How will Language Modelers like ChatGPT Affect Occupations and Industries?

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Abstract: Recent dramatic increases in AI language modeling capabilities has led to many questions about the effect of these technologies on the economy. In this paper we present a methodology to systematically assess the extent to which occupations, industries and geographies are exposed to advances in AI language modeling capabilities. We find that the top occupations exposed to language modeling include telemarketers and a variety of post-secondary teachers such as English language and literature, foreign language and literature, and history teachers. We find the top industries exposed to advances in language modeling are legal services and securities, commodities, and investments. We also find a positive correlation between wages and exposure to AI language modeling.

Keywords: artificial intelligence, ChatGPT, language modeling, occupation, technology

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1. Introduction

Artificial Intelligence (AI) will likely affect the economy in many ways, potentially boosting economic growth and changing the way people work and play. The effect of AI on work will likely be multi-faceted. In some cases, AI may substitute for work previously done by humans, and in other cases AI may complement work done by humans. The effect on work will likely also vary across industries. Recent research by Goldfarb et al (2020) document that adoption of AI is relatively high in some industries such as information technology and finance, but low in others such as health care and construction. Moreover, trying to understand how AI will affect work is like trying to hit a moving target because the capabilities of AI are still advancing.

A prominent example of how AI capabilities continue to advance are the recent improvements in AI language modeling. In particular, ChatGPT, a language modeler released by Open AI in late 2022, has garnered a huge amount of attention and controversy. Some worry about the negative effects of tools like ChatGPT on jobs, as in the *New York Post* article headlined "ChatGPT could make these jobs obsolete: 'The wolf is at the door.'"[2] Others see practical and commercial promise from language modeling. For example, Microsoft announced a $10 billion partnership with Open AI and has linked ChatGPT with its Bing search engine.[3] Google felt compelled to demonstrate its own language modeler, Bard, but mistakes during the demonstration led Google's stock price to drop 7%.[4] ChatGPT has been banned by J.P. Morgan.[5] However, at present, most of this is speculation.

In order to better understand how language modelers such as ChatGPT will affect occupations, industries and geographies, we use a methodology developed by Felten et al (2018, 2021). Felten et al created the AI Occupational Exposure (AIOE) measure and used this measure to identify which occupations, industries and geographies are most exposed to AI. In this paper, we describe how the AIOE approach can be adapted to account for the recent advancement of language modeling.

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[2] https://nypost.com/2023/01/25/chat-gpt-could-make-these-jobs-obsolete/
[3] https://www.bloomberg.com/news/articles/2023-01-23/microsoft-makes-multibillion-dollar-investment-in-openai
[4] https://www.cnbc.com/2023/02/08/alphabet-shares-slip-following-googles-ai-event-.html
[5] https://www.cbsnews.com/news/chatgpt-jpmorgan-chase-bars-workers-from-using-ai-tool/

We find that the top occupations affected include telemarketers and a variety of post-secondary teachers such as English language and literature, foreign language and literature, and history teachers. We also find the top industries exposed to advances in language modeling are legal services and securities, commodities, and investments. We also find a positive and statistically significant correlation between an occupation's mean or median wage and our measure of exposure to AI language modeling.

This article contributes to several literatures. First, by providing a systematic examination of the effect of language modeling across occupations, industries and geographies, it contributes to a nascent literature on the effects of ChatGPT and other language modelers on the economy (e.g. Agarwal et al., 2022; Zarifhonarvar, 2023). More generally, the article builds on a broader set of literature studying the effect of AI on the economy (Furman and Seamans, 2019; Goldfarb et al., 2019). Second, the article builds on and extends a set of papers that provide systematic methodologies for studying how AI affects occupations (e.g., Brynjolfsson et al, 2018; Frey & Osborne, 2017; Tolan et al., 2021; Webb, 2020). The article specifically builds off and extends the methodology described in Felten et al. (2018, 2021). In so doing, the article demonstrates the flexibility of the original Felten et al methodology; it can be adjusted dynamically to assess the impact of changes in AI capabilities. Finally, the article adds to a large literature on the effect of automating technologies on labor (e.g., Acemoglu et al., 2022; Autor, 2015; Frank et al., 2019; Genz et al., 2021).

The article proceeds as follows. Section 2 describes the AI Occupational Exposure (AIOE) measure developed by Felten et al (2018, 2021). Section 3 extends the AIOE to account for recent advances in language modeling. Section 4 provides results, including listing the top 20 most affected occupations and industries. Section 5 investigates the relationship between occupational wages and exposure to AI language modeling. Section 6 concludes.

