

August 12, 2024

Office of Management and Budget
725 17th Street NW
Washington, DC 20503

Re: Review of the 2018 Standard Occupational Classification (SOC) Manual

Submitted electronically via www.regulations.gov

Dear Standard Occupational Code Policy Committee (SOCPC):

We appreciate the opportunity to contribute to the Standard Occupational Classification (SOC) update for 2028. **It is the undersigned organizations' position that the SOC manual update must include dedicated "clinical informatics" codes under each profession in the Healthcare Practitioners and Technical Occupations section (29-0000).**

29-XXXX Clinical Informaticians

Professionals who treat patients and populations using information and information technology to assess delivery of healthcare services, outcomes, cost, and safety data. May be concerned with the improvement of such healthcare systems ability to treat patients and patient populations. Excludes: "Medical Records Specialists" (29-2072) and "Health Information Technologists and Medical Registrars" (29-9021).

Illustrative examples: Chief Medical Information Officer, Clinical Informatics Analyst, Clinical Informatics Nurse

This code should be included as an option under the following professions:

- Chiropractors
- Dentists
- Dietitians and Nutritionists
- Optometrists
- Pharmacists
- Physician Assistants
- Podiatrists
- Therapists
- Veterinarians
- Registered Nurses
- Nurse Anesthetists
- Nurse Midwives
- Nurse Practitioners
- Audiologists
- Physicians
- Surgeons
- Miscellaneous Healthcare Diagnosing or Treating Practitioners
- Clinical Laboratory Technologists and Technicians
- Diagnostic Related Technologists and Technicians
- Emergency Medical Technicians and Paramedics
- Health Practitioner Support Technologists and Technicians

- Licensed Practical and Licensed Vocational Nurses
- Miscellaneous Health Technologists and Technicians

Clinical informatics professionals likely currently fall under “All Other” categories within SOC code 29-0000, making it difficult to collect specific information on the occupation. Our organizations have been long time advocates for the inclusion of a dedicated “Clinical Informatics” code in the SOC and other federal occupational code systems, including the Occupational Information Network (O*NET). In 2014, the American Medical Informatics Association (AMIA), the Healthcare Information and Management Systems Society (HIMSS), and over 50 other organizations proposed three possible new codes relevant to the field; Health Informatics occupation (29-9021), HIM occupation (29-9022) and Health IT occupation (29-9023), with the Health IT occupation code being accepted and integrated into the SOC in 2018. In 2023, 42 organizations submitted an [application](#) to O*NET¹ to further study the “Clinical Informatics” field. O*NET has a code, the Health Informatics Specialist code (15-1211.01), but this code did not adequately capture the breadth of the field. Based on the information provided in our application and other resources, this code 15-211.01 is currently being updated to better reflect clinical informatics.

The proposed Health Informatics occupation code was denied inclusion in the 2018 SOC manual update based on Principle 9, due to a lack of data. Classification Principle 9 deals with “collectability” – that is, whether data can be collected on the occupation.

Principle 9:

9. The U.S. Bureau of Labor Statistics and the U.S. Census Bureau are charged with collecting and reporting data on total U.S. employment across the full spectrum of SOC major groups. Thus, for a detailed occupation to be included in the SOC, either the Bureau of Labor Statistics or the Census Bureau must be able to collect and report data on that occupation.

Given this feedback, AMIA assessed the occupation.

Medical informatics, increasingly known as “biomedical informatics”, is the science of how to use data, information, and knowledge to improve human health and the delivery of health care services. In a medical context, informatics is an “important tool to control and address public health concerns using an interprofessional team of physicians, nurses, pharmacists, and public health workers,” and potentially other medical professionals. For example, informatics is necessary in tracking immunizations, implementing plans for community health care access, and ensuring patient record privacy and safety. Understanding the salary ranges and factors influencing compensation among health informatics faculty is crucial for ensuring equitable remuneration and fostering career development. A standard code for clinical informatics will support the standardization of gathering this information.

