

Industry and Occupation

This document was developed by the Data Standardization Work Group (DSWG) of the Council of State and Territorial Epidemiologists (CSTE) Surveillance Practice and Implementation Subcommittee (SPIS) as a part of a larger data harmonization effort. It will be published and maintained in a repository on the CSTE website.

More information about the DSWG and data harmonization can be found here: [link to DSWG Core Surveillance Project Brief (pending)].

Background

The Industry and Occupation data class addresses the present and/or past work history of an individual and includes data elements relating to the individual's overall industry and occupation, both current and usual, their employment status and dates, and if they work in specific roles or positions that might be relevant to the condition being investigated. The industry typically refers to the type of business where someone works, such as a hospital, school, or restaurant, while the occupation refers to the type of work a person does, such as a nurse, teacher, or a chef. Collecting work history as part of case-based surveillance allows for investigation into potential exposures to a condition, may guide the creation of specific work-related prevention messaging for certain conditions, and help identify occupational health inequities. [CSTE Policy Brief 24-PB-EHOH-01 Inclusion of Industry and Occupation as Core Demographic Variables in Public Health Surveillance](#) advocates for the collection and transmission of standardized industry and occupation data.

In recent years, a standard template has been incorporated into condition-specific National Notifiable Diseases Surveillance System (NNDSS) message mapping guides (MMGs) to capture industry and occupation data within case notifications to CDC. This standard template consists of the four data elements listed below. Jurisdictions are able to send both occupation and industry as either a free text field or a standardized code from CDC-developed code systems, which consist of the 2010 U.S. Census Bureau occupation codes and the 2007 U.S. Census Bureau industry codes with modifications made by CDC for unpaid workers and military occupations.

Table 1. Data elements present within the standard template for Industry and Occupation utilized across NNDSS MMGs.

Data Element (Identifier)	Description	Value Set
Current Occupation (85658-3)	This data element is used to capture the narrative text of a subject's current occupation.	N/A – Free Text
Current Occupation Standardized (85659-1)	This data element is used to capture the CDC NIOSH standard occupation code based upon the narrative text of a subject's current occupation.	Occupation CDC Census 2010
Current Industry (85078-4)	This data element is used to capture the narrative text of a subject's current industry.	N/A – Free Text
Current Industry Standardized (85657-5)	This data element is used to capture the CDC NIOSH standard industry code based upon the narrative text of a subject's current industry.	Industry CDC Census 2010

The “Standardized” data elements are both associated with CDC Census 2010 value sets. Instead, the National Institute for Occupational Safety and Health (NIOSH) recommends use of the North American

Industry Classification Scheme (NAICS) or the Standard Occupational Classification (SOC) value sets for industry and occupation, respectively. The CDC Occupational Data for Health code system, considered to be the applicable vocabulary standard in USCDI, utilizes NAICS for the “Industry NAICS Detail (ODH)” value set and Occupational Information Network (ONET) SOC based codes for the “Occupation ONETSOC Detail (ODH)” value set. The Census codes are intentionally less detailed in order to protect privacy; however, the additional detail as well as the hierarchical nature of the NAICS/SOC value sets adds useful information about relationships between the codes. Furthermore, cross-walking from the NAICS/SOC codes to the Census codes is a simple process that can be undertaken when less detail is deemed necessary.

NIOSH has developed a web-based software tool, the [NIOSH Industry and Occupational Computerized Coding System \(NIOCCS\)](#), designed to translate industry and occupation free text into standardized industry and occupation codes. In addition to this autocoder being much faster than manual coding, it allows for greater consistency in code mapping and can output either Census, NAICS, or SOC codes as desired. However, implementation of this tool varies greatly across PHAs, and therefore, “Current Industry Standardized” and “Current Occupation Standardized” are often not available in jurisdiction surveillance systems or to transmit to CDC.

In addition to the standard Industry/Occupation template used in many MMGs, other data elements relevant to this data class have been included in condition-specific MMGs. For example, data elements such as “Case Patient a Healthcare Worker”, “Day Care Worker Within 7 Days Before Illness” and “Food Handler” are aiming to determine if the person had a potential occupation-related exposure. In some communicable disease scenarios, these data elements may also provide information for public health action and infection control when a case has been identified in a specific work setting or work location.

