

Illinois Innovation Index

Fall 2017

Talent Index: Methodology

Part I: Supply—STEM graduates

The source of all data on STEM degree completions comes from the National Center for Education Statistics (NCES) *Completions Survey*. Data for years 2004–15 were finalized data obtained via the NSF WebCASPAR data portal. Data for 2016 are preliminary data accessed via the Integrated Postsecondary Education Data System (IPEDS) portal.¹ To ensure compatibility between the 2016 data and historical data, the analysis was limited to the following universe of institutions: Title IV institutions, NCES institutions, degree-granting institutions only, first major only, geographic scope limited to US states and the District of Columbia only (excludes territories).

The definition of STEM used in the "supply-side" analysis of this issue remains unchanged since it was first introduced in 2015. To define STEM, the *Index* relied on the NCES Classification of Instructional Programs (CIP) codes at the four-digit level. The CIP codes included in the definition of STEM for the supply-side analysis are listed in Table 1.

Table 1: STEM subject areas

CIP	Subject area	Four-digit codes included in <i>Index</i> STEM definition
1	Agricultural sciences (select)	01.09, 01.10, 01.11, 01.99
3	Natural Resources (select)	03.01, 03.05
11	Computer Sciences	All
14	Engineering	All
15	Engineering Technologies	All
26	Biological Sciences	All
27	Mathematical Sciences	All
40	Physical Sciences	All
41	Science Technologies	All
51	Health (select)	51.02, 51.05, 51.10, 51.14, 51.15, 51.16, 51.20, 51.22, 51.25, 51.27, 51.31, 51.38, 51.99

¹ IPEDS data is released in three stages: provisional, preliminary, and finalized data. For more information on the considerations attached to each data phase please see [here](#). Provisional and finalized *Completions Survey* data are accessible via the IPEDS and WebCASPAR data portals. Preliminary data for the latest year of data (2016) is only accessible via the [IPEDS data portal](#).

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Part II: Demand—STEM employment

Occupational classification

The Standard Occupational Classification Policy Committee, consisting of representatives from nine federal agencies, convened throughout 2011 at the request of the Office of Management and Budget to create guidelines for the classification of STEM workers. The final recommendations are available online at https://www.bls.gov/soc/Attachment_C_STEM.pdf.

Based on this classification, the Census definition of STEM includes computer and mathematical occupations, engineers, engineering technicians, life scientists, physical scientists, social scientists, science technicians, and STEM managers. STEM-related occupations consist of architects, healthcare practitioners, healthcare managers, and healthcare technicians. Non-STEM occupations are all other occupations not classified as STEM or STEM-related occupations.

Occupations included in the Index STEM definition are as follows:

Table 2: List of *Index* STEM and STEM-related occupations

Occupation	STEM Designation	SOC Code
Computer and information systems managers	STEM	11-3021
Architectural and engineering managers	STEM	11-9041
Medical and health services managers	STEM-Related	11-9111
Natural sciences managers	STEM	11-9121
Computer and information research scientists	STEM	15-1111
Computer systems analysts	STEM	15-1121
Information security analysts	STEM	15-1122
Computer programmers	STEM	15-1131
Web developers	STEM	15-1134
Software developers, applications and systems software	STEM	15-113X
Database administrators	STEM	15-1141
Network and computer systems administrators	STEM	15-1142
Computer network architects	STEM	15-1143
Computer support specialists	STEM	15-1150
Computer occupations, all other	STEM	15-1199
Actuaries	STEM	15-2011
Mathematicians	STEM	15-2021
Operations research analysts	STEM	15-2031
Statisticians	STEM	15-2041
Miscellaneous mathematical science occupations	STEM	15-2090
Architects, except naval	STEM-Related	17-1010
Surveyors, cartographers, and photogrammetrists	STEM	17-1020
Aerospace engineers	STEM	17-2011
Agricultural engineers	STEM	17-2021
Biomedical engineers	STEM	17-2031
Chemical engineers	STEM	17-2041
Civil engineers	STEM	17-2051

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Computer hardware engineers	STEM	17-2061
Electrical and electronics engineers	STEM	17-2070
Environmental engineers	STEM	17-2081
Industrial engineers, including health and safety	STEM	17-2110
Marine engineers and naval architects	STEM	17-2121
Materials engineers	STEM	17-2131
Mechanical engineers	STEM	17-2141
Mining and geological engineers, including mining safety engineers	STEM	17-2151
Nuclear engineers	STEM	17-2161
Petroleum engineers	STEM	17-2171
Engineers, all other	STEM	17-2199
Drafters	STEM	17-3010
Engineering technicians, except drafters	STEM	17-3020
Surveying and mapping technicians	STEM	17-3031
Agricultural and food scientists	STEM	19-1010
Biological scientists	STEM	19-1020
Conservation scientists and foresters	STEM	19-1030
Medical scientists	STEM	19-1040
Life scientists, all other	STEM	19-1099
Astronomers and physicists	STEM	19-2010
Atmospheric and space scientists	STEM	19-2021
Chemists and materials scientists	STEM	19-2030
Environmental scientists and geoscientists	STEM	19-2040
Physical scientists, all other	STEM	19-2099
Economists	STEM	19-3011
Survey researchers	STEM	19-3022
Psychologists	STEM	19-3030
Sociologists	STEM	19-3041
Urban and regional planners	STEM	19-3051
Miscellaneous social scientists and related workers	STEM	19-3090
Agricultural and food science technicians	STEM	19-4011
Biological technicians	STEM	19-4021
Chemical technicians	STEM	19-4031
Geological and petroleum technicians	STEM	19-4041
Nuclear technicians	STEM	19-4051
Social science research assistants	STEM	19-4061
Miscellaneous life, physical, and social science technicians	STEM	19-4090
Chiropractors	STEM-Related	29-1011
Dentists	STEM-Related	29-1020
Dietitians and nutritionists	STEM-Related	29-1031
Optometrists	STEM-Related	29-1041
Pharmacists	STEM-Related	29-1051
Physicians and surgeons	STEM-Related	29-1060
Physician assistants	STEM-Related	29-1071
Podiatrists	STEM-Related	29-1081
Occupational therapists	STEM-Related	29-1122
Physical therapists	STEM-Related	29-1123
Radiation therapists	STEM-Related	29-1124

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Recreational therapists	STEM-Related	29-1125
Respiratory therapists	STEM-Related	29-1126
Speech-language pathologists	STEM-Related	29-1127
Exercise physiologists	STEM-Related	29-1128
Therapists, all other	STEM-Related	29-1129
Veterinarians	STEM-Related	29-1131
Registered nurses	STEM-Related	29-1141
Nurse anesthetists	STEM-Related	29-1151
Nurse midwives	STEM-Related	29-1161
Nurse practitioners	STEM-Related	29-1171
Audiologists	STEM-Related	29-1181
Health diagnosing and treating practitioners, all other	STEM-Related	29-1199
Clinical laboratory technologists and technicians	STEM-Related	29-2010
Dental hygienists	STEM-Related	29-2021
Diagnostic related technologists and technicians	STEM-Related	29-2030
Emergency medical technicians and paramedics	STEM-Related	29-2041
Health practitioner support technologists and technicians	STEM-Related	29-2050
Licensed practical and licensed vocational nurses	STEM-Related	29-2061
Medical records and health information technicians	STEM-Related	29-2071
Opticians, dispensing	STEM-Related	29-2081
Miscellaneous health technologists and technicians	STEM-Related	29-2090
Other healthcare practitioners and technical occupations	STEM-Related	29-9000
Sales engineers	STEM	41-9031