2. AI Occupational Exposure Methodology

According to Felten et al (2021), the AI Occupational Exposure (AIOE) is a measure of each occupation's "exposure" to AI. The term "exposure" is used so as to be agnostic as to the effects of AI on the occupation, which could involve substitution or augmentation depending on various factors associated with the occupation itself.

The AIOE measure was constructed by linking 10 AI applications (abstract strategy games, real-time video games, image recognition, visual question answering, image generation, reading comprehension, language modeling, translation, speech recognition, and instrumental track recognition) to 52 human abilities (e.g., oral comprehension, oral expression, inductive reasoning, arm-hand steadiness, etc) using a crowd-sourced matrix that indicates the level of relatedness between each AI application and human ability. Data on the AI applications come from the Electronic Frontier Foundation (EFF) which collects and maintains statistics about the progress of AI across multiple applications. Data on human abilities comes from the Occupational Information Network (O*NET) database developed by the United States Department of Labor. O*NET uses these 52 human abilities to describe the occupational makeup of each of 800+ occupations that it tracks. Each of 800+ occupations can be thought of as a weighted combination of the 52 human abilities. O*NET uses two sets of weights: prevalence and importance.

Once the 10 AI categories and 52 human abilities are linked through the matrix, the AIOE can then be calculated for each occupation. To do this, first we calculate an ability-level exposure as follows:

$$A_{ij} = \sum_{i=1}^{10} x_{ij} \tag{1}$$

Where i indexes the AI application and j indexes the occupational ability. The ability-level exposure, A, is calculated as the sum of the 10 application-ability relatedness scores, x, as constructed using the matrix of crowd-sourced survey data.

We then calculate the AIOE for each occupation k as follows:

$$AIOE_k = \frac{\sum_{j=1}^{52} A_{ij} \times L_{jk} \times I_{jk}}{\sum_{j=1}^{52} L_{jk} \times I_{jk}} \tag{2}$$

In this equation, i indexes the AI application, j indexes the occupational ability, and k indexes the occupation. A_{ij} represents the ability-level exposure score. We weight the ability-level AI exposure by the ability's prevalence (L_{jk}) and importance (I_{jk}) within each occupation as measured by O*NET by multiplying the ability-level AI exposure by the prevalence and importance scores for that ability within each occupation, scaled so that they are equally weighted.

Felten et al (2021) explain the construction of the AIOE scores in more detail, describe how they can be weighted at the industry level to construct an AI Industry Exposure score, or weighted at the geographic level to construct an AI Geographic Exposure score. They also provide results from a number of validation exercises and describe a number of ways in which the scores can be used by scholars and practitioners.[6]

3. Language Modeling AI Occupational Exposure

The original AIOE described in Felten et al (2021) explicitly weighted each of the AI applications the same. In order to update the AI Occupational Exposure score to account for advances in Language Modeling we modify equation (1) as follows.

$$A_{ij} = \sum_{i=1}^{10} \alpha_i x_{ij} \tag{3}$$

Where *i* indexes the AI application and *j* indexes the occupational ability. The ability-level exposure, *A*, is calculated as the weighted sum of the 10 application-ability relatedness scores, *x*, as constructed using the matrix of crowd-sourced survey data. α_i is the weight placed on each application *i*. The weights used in Felten et al (2021) set α_i equal to 1 for each application *i*.

Next, we set α_i equal to 0 for every AI application except for language modeling, which retains a weight of 1. This then constructs an ability-level exposure measure that only "counts" the value of abilities that are related to language modeling. We then proceed to calculate the $AIOE_k$ for each occupation k using this new "language modeling" weighted A_{ij}. The resulting $AIOE_k$ therefore captures the extent to which each occupation is exposed to advances in language modeling due to AI. A complete list of the occupations and their resulting AIOE language modeling score are listed in the appendix and on GitHub.

The resulting scores are highly correlated with the original AIOE scores (correlation coefficient: 0.979). This can be seen in Figure 1 which plots the original AIOE score and the new language modeling adjusted AIOE score for each occupation.

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[6] The Felten et al (2021) paper is open access and available here: https://onlinelibrary.wiley.com/doi/full/10.1002/smj.3286 The data and code used to create the AIOE scores described in Felten et al (2021) is available on GitHub: https://github.com/AIOE-Data/AIOE

4. Results

In this section we present and briefly discuss tables of "top 20" occupations and industries exposed to language modeling.