Core Surveillance Industry and Occupation Data Elements for Routine Case Notifications

The data elements below are those that the DSWG agreed to define as core surveillance data for case notifications to CDC. For each of these data elements, there is no pre-defined default value for what should be transmitted when the data element has not been populated. Refer to Tables 2-6 below for definitions and additional information for each data element.

- **Current Employment Status**
- Current Industry
- Current Industry Standardized
- Current Occupation
- Current Occupation Standardized

Discussion occurred around the use of the term “current” within these definitions. Options considered included specifying “current” as a date associated with the case, the exposure period for the case, or a more general time of event. Ultimately the group decision was to leave the definitions as simply “current” as these data elements are more demographic-level than case-related, can be abstracted from eCR if “current” is not defined in a potentially conflicting way, and defining further was seen as adding too much complexity when trying to meet all potential use cases. A data element to capture whether the exposure to the condition is related to the current occupation was also discussed, but it was decided to instead consider this concept as a part of the Exposure/Risk Factor data class conversation.

Table 2. Core Surveillance Data Element for Routine CDC Case Notification – Current Employment Status

Current Employment Status	
Definition	Person's relationship to working for pay, family earnings, or training (e.g. having one or more jobs, searching for work, etc.) -or- Person's relationship to working for pay or family earnings (e.g. having one or more jobs, searching for work, etc.)
Standard Code for Transmission to CDC	LOINC: 67875-5 Employment status - current
Value set or coding system	Employed (Full-time or part-time) Unemployed (Not employed and seeking employment) Not in Labor Force (Not working and not seeking employment; e.g., retired, student) Not asked - <i>(If this is not used in most of our other data elements, is just "unknown" sufficient for transmission to CDC?)</i> Refused - <i>(If this is not used in most of our other data elements, is just "unknown" sufficient for transmission to CDC?)</i> Unknown
Abstracted/ Derived/ Created	Abstracted
Derived From	N/A
Recommendations for Input Data Source(s)	- Case investigation - eCR
Notes	Volunteer work would not be considered "Employed". Someone who is retired or a student and not seeking employment would be considered "Not in Labor Force", while someone who is retired or a student and also working for pay would be considered "Employed".
Data Source Details	
eCR CDA	History of Employment Status Observation transmits a clinical statement about the patient's state of being employed: Definition: a clinical statement about a person's relationship to working for pay, family earnings, or training (e.g. having one or more jobs, searching for work, etc.) History of Employment Status Observation - Observation/code = LOINC 74165-2 History of Employment Status - Observation/value = Value set: Employment Status ODH - Employed, Not in Labor Force, Unemployed
eCR FHIR	The FHIR resource profile for Employment Status utilizes the same value set as CDA to define observation values: https://build.fhir.org/ig/HL7/us-odh/StructureDefinition-odh-EmploymentStatus.html Observation.component.code = 74165-2, History of Employment Status
ELR	Occupational data for health (ODH) are not typically collected and transmitted via ELR, although specific work-related data elements were collected as an Ask on Order Entry (AOE) data element during the COVID-19 response. While ODH segments (OH1 and OH2) for transmitting patient employment status, industry and occupation information are defined in the HL7 v2.9 standard, they are not part of the ELR implementation guide and are not commonly collected as a part of a clinical laboratory workflow.
USCDI v4	Employment Status is not currently contained in a published version of USCDI. Employment Status is currently listed as a Level 1 data element.
USCDI+ Public Health: Case Reporting Use Case	This is not a data element within the Public Health Case Reporting Use Case. However, it is part of the Patient Demographics/Information data class in the Quality Overarching Use Case:

	• Employment Status: A person's self-reported, coded relationship to working for pay, family earnings, or training (e.g. having one or more jobs, searching for work, etc.).
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Interpretation Notes

[NIOSH recommendations](#) specify that this data element conveys information about someone's potential financial resources, benefits, and demands which can impact their health. It is not intended to capture the type of work someone is engaged in (e.g., full-time, part-time, work from home). Volunteer work would not be considered "Employed", but information on the type of volunteer work someone may still be captured in Current Industry and Current Occupation: the recommendations specify that volunteer work should be included in Current Industry and Current Occupation if the volunteer work is as an emergency/first responder, or if the volunteer work is at least 20 hours/week.