Based on feedback from the Department of Labor staff following our failed submission in 2014, AMIA consulted with a third-party labor market analytics firm, Lightcast, and provided

¹ Need for “Clinical Informatics” Occupational Code. Comments to the U.S. Department of Labor. October 30, 2023. <https://brand.amia.org/m/4200370353924878/original/Occupational-Code-Assignment-Application-2023.pdf>

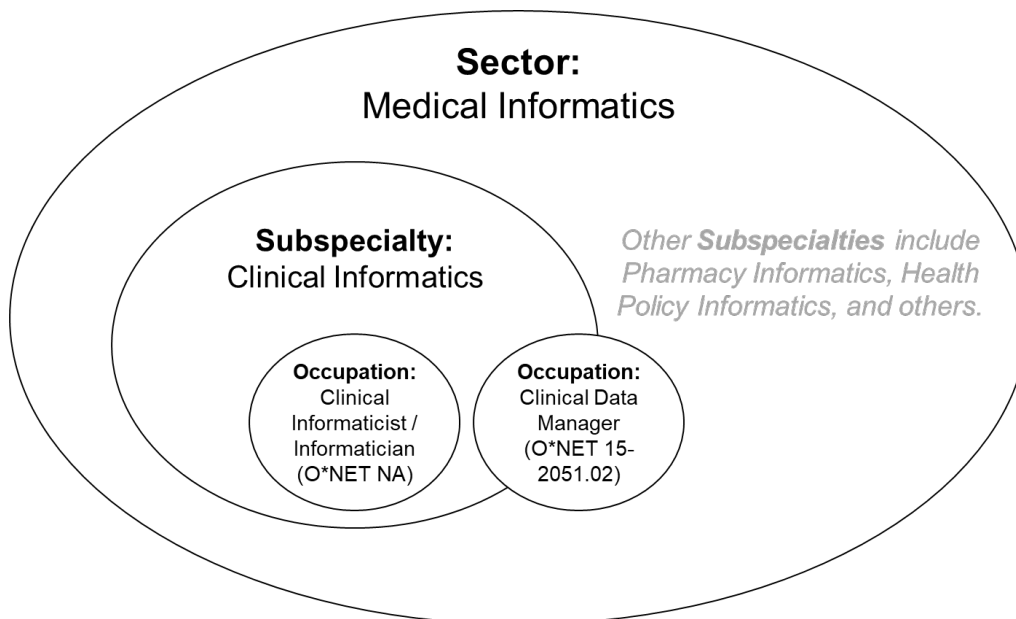
documentation detailing clinical informatics, including job titles, job descriptions, relevant certification and degree names, and typically required education and experience levels, among other information. Lightcast used the information provided by AMIA to create search terms to identify demand for clinical informatics as expressed in job postings. Lightcast then mined a comprehensive database of millions of job postings collected nationally between 2017 and 2023 to quantify demand for clinical informatics.

Clinical informatics is situated within the larger discipline of medical (or biomedical) informatics. Within clinical informatics, AMIA is interested in highlighting demand for a specific occupation, Clinical Informaticist (see Figure 1). The Clinical Informaticist occupation is not currently well captured within standard employment taxonomies, such as the SOC maintained by the Bureau of Labor Statistics (BLS), or the occupation taxonomies maintained by Census or O*NET. Due to a lack of SOC, there is a lack of standardization and discrepancies in salary between the government and the private sector, with pay being half or one third of comparable positions, making it difficult to competitively hire and retain the most qualified candidates.

We found that from January 2017 to October 2023, there were 809,233 job postings for positions in clinical informatics. The top job titles include Clinical Research Associates, Clinical Research Coordinators, Clinical Data Managers, and Nurse Practitioners.

The universe and hierarchy of job postings are represented in the following diagram.

Figure 1:²



² Sector may also be known as “biomedical informatics”.

Top employers within clinical informatics come primarily from five industry subsectors: General Medical and Surgical Hospitals, Direct Health and Medical Insurance Carriers; Pharmaceutical Preparation Manufacturing; Research and Development in the Physical, Engineering, and Life Sciences; and Offices of Physicians (hospital networks). The table below lists the top employers of clinical informaticians within each industry subsector. The code corresponds to the North American Industry Classification System (NAICS) taxonomy. Based on the NAICS codes, the table depicts how critical and relevant clinical informatics is in health care.