4.1. Top 20 Occupations Exposed to Language Modeling

Table 1 provides the list of top 20 occupations exposed to AI based on the original Felten et al (2021) AI Occupational Exposure (AIOE) measure as well as the top 20 occupations exposed to AI enabled advances in language modeling capabilities.

Some occupations occur in both lists, including "clinical, counseling, and school psychologists" and "history teachers, postsecondary". Notably, the language modeling list includes more education-related occupations, indicating that occupations in the field of education are likely to be relatively more impacted by advances in language modeling than other occupations. This accords well with the recent spate of articles around how ChatGPT and other language modeling tools affect the way teachers assign work and detect cheating or could use language modeling tools to develop teaching materials.

Also of interest, the top occupation in the language modeling list is "telemarketer." One might imagine that human telemarketers could benefit from language modeling being used to augment their work. For example, customer responses can be fed into a language modeling engine in real time and relevant, customer-specific prompts quickly fed to the telemarketer. Or, one might imagine that human telemarketers are substituted with language modeling enabled bots. The potential for language modeling to augment or substitute for human telemarketers work highlights one aspect of the AIOE measure: it measures "exposure" to AI, but whether that exposure leads to augmentation or substitution will depend on specifics of any given occupation.

4.2. Top 20 Industries Exposed to Language Modeling

Table 2 provides the list of 20 industries most exposed to AI based on the original Felten et al. (2021) AI Industry Exposure (AIIE) measure as well as the top 20 industries exposed to AI enabled advances in language modeling capabilities.

As before, we see some similarities in the industries categorized as most exposed to AI based on the original AIOE as well as the version that focuses on advances in language modeling capabilities. For example, "Securities, Commodity Contracts, and Other Financial Investments and Related Activities" is categorized as the most exposed industry using the original AIOE and is the second most exposed industry using the language modeling-focused version of the AIOE. Legal services, insurance and employee benefit funds, and agencies, brokerages, and other insurance related activities are among the top five most exposed industries across both lists.

However, some differences emerge. One salient difference is that the language modeling-focused AIOE suggests a higher exposure to advances in AI within higher education and higher education-adjacent industries. Junior colleges, grantmaking and giving services, and business schools and computer and management training all appear within the top twenty exposed industries.

5. Relationship to Wages

We next investigate the relationship between two measures of wages and our language modeling AIOE. We obtain mean and median occupational wage data from the Bureau of Labor Statistics (BLS), for 2021, the most recent year for which national level occupational wage data is available.[7] Due to changes in occupational definitions over time, we do not have the same set of occupations between the 2021 BLS data and our AIOE dataset. To address this difference, we match our AIOE dataset to the BLS wage dataset first on occupational codes and then on occupational titles (which allows us to match occupations where the code has changed but the occupation is the same). We have 708 occupations present in both datasets.

To investigate the relationship between wages and exposure to AI language modeling we group occupations into 20 equal-sized bins by their language modeling AIOE score. We then plot the average AIOE score for each of these bins to the mean and median wage for the occupations in each bin. The results are plotted in Figure 2 (mean wages) and Figure 3 (median wages). The results are consistent across both figures. There appears to be a strong positive correlation between our language modeling AIOE score and mean or median wages in an occupation. In other words, occupations with higher wages are more likely to be exposed to rapid advances in language modeling from products such as ChatGPT or others. Given that the most exposed

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[7] https://www.bls.gov/oes/

occupations appear to be white-collar occupations that may be likely to be classified as "high-skilled" labor, this is perhaps not surprising.

6. Conclusion

In this paper we present a methodology to systematically assess the extent to which occupations and industries are exposed to advances in AI language modeling capabilities. This methodology relies on the approach described in Felten et al (2021) but adapts it to account for recent advances in language modeling. We find that the top occupations exposed to language modeling include telemarketers and a variety of post-secondary teachers such as English language and literature, foreign language and literature, and history teachers. We also find the top industries exposed to advances in language modeling are legal services and securities, commodities, and investments. We also find that occupations with higher wages are more likely to be exposed to rapid advances in language modeling.

At a broad level, this paper adds to a growing literature studying the effects of AI on labor and work. More specifically, the paper provides a systematic approach for understanding how ChatGPT and other language modelers will affect occupations, industries and geographies. We believe these results will be useful for other scholars as well as practitioners and policymakers.