Table 3. Core Surveillance Data Element for Routine CDC Case Notification – Current Industry

Current Industry	
Definition	Narrative text of a person's current industry
Standard Code for Transmission to CDC	LOINC: 85078-4 Occupation industry
Value set or coding system	N/A - Text
Abstracted/ Derived/ Created	Abstracted
Derived From	N/A
Recommendations for Input Data Source(s)	• Case investigation • eCR
Notes	If a jurisdiction is able to utilize the NIOCCS autocoder, the free text for current industry is lower priority for transmission to CDC than the standardized code and standardized text.
Data Source Details	
eCR CDA	As defined in the implementation guide for eCR, the industry and occupation fields utilize standardized coding systems rather than free text entries: Definition: Type of business (industry) in which the subject currently holds a job. Past or Present Industry Observation (V2) • Observation/code = LOINC 86188-0 History of Occupation Industry • Observation/value = Value set: Industry CDC Census 2010 • Observation/value/translation = Value set: Industry NAICS Detail (ODH) • Note: To indicate "Current Industry", Observation/statusCode="active" and Observation/effectiveTime/high is omitted.
eCR FHIR	The FHIR resource profile for past or present job utilizes standardized coding systems to define observation values rather than free text entries: http://hl7.org/fhir/us/odh/STU1.1/StructureDefinition-odh-PastOrPresentJob.html • Observation.component.code = 86188-0, History of Occupation Industry
ELR	Occupational data for health (ODH) are not typically collected and transmitted via ELR, although specific work-related data elements were collected as an Ask on Order Entry (AOE) data element during the COVID-19 response. While ODH segments (OH1 and OH2) for transmitting patient employment status, industry and occupation information are defined in the HL7 v2.9 standard, they are not part of the ELR implementation guide and are not commonly collected as a part of a clinical laboratory workflow.
USCDI v4	Patient Demographics/Information data class: • Occupation Industry: Type of business that compensates for work or assigns work to an unpaid worker or volunteer. Examples include but are not limited to U.S. Army, cement manufacturing, and children and youth services.
USCDI+ Public Health: Case Reporting Use Case	Patient Demographics data class: • Current Industry: Type of business (industry) in which the subject currently holds a job.

Table 4. Core Surveillance Data Element for Routine CDC Case Notification – Current Industry Standardized

Current Industry Standardized	
Definition	The CDC NIOSH standard industry code and standard text based upon the narrative text of a person's current industry.
Standard Code for Transmission to CDC	LOINC: TBD (New LOINC codes that do not explicitly reference the Census value sets may need to be requested prior to implementation.)
Value set or coding system	North American Industry Classification System (NAICS) 2017 (Future implementations may consider newer versions)
Abstracted/ Derived/ Created	Abstracted or Derived
Derived From	The free text from Current Industry can be run through the NIOCCS autocoder for mapping to a NAICS standardized code
Recommendations for Input Data Source(s)	• Case investigation • eCR
Notes	If a jurisdiction is able to utilize the NIOCCS autocoder, the standardized code and standardized text for current industry is higher priority for transmission to CDC than the narrative free text. An update to this data element from the current MMG template is to adopt the NAICS over Census codes.
Data Source Details	
eCR CDA	Definition: Type of business (industry) in which the subject currently holds a job. Past or Present Industry Observation (V2) • Observation/code = LOINC 86188-0 History of Occupation Industry • Observation/value = Value set: Industry CDC Census 2010 • Observation/value/translation = Value set: Industry NAICS Detail (ODH) • Note: To indicate "Current Industry", Observation/statusCode="active" and Observation/effectiveTime/high is omitted.
eCR FHIR	http://hl7.org/fhir/us/odh/STU1.1/StructureDefinition-odh-PastOrPresentJob.html • Observation.component.code = 86188-0, History of Occupation Industry
ELR	Occupational data for health (ODH) are not typically collected and transmitted via ELR, although specific work-related data elements were collected as an Ask on Order Entry (AOE) data element during the COVID-19 response. While ODH segments (OH1 and OH2) for transmitting patient employment status, industry and occupation information are defined in the HL7 v2.9 standard, they are not part of the ELR implementation guide and are not commonly collected as a part of a clinical laboratory workflow.
USCDI v4	Patient Demographics/Information data class: • Occupation Industry: Type of business that compensates for work or assigns work to an unpaid worker or volunteer. Examples include but are not limited to U.S. Army, cement manufacturing, and children and youth services.
USCDI+ Public Health: Case Reporting Use Case	Patient Demographics data class: • Current Industry: Type of business (industry) in which the subject currently holds a job.

