Supplemental Table 1 – Potential for Strengthening Existing CDC/CDC-Supported Datasets through Comprehensive Collection of Industry and Occupation -

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| **Survey Name** | **Potential Enhancements** | **Primary Benefits of enhancement** | **Additional benefits** |
| Behavioral Risk Factor Surveillance System (BRFSS) | Include I&O on BRFSS core annually (i.e., to be asked nationally of all employed, self-employed, or recently employed) | Allow national assessment of health equity issues; allow assessment of trends | Allow analysis of I&O data along with information collected in optional equity-related modules. Cannot currently be done because too few states administer both I&O and equity modules |
| National Health Interview Survey (NHIS) | Annual collection of I&O on core survey (as was practice prior to 2019) | Ensure I&O can be analyzed with variables that rotate.  | Facilitate analysis of more detailed I&O groups by increasing sample size in contiguous years. |
| National Health and Nutritional Examination Survey (NHANES) | Return to collecting industry, along with occupation (as was practice prior to 2015) | Facilitate assessment of work-relatedness of findings from biological samples because exposures often differ among workers with the same occupation who work in different industries | Biological data, together with I&O, could allow evaluation of whether burden of exposure in a workforce falls disproportionately on employees from minoritized groups. |
| Pregnancy Risk Assessment Monitoring System (PRAMS) | Include employment-related questions on core survey, rather than optional question set. | Permit assessment of work-relatedness of pregnancy experiences and outcomes on full sample. | Facilitate use of dataset to assess equity issues such as the role of work in access to prenatal care by having employment and economic questions together. |

Appendix A. List and description of selected data systems reviewed for work-related information.