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Figure 1: Comparison between Original AIOE and Language Modeling Adjusted AIOE
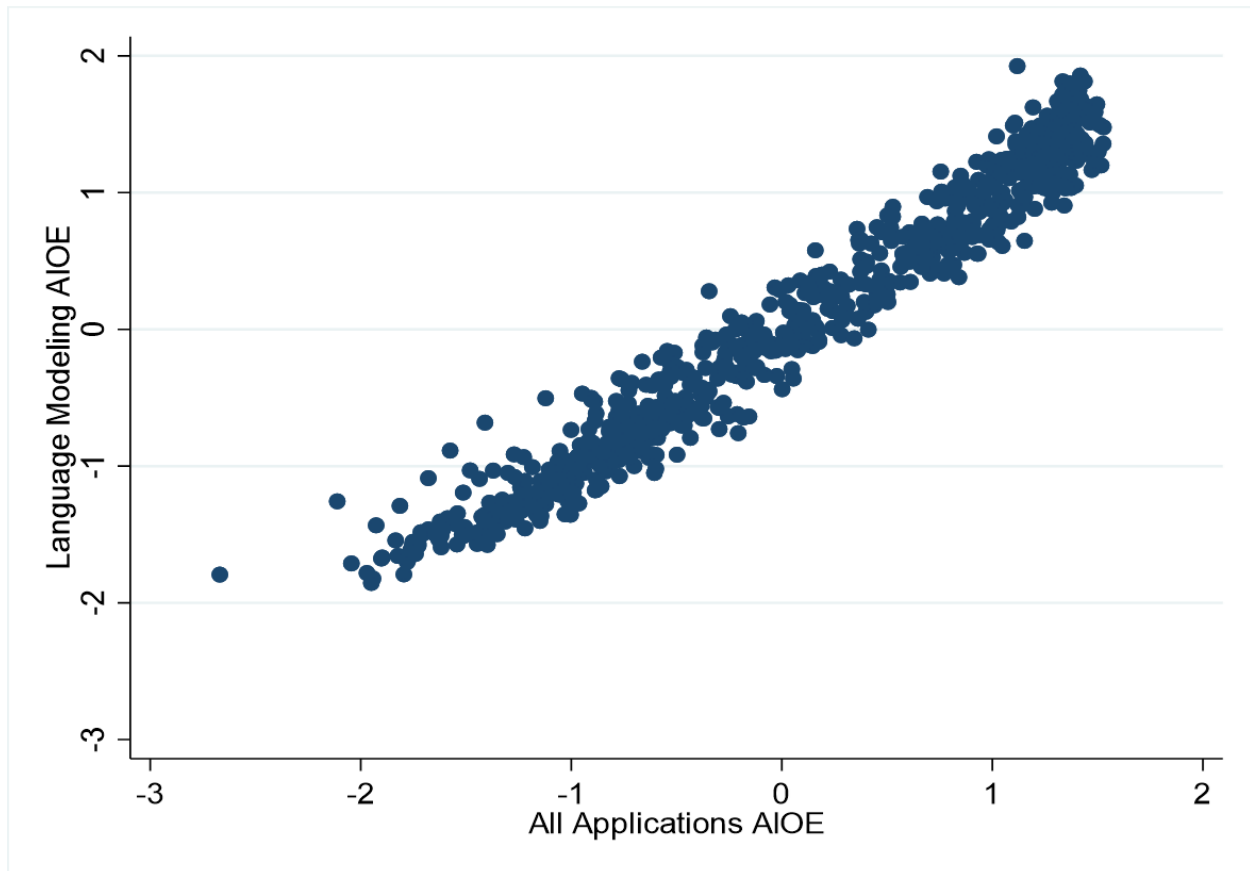
Notes: This figure plots the original AIOE score (x-axis) and the new language modeling adjusted AIOE score (y-axis) for each occupation.