Table 5. Core Surveillance Data Element for Routine CDC Case Notification – Current Occupation

Current Occupation	
Definition	Narrative text of a person's current occupation
Standard Code for Transmission to CDC	LOINC: 85658-3 Occupation
Value set or coding system	N/A - Text
Abstracted/ Derived/ Created	Abstracted
Derived From	N/A
Recommendations for Input Data Source(s)	- Case investigation - eCR
Notes	If a jurisdiction is able to utilize the NIOCCS autocoder, the narrative free text for current occupation is lower priority for transmission to CDC than the standardized code and standardized text.
Data Source Details	
eCR CDA	As defined in the implementation guide for eCR, the industry and occupation fields utilize standardized coding systems rather than free text entries: Definition: Occupation which the subject currently holds. Past or Present Industry Observation (V2) - Observation/code = LOINC 11341-5 History of Occupation - Observation/value = Value set: Occupation CDC Census 2010 - Observation/value/translation = Value set: Occupation ONETSOC Detail (ODH) - Note: To indicate "Current Industry", Observation/statusCode="active" and Observation/effectiveTime/high is omitted.
eCR FHIR	The FHIR resource profile for past or present job utilizes standardized coding systems to define observation values rather than free text entries: http://hl7.org/fhir/us/odh/STU1.1/StructureDefinition-odh-PastOrPresentJob.html Observation.code = 11341-5, History of Occupation
ELR	Occupational data for health (ODH) are not typically collected and transmitted via ELR, although specific work-related data elements were collected as an Ask on Order Entry (AOE) data element during the COVID-19 response. While ODH segments (OH1 and OH2) for transmitting patient employment status, industry and occupation information are defined in the HL7 v2.9 standard, they are not part of the ELR implementation guide and are not commonly collected as a part of a clinical laboratory workflow.
USCDI v4	Patient Demographics/Information data class: Occupation: Type of work of a person. Examples include but are not limited to infantry, business analyst, and social worker.
USCDI+ Public Health: Case Reporting Use Case	Patient Demographics data class: Current Occupation: Occupation which the subject currently holds.

Table 6. Core Surveillance Data Element for Routine CDC Case Notification – Current Occupation Standardized

Current Occupation Standardized	
Definition	The CDC NIOSH standard occupation code and standard text based upon the narrative text of a person's current occupation.
Standard Code for Transmission to CDC	LOINC: TBD (New LOINC codes that do not explicitly reference the Census value sets may need to be requested prior to implementation.)
Value set or coding system	Standard Occupational Classification 2018 (SOC) (Future implementations may consider newer versions)
Abstracted/ Derived/ Created	Abstracted or Derived
Derived From	The free text from Current Occupation can be run through the NIOCCS autocoder for mapping to a SOC standardized code
Recommendations for Input Data Source(s)	• Case investigation • eCR
Notes	If a jurisdiction is able to utilize the NIOCCS autocoder, the standardized code and standardized text for current occupation is higher priority for transmission to CDC than the narrative free text. An update to this data element from the current MMG template is to adopt the SOC over Census codes
Data Source Details	
eCR CDA	Definition: Occupation which the subject currently holds. Past or Present Industry Observation (V2) • Observation/code = LOINC 11341-5 History of Occupation • Observation/value = Value set: Occupation CDC Census 2010 • Observation/value/translation = Value set: Occupation ONETSOC Detail (ODH) • Note: To indicate "Current Industry", Observation/statusCode="active" and Observation/effectiveTime/high is omitted.
eCR FHIR	http://hl7.org/fhir/us/odh/STU1.1/StructureDefinition-odh-PastOrPresentJob.html • Observation.code = 11341-5, History of Occupation
ELR	Occupational data for health (ODH) are not typically collected and transmitted via ELR, although specific work-related data elements were collected as an Ask on Order Entry (AOE) data element during the COVID-19 response. While ODH segments (OH1 and OH2) for transmitting patient employment status, industry and occupation information are defined in the HL7 v2.9 standard, they are not part of the ELR implementation guide and are not commonly collected as a part of a clinical laboratory workflow.
USCDI v4	Patient Demographics/Information data class: • Occupation: Type of work of a person. Examples include but are not limited to infantry, business analyst, and social worker.
USCDI+ Public Health: Case Reporting Use Case	Patient Demographics data class: • Current Occupation: Occupation which the subject currently holds.