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| **Selected Data Systems** | **Data System Placement and CDC/CIO Role for non-CDC Systems** |
| [Adult Blood Lead Epidemiology & Surveillance (ABLES)](https://www.cdc.gov/niosh/topics/ables/default.html)ABLES collects blood lead levels (BLL) data among working adults 16 years or older from state programs. Industry is collected for exposures thought to be work-related. The dataset is used to examine trends and guide interventions to prevent work-related lead exposures. In 2019, 37 states participated in the ABLES program.  | CDC/National Institute for Occupational Safety and Health (NIOSH) |
| [Behavioral Risk Factor Surveillance System (BRFSS)](https://www.cdc.gov/BRFSS/)A state-based telephone system of health surveys that collects information on health-related behaviors, health care access and utilization, and chronic health conditions. Data are collected monthly in all 50 states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and Guam. Industry and Occupation are not on the core survey; they are included in a module that states and other entities can opt to administer. | CDC system. NIOSH sponsors an optional industry and occupation module and an asthma call-back survey. |
| [Childhood Blood-Lead Poisoning Surveillance System (CBLS)](https://www.cdc.gov/NCEH/lead/about/program.htm)CBLS compiles blood blead surveillance data for children <16 years of age who were tested at least once since January 1, 1997. The national surveillance system is composed of de-identified data from state and local health departments in all 50 states and the District of Columbia. No work-related information is collected, despite the possibility of take-home lead exposure from the workplaces of adult household members. | CDC/National Center for Environmental Health |
| [Coal Workers’ Health Surveillance Program (CWHSP)](https://www.cdc.gov/niosh/topics/cwhsp/default.html)The CWHSP collects data on coal workers’ pneumoconiosis occurrence by state, year, age, and tenure. The x-rays included in this system are obtained from different surveillance programs.  | CDC/NIOSH |
| [Commercial Fishing Incident Database (CFID)](https://www.cdc.gov/niosh/topics/fishing/)CFID is a surveillance system at NIOSH that collects data on deaths in the U.S. commercial fishing industry and identifies high-risk fisheries. Data is from sources in each state, including reports from the U.S. Coast Guard, local law enforcement, and local media; death certificates; and state-based occupational fatality surveillance programs.  | CDC/NIOSH |
| [National Agricultural Workers Survey (NAWS)](https://www.cdc.gov/niosh/topics/aginjury/naws/default.html)NAWS is the only national level surveillance system providing health and healthcare services information for agricultural workers. NAWS includes information for hired crop workers on U.S. farms aged 14 years and older, regardless of worker documentation status. Trained interviewers conduct face-to-face interviews with a national probability sample of workers identified through sampling at their farm location. Between 1,500 and 2,000 workers are interviewed each year. NIOSH has sponsored occasionally sponsored the addition of questions about injury, and, more recently, questions related to COVID-19. | U.S. Department of LaborNIOSH has sponsored specific questions |
| [National Health and Nutrition Examination Survey (NHANES)](https://www.cdc.gov/nchs/nhanes/index.htm)NHANES is a program of studies designed to assess the health and nutritional status of civilian, noninstitutionalized adults and children in the United States. The NHANES interview includes demographic, socioeconomic, dietary, and health-related questions. The examination component consists of medical, dental, and physiological measurements, as well as laboratory tests. The survey collects data from a nationally representative sample of about 5,000 persons each year. NHANES collected both I&O through 2014; between 2015 and 2023, only occupation has been collected.  | CDC/National Center for Health Statistics (NCHS) |
| [National Health Interview Survey (NHIS)](https://www.cdc.gov/nchs/nhis/index.htm)NHIS is a cross-sectional household interview survey. The target population for the NHIS is the civilian noninstitutionalized population residing within the 50 states and the District of Columbia at the time of the interview. Most interviews are conducted in the respondent’s home. Core information includes data on chronic conditions, functioning and disability, health insurance, health care access and use, health-related behaviors, and demographics. NHIS previously collected I&O annually, but now collects them in only two of three consecutive years. In 2010, 2015, and 2021, NIOSH sponsored a number of work-related questions in Occupational Health Supplements administered to study participants.  | CDC/NCHS |
| [National Occupational Mortality Surveillance System (NOMS)](https://www.cdc.gov/niosh/topics/NOMS/) / National Vital Statistics System (NVSS)NOMS is a collaboration with the NVSS to code Industry and Occupation narratives to standardized codes to allow quantitative analysis. NOMS monitors changes in cause of death by usual occupation or industry in the United States. Data provides information on high disease mortality, high risk occupations, and information gaps to set priorities. NOMS data include all men and women employed in a usual occupation or industry (work done during most of working life, reported by funeral directors in death registration systems), ages 15 and older, who died at any time during the years of the program (2020 forward).  | CDC – collaboration between NCHS and NIOSH |
| [National Violent Death Reporting System (NVDRS)](https://www.cdc.gov/violenceprevention/datasources/nvdrs/index.html)NVDRS collects information about violent deaths, including homicides, suicides, and deaths where individuals are killed by law enforcement acting in the line of duty. NVDRS also gathers information about unintentional firearm-related deaths, and deaths where the intent cannot be determined, that might have been due to violence. It combines data from police reports, death certificates, coroners’ reports, medical examiners’ offices, and medical providers. NVDRS is implemented in all 50 states, the District of Columbia, and Puerto Rico.  | CDC/National Center for Injury Prevention and Control |
| [Pregnancy Risk Assessment Monitoring System (PRAMS)](https://www.cdc.gov/prams/)PRAMS collects state-specific, population-based data on maternal attitudes and experiences before, during, and after pregnancy. PRAMS surveillance currently covers about 81% of all U.S. births. The only work-related questions on the core survey elicit household-level information about income and insurance coverage. Other work-related items appear on a list of standardized questions states and other entities can opt to administer. | CDC (multiple centers) |
| [Quality of Worklife (QWL)](https://www.cdc.gov/niosh/topics/stress/qwlquest.html) module of General Social Survey NIOSH sponsors a special module assessing the quality of worklife as part of the General Social Survey (GSS). The GSS is a biannual, nationally representative, personal interview survey of U.S. households conducted by the National Opinion Research Center and funded by the National Science Foundation. The QWL examines multiple topics related to the quality of worklife, along with questions about physical and mental health. Starting in 2002, the QWL has been administered every four years.  | GSS – NORC NIOSH sponsors QWL module |
| [Sentinel Event Notification System for Occupational Risks – Pesticides (SENSOR-Pesticides)](https://www.cdc.gov/niosh/topics/pesticides/overview.html)SENSOR builds and maintains occupational illness and injury surveillance capacity within state health departments. One of the illnesses supported under SENSOR is acute occupational pesticide-related illness and injury. Thirteen states participate in the SENSOR-Pesticides program. | CDC/NIOSH |
| [Youth Risk Behavior Surveillance System (YRBSS)](https://www.cdc.gov/HealthyYouth/yrbs/index.htm)YRBSS monitors health-related behaviors (behaviors that contribute to unintentional injuries and violence, sexually transmitted diseases and unintended pregnancy, tobacco use, alcohol and other drug use, unhealthy dietary behaviors, and physical inactivity) as well as the prevalence of obesity and asthma among youth and young adults. YRBSS is a system of surveys that includes a national school-based survey and local surveys in representative samples of students in grades 9–12. | CDC/National Center for HIV, Viral Hepatitis, STD, and TB Prevention |