Figure 2: Relationship between Language Modeling AIOE and Mean Occupational Wages
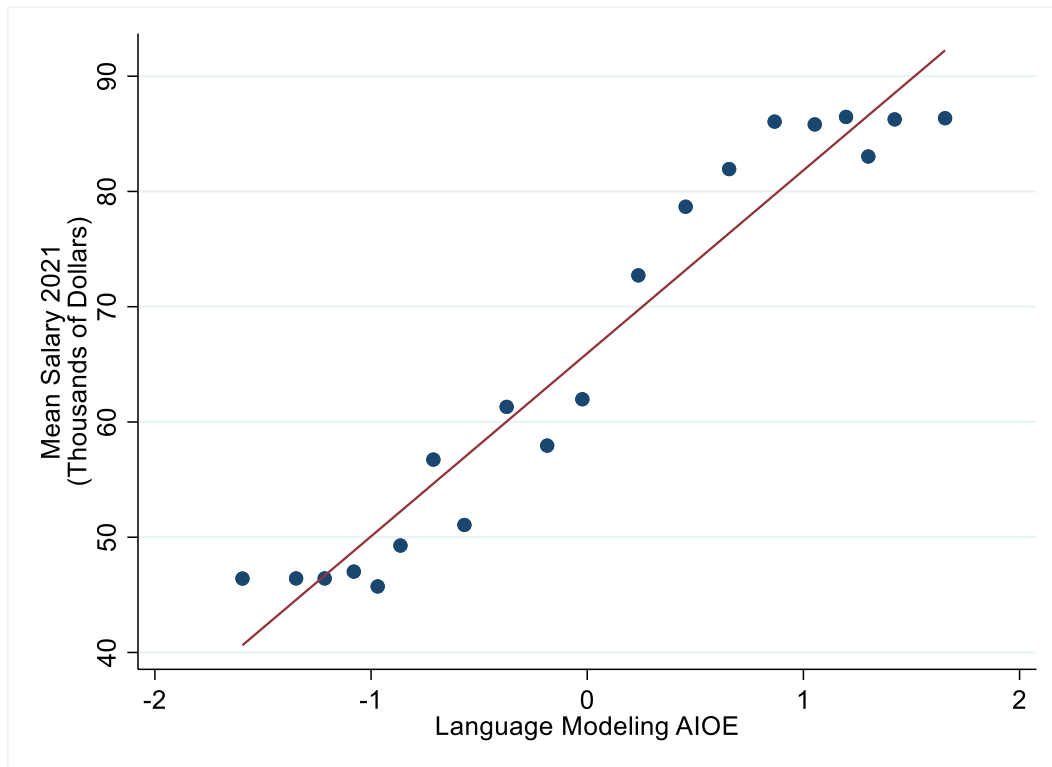
Notes: This figure plots the relationship between the language modeling AIOE score (x-axis) and mean salary (y-axis) for each occupation, where occupations are grouped into 20 equal sized bins based on language modeling AIOE score.

Figure 3: Relationship between Language Modeling AIOE and Median Occupational Wages
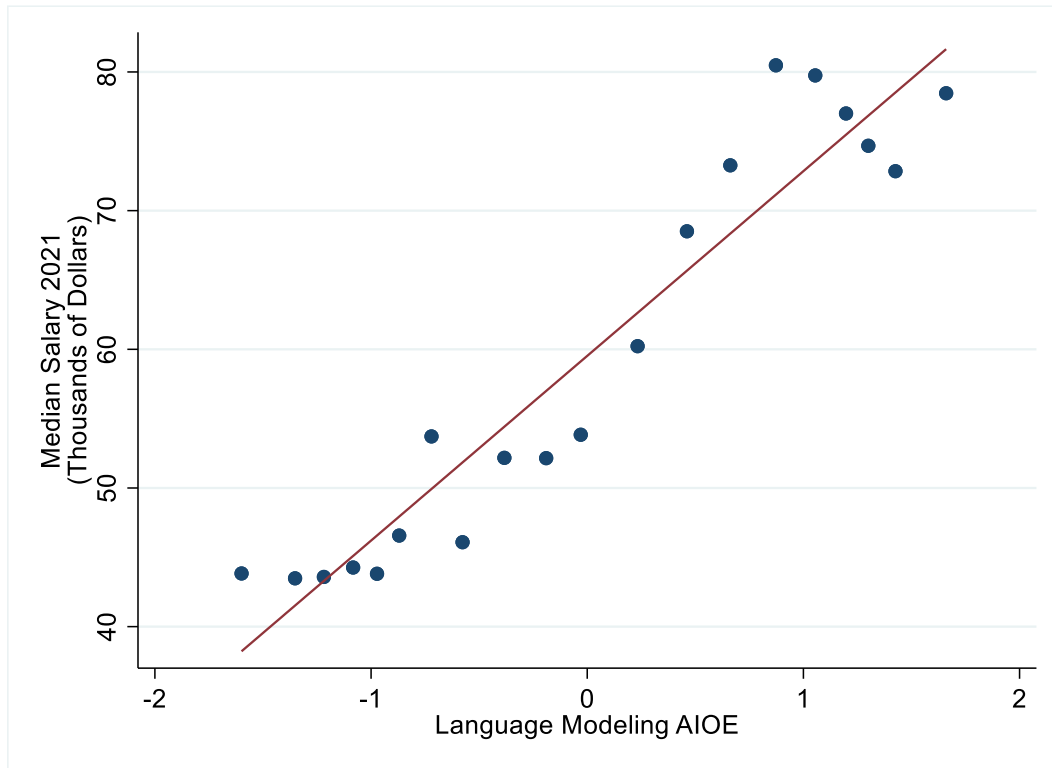
Notes: This figure plots the relationship between the language modeling AIOE score (x-axis) and median salary (y-axis) for each occupation, where occupations are grouped into 20 equal sized bins based on language modeling AIOE score.