NAICS Code	NAICS Industry Sector (min. 25,000 postings)	Job Postings (Jan 2017 – Oct 2023)	Top Employers (min. 1,000 postings)
622110	General Medical and Surgical Hospitals	79,039	Children's Hospital of Philadelphia, HCA Healthcare, Cedars-Sinai, Massachusetts General Hospital, AdventHealth, NYU Langone Health, The Henry M. Jackson Foundation For The Advancement Of Military Medicine, Boston Children's Hospital, UT Southwestern Medical Center, CommonSpirit Health, Beth Israel Lahey Health, Trinity Health, Hartford HealthCare, Providence, Mayo Clinic, Baylor Scott & White Health, Banner Health, SSM Health Care
524114	Direct Health and Medical Insurance Carriers	64,467	Elevance Health, UnitedHealth Group, Humana, Aetna
325412	Pharmaceutical Preparation Manufacturing	50,897	Johnson & Johnson, Pfizer, Takeda Pharmaceutical Company, Bristol-Myers Squibb, Merck, Genentech, AbbVie, Novartis, Gilead Sciences, AstraZeneca, Eli Lilly, GlaxoSmithKline
541715	Research and Development in the Physical, Engineering, and Life Sciences	35,246	IQVIA, Bayer, Dana-Farber Cancer Institute, DOCS Health, inVentiv Health, Fred Hutchinson Cancer Research Center
621111	Offices of Physicians	32,602	Cincinnati Children's Hospital Medical Center, Emory Healthcare, Centura Health, Memorial Sloan-Kettering Cancer Center, Cleveland Clinic,

			Intermountain Healthcare, Nationwide Children's Hospital, Northwell Health, Wellstar Health System, Mercy Health, UNC Health, Indiana University
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Nationally, there were 2,083 individuals that graduated in 2022 and 2023 with a degree in Clinical/Medical Informatics and Bioinformatics, the degree most closely aligned with clinical informatics. (Degrees are classified according to the Classification of Instructional Programs (CIP), a taxonomy maintained by the National Center for Education Statistics.) These relatively low graduation counts point to the need to both expand throughput in clinical informatics focused programs and connect individuals from non-informatics programs such as Medicine, Nursing Science, and other healthcare programs to informatics jobs through additional on-the-job or certificate-based training.

University Name	All Completions	Bachelor's	Master's	Doctoral
All Universities	3,045	951	1,990	104
Capella University	211	1	197	0
University of South Florida	86	Not Offered	86	Not Offered
University of San Diego	84	Not Offered	84	Not Offered
The University of Texas Health Science Center at Houston	73	Not Offered	141	25
Stanford University	61	Not Offered	51	10
University of Wisconsin-Milwaukee	58	Not Offered	14	2
Northeastern University	114	62	48	4
University of Cincinnati-Main Campus	51	Not Offered	43	5
Indiana University-Purdue University-Indianapolis	60	23	37	Not Offered
George Mason University	41	2	37	Not Offered
Duke University	40	Not Offered	40	Not Offered
Harvard University	39	Not Offered	29	10
University of Michigan-Ann Arbor	92	58	34	0
University of North Carolina at Charlotte	69	34	12	Not Offered
Ashford University	34	Not Offered	34	Not Offered
Rutgers University-New Brunswick	33	Not Offered	20	13
Stony Brook University	33	Not Offered	32	1
University of Missouri-Columbia	31	Not Offered	21	4
Temple University	29	19	6	Not Offered
University of North Carolina at Chapel Hill	27	Not Offered	23	4
National University	26	Not Offered	26	Not Offered

Oregon Health & Science University	36	Not Offered	24	2
State University of New York at Oswego	25	Not Offered	25	Not Offered
Vanderbilt University	7	0	6	1
University of Wisconsin-Madison	10	0	10	0
George Washington University	29	29	0	0
Brigham Young University	27	27	0	0
University of Missouri-Kansas City	24	24	0	0
Loyola University Chicago	23	23	0	0
CUNY New York City College of Technology	22	22	0	0
University of Southern California	16	16	0	0
University of California-Los Angeles	15	15	0	0
University of California-San Diego	88	88	0	0
University of California-Santa Cruz	76	76	0	0
Boston University	76	76	0	0
Georgia Institute of Technology-Main Campus	55	55	0	0
Virginia Commonwealth University	46	46	0	0
New York University	42	42	0	0
Arizona State University	66	77	287	25
University of Chicago	33	33	0	0

Ultimately the Lightcast survey revealed that the information out there is insufficient because the lack of occupation-specific codes makes it hard to track down.

- It heavily favors beginner positions because those are the ones that tend to have qualifications and salaries listed while higher up options are negotiated.
- There is a clear need for clinical informaticians in medicine, with over 800,000 posted positions in five healthcare industry sectors, but it is difficult to assess standard salaries and duties across the field without an occupational code.