Appendix B – Conceptual Organization of Work Arrangements, with Applicability to NHIS-OHS

Describing work arrangements can involve a two-tiered approach. The first tier, described in detail in Howard (2017), is a legal approach to classifying employed, co-employed, and nonemployee workers. Examples of workers in these categories include workers in standard work arrangements (employed), temporary help agency workers (co-employed), and independent contractors (nonemployee workers).

The second tier is based on important elements of all work arrangements that vary by arrangement (e.g., stable and adequate pay, access to health insurance, paid leave, and retirement benefits, a regular, full-time work schedule, and the ability to negotiate one’s schedule and take time off). Therefore, work arrangements include partial, augmented information on employment status, as well as several other working conditions.

Several household surveys use a similar first-tier approach to broadly classify workers as employed, co-employed, or nonemployees when considering their main job. An important example is the Contingent Worker Supplement (CWS) of the Current Population Survey (CPS), administered by the BLS. CWS uses several questions to classify an individual’s type of work arrangement and defines the following nonstandard (or alternative) arrangements (see <https://www.bls.gov/cps/contingent-and-alternative-arrangements-faqs.htm#alternative>):

* Temporary help agency workers—Workers who were paid by a temporary help agency, whether or not their job was temporary
* Workers provided by contract firms—Workers who are employed by a company that provides them or their services to others under contract and who are usually assigned to only one customer and usually work at the customer’s worksite
* Independent contractors—Workers who were identified as independent contractors, independent consultants, or freelance workers, whether they were self-employed or wage and salary workers
* On-call workers—Workers who are called to work only as needed, although they can be scheduled to work for several days or weeks in a row

These categories, along with information on self-employment, allow categorization of workers into mutually-exclusive arrangement categories.

Other surveys, such as the QWL and the NHIS OHS of 2010 and 2015, use questions similar to those by CWS but do not provide definitions for each work arrangement category and may combine data from different categories. The 2010 NHIS OHS asked *Which of the following best describes your work arrangement?* In 2010, the response options on which work arrangement that best described the respondents’ arrangement were (1) independent contractor, independent consultant, or freelance worker; (2) on-call, and work only when called to work; (3) paid by a temporary agency; (4) work for a contractor who provides workers and services to others under contract; (5) a regular, permanent employee (standard work arrangement); and (6) other. In 2015, response option (2) was dropped and options (3) and (4) were combined in the public use dataset because of small numbers in each category. To compare the results over time, responses from both years would have to be combined into four categories: (1) standard (option 5); (2) independent (Option 1); (3) Temporary or contract (2010 options 3 and 4); and (4) other (2010 options 2 and 6). The 2022 QWL included response options 1-5 listed above.

To better understand first-tier responses, the 2021 NHIS section on work arrangements asked respondents if their employer deducts or withholds taxes from their pay. This aimed to distinguish among workers who were employed or co-employed from other workers.

A concept related but not identical to work arrangements is that of contingent workers. These are workers with a job that they do not expect to last (see alternative definitions used by the Bureau of Labor Statistics (BLS) with the Contingent Work Survey (BLS [2005] Contingent and alternative employment arrangements. Washington DC: U.S. Department of Labor, Bureau of Labor Statistics, <https://www.bls.gov/news.release/pdf/conemp.pdf>). Because concepts such as safety climate, work arrangements, and flexibility are not consistently defined, it is important for readers of the current study to understand the specific definitions used by each data system we evaluated.