Table 1: Top 20 Occupations Exposed to AI, Original and with Language Modeling Adjustment

Rank	Top 20 Occupations from Original AIOE	Top 20 Occupations after Language Modeling Adjustment
1	Genetic Counselors	Telemarketers
2	Financial Examiners	English Language and Literature Teachers, Postsecondary
3	Actuaries	Foreign Language and Literature Teachers, Postsecondary
4	Purchasing Agents, Except Wholesale, Retail, and Farm Products	History Teachers, Postsecondary
5	Budget Analysts	Law Teachers, Postsecondary
6	Judges, Magistrate Judges, and Magistrates	Philosophy and Religion Teachers, Postsecondary
7	Procurement Clerks	Sociology Teachers, Postsecondary
8	Accountants and Auditors	Political Science Teachers, Postsecondary
9	Mathematicians	Criminal Justice and Law Enforcement Teachers, Postsecondary
10	Judicial Law Clerks	Sociologists
11	Education Administrators, Postsecondary	Social Work Teachers, Postsecondary
12	Clinical, Counseling, and School Psychologists	Psychology Teachers, Postsecondary
13	Financial Managers	Communications Teachers, Postsecondary
14	Compensation, Benefits, and Job Analysis Specialists	Political Scientists
15	Credit Authorizers, Checkers, and Clerks	Area, Ethnic, and Cultural Studies Teachers, Postsecondary
16	History Teachers, Postsecondary	Arbitrators, Mediators, and Conciliators
17	Geographers	Judges, Magistrate Judges, and Magistrates
18	Epidemiologists	Geography Teachers, Postsecondary
19	Management Analysts	Library Science Teachers, Postsecondary
20	Arbitrators, Mediators, and Conciliators	Clinical, Counseling, and School Psychologists

Notes: This table lists the top 20 occupations most exposed to AI from the original AIOE (Felten et al., 2021) and the top 20 occupations most exposed to advances in AI language modeling.

Table 2: Top 20 Industries Exposed to AI, Original and with Language Modeling Adjustment

Rank	Top 20 Industries from Original AIOE	Top 20 Industries after Language Modeling Adjustment
1	Securities, Commodity Contracts, and Other Financial Investments and Related Activities	Legal Services
2	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	Securities, Commodity Contracts, and Other Financial Investments and Related Activities
3	Insurance and Employee Benefit Funds	Agencies, Brokerages, and Other Insurance Related Activities
4	Legal Services	Insurance and Employee Benefit Funds
5	Agencies, Brokerages, and Other Insurance Related Activities	Nondepository Credit Intermediation
6	Nondepository Credit Intermediation	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures
7	Other Investment Pools and Funds	Insurance Carriers
8	Insurance Carriers	Other Investment Pools and Funds
9	Software Publishers	Accounting, Tax Preparation, Bookkeeping, and Payroll Services
10	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	Business Support Services
11	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	Software Publishers
12	Credit Intermediation and Related Activities (5221 And 5223 only)	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)
13	Computer Systems Design and Related Services	Business Schools and Computer and Management Training
14	Management, Scientific, and Technical Consulting Services	Credit Intermediation and Related Activities (5221 And 5223 only)
15	Monetary Authorities-Central Bank	Grantmaking and Giving Services
16	Office Administrative Services	Travel Arrangement and Reservation Services
17	Other Information Services	Junior Colleges
18	Data Processing, Hosting, and Related Services	Computer Systems Design and Related Services
19	Business Schools and Computer and Management Training	Management, Scientific, and Technical Consulting Services
20	Grantmaking and Giving Services	Other Information Services

Notes: This table lists the top 20 industries most exposed to AI from the original AIOE (Felten et al., 2021) and the top 20 industries most exposed to advances in AI language modeling.