In addition to the Lightcast analysis conducted, AMIA's Academic Forum conducted a survey specifically examining members who work in Academic institutions conducted a separate survey³ of their institutions, generously contributing to a dedicated salary survey of the profession by sharing information on their salaries and backgrounds. This survey was

³ This survey has not yet been published. AMIA will follow up with the final publication when available.

motivated by clinical informatics continuing to grow and evolve as health care continues to be one of the largest data generators⁴ and in the context of data and use of algorithmic tools such as artificial intelligence. The survey found two key takeaways relevant to the update of the SOC Manual:

- 1) As of 2022, there were 94 US universities offering Health Informatics programs with outcomes from certificates to doctoral degrees.⁵ This is likely an underestimation due to health informatics programs being found in various schools, including but not limited to computer science, information systems, engineering, medical, public health, and other health professional schools. This variance makes it difficult to assess parameters across the field without a standardized federal code that adequately captures the expertise of the occupation.
- 2) Though informaticians can work with many degrees, including Bachelor, Master, PhD, Nursing, Medicine, Doctor of Practice, Pharmacist, and Dentist, the most common highest degree attained is PhD (59% of survey respondents) and MD (37%).

The structure of the SOC system may be flawed in that it cannot account for occupations such as informatics. The proposed coding guidelines for use in 2028 state:

When workers in a single job could be coded in more than one occupation, they should be coded in the occupation that requires the highest level of skill. If there is no measurable difference in skill requirements, workers should be coded in the occupation in which they spend the most time.

This requirement is tricky for clinical informaticians. As stated, clinical informaticians may be so with a bachelor's degree, but may also be pharmacists, nurses, physicians, dentists, and doctors and could be coded to more than one occupation. Coding an informatician to their "highest skill" may code them to physician or pharmacist even if they spend much of their time in informatics. This gathers flawed data on the professional breakdown of healthcare occupations. If a "clinical informatics" subcode cannot be added to each of the sections listed in our comment, AMIA encourages the SOCP to amend the coding guidelines to allow for multiple coding options.

There is a massive gap in the SOC due to the lack of acknowledgment of Informatics. Clinical informaticians are experts in harnessing the power of data to make clinical decisions and advance healthcare at the individual and population level. After a three-year public health emergency where the healthcare workforce functioned not only as essential workers, but as the nation's frontline, this is especially troubling. As artificial intelligence (AI) tools proliferate and become mainstream in healthcare provision, Informaticians are integral to the healthcare workforce. Clinical informaticians are experts in algorithmic development to point-of-care implementation. We urge you to further develop the occupational codes relevant to "Clinical Informatics" and gather data on this field that can then be shared during the next SOC solicitation to ensure this medical specialty is part of the government's national occupational

⁴ Wired C. Exploring The History Of Health Informatics. 2023. <https://clinicalwired.com/history-of-health-informatics/>.

⁵ Patel JS, Vo H, Nguyen A, Dzomba B, Wu H. A data-driven assessment of the US Health Informatics Programs and job market. *Applied Clinical Informatics*. 2022;13(02):327-338.

data capture and thus recognized for their contributions to patient and health care. Please see our attached materials for more information on this vital occupation.

Thank you for your consideration of these resources and recommendations. If you have questions, please contact Reva Singh, AMIA's Vice President of Public Policy, at rsingh@amia.org.

American Medical Informatics Association (AMIA)
Alliance for Nursing Informatics
Abstractive Health
aiNET LLC
Amarillo Medical Specialists LLP
Center for Biomedical Informatics, Regenstrief Institute Inc.
Children's Hospital of Orange County
Children's Hospital of Philadelphia
Clinical Informatics, Office of Health Informatics (OHI) VHA Digital Health Office (DHO) U.S.
Department of Veterans of Affairs
College of Healthcare Information Management Executives (CHIME)
Creighton University
Department of Biomedical Informatics, State University of New York at Buffalo
Health Information and Management Systems Society (HIMSS)
Heersink School of Medicine – University of Alabama at Birmingham
Hennepin Healthcare
Luddy School of Informatics, Computing, and Engineering, Indiana University
Mass General Brigham
Michigan Medicine
Michigan Medicine Clinical Informatics
Next Level Health Innovations
Northeast Georgia Healthy System
Regenstrief Institute
Texas e-Health Alliance
University of Kansas Medical Center
University of Missouri Medicine – BBME Department
University of Rochester Medical Center
UW Health, University of Wisconsin School of Medicine & Public Health
UW Medicine
VAMC