a computer or other machine by means of a keyboard. Devices include traditional keyboard, 10-key pad, touch screen, and other.

Kneeling

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

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 gear, 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.

Occasional

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

Occupation

A generalized job or family of jobs common to many industries and areas, such as an economist or carpenter.

Outdoors

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

Overhead Reaching

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 of Work - Slow

The pace is unhurried and the workload is constant. A worker may have sufficient time between tasks to complete the previous one and may spend time observing or waiting

Pace of Work - Moderate

This pace is steady and the workload is constant. On rare occasions, there may be episodes of faster paced work.

Pace of Work – Fast

This is a rapid pace and the workload is constant. A worker has little downtime between completing a task and performing another or receiving a new assignment.

Pace of Work – Variable

The pace changes repeatedly throughout the day or from day-to-day. There are markedly faster and slower periods of work driven by changing workload demands.

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.

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 required training before being hired.

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.

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

Straightening and extension of the arm and elbow and the engagement of the shoulder. The elbow does not need to be locked and the arm does not need to remain in a continuously straight position.

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 (RHAJ)

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.

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

This includes active sitting such as riding a bike, inactive sitting, lying prone, or choosing between sitting and standing.

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/worker situation. (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 body downward and forward by bending the spine at the waist, requiring full use of the lower extremities and back muscles. Stooping is considered standing. A worker cannot sit and stoop.

Strength

The capacity for exertion or endurance.

Task

A distinct activity, in the logical and necessary steps of work performed by an individual, which results in a meaningful outcome.

Threshold

A level at which something will take place and below which it will not.

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

Work as generally performed refers to the way in which most workers normally perform tasks. Collection should include occupational information representative of the typical duties performed or a "snapshot" of the occupation.

Work-driven

Work process drives the pace. The worker must keep up and continuously meet production standards.

Worker-driven

The worker controls the pace of work.