APPENDIX

**FULL LIST OF OCCUPATIONS
SORTED BY LANGUAGE MODELING EXPOSURE SCORE**

Rank	SOC Code	Occupation Title	Language Modeling AIOE
1	41-9041	Telemarketers	1.926
2	25-1123	English Language and Literature Teachers, Postsecondary	1.857
3	25-1124	Foreign Language and Literature Teachers, Postsecondary	1.814
4	25-1125	History Teachers, Postsecondary	1.813
5	25-1112	Law Teachers, Postsecondary	1.802
6	25-1126	Philosophy and Religion Teachers, Postsecondary	1.800
7	25-1067	Sociology Teachers, Postsecondary	1.770
8	25-1065	Political Science Teachers, Postsecondary	1.770
9	25-1111	Criminal Justice and Law Enforcement Teachers, Postsecondary	1.754
10	19-3041	Sociologists	1.747
11	25-1113	Social Work Teachers, Postsecondary	1.739
12	25-1066	Psychology Teachers, Postsecondary	1.716
13	25-1122	Communications Teachers, Postsecondary	1.702
14	19-3094	Political Scientists	1.687
15	25-1062	Area, Ethnic, and Cultural Studies Teachers, Postsecondary	1.669
16	23-1022	Arbitrators, Mediators, and Conciliators	1.647
17	23-1023	Judges, Magistrate Judges, and Magistrates	1.646
18	25-1064	Geography Teachers, Postsecondary	1.629
19	25-1082	Library Science Teachers, Postsecondary	1.626
20	19-3031	Clinical, Counseling, and School Psychologists	1.626
21	25-1081	Education Teachers, Postsecondary	1.624
22	25-1011	Business Teachers, Postsecondary	1.618
23	25-1053	Environmental Science Teachers, Postsecondary	1.603
24	43-3061	Procurement Clerks	1.590
25	25-1043	Forestry and Conservation Science Teachers, Postsecondary	1.563
26	13-1071	Human Resources Specialists	1.557
27	13-1111	Management Analysts	1.548
28	23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers	1.547
29	43-4041	Credit Authorizers, Checkers, and Clerks	1.546
30	11-9033	Education Administrators, Postsecondary	1.545
31	21-1014	Mental Health Counselors	1.537
32	25-1061	Anthropology and Archeology Teachers, Postsecondary	1.534
33	25-1051	Atmospheric, Earth, Marine, and Space Sciences Teachers, Postsecondary	1.522
34	27-3031	Public Relations Specialists	1.518
35	23-1012	Judicial Law Clerks	1.513
36	41-9091	Door-To-Door Sales Workers, News and Street Vendors, and Related Workers	1.511
37	13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	1.496
38	25-1042	Biological Science Teachers, Postsecondary	1.493

39	19-3093	Historians	1.491
40	25-3099	Teachers and Instructors, All Other	1.486
41	43-4161	Human Resources Assistants, Except Payroll and Timekeeping	1.481
42	29-9092	Genetic Counselors	1.478
43	13-2072	Loan Officers	1.477
44	21-1013	Marriage and Family Therapists	1.473
45	27-3022	Reporters and Correspondents	1.471
46	21-2011	Clergy	1.470
47	25-1192	Home Economics Teachers, Postsecondary	1.468
48	11-3111	Compensation and Benefits Managers	1.467
49	25-1063	Economics Teachers, Postsecondary	1.462
50	23-1011	Lawyers	1.454
51	25-1052	Chemistry Teachers, Postsecondary	1.450
52	43-4111	Interviewers, Except Eligibility and Loan	1.449
53	25-3011	Adult Basic and Secondary Education and Literacy Teachers and Instructors	1.440
54	43-9081	Proofreaders and Copy Markers	1.436
55	13-1075	Labor Relations Specialists	1.431
56	25-1193	Recreation and Fitness Studies Teachers, Postsecondary	1.429
57	19-3032	Industrial-Organizational Psychologists	1.427
58	41-3021	Insurance Sales Agents	1.427
59	43-4061	Eligibility Interviewers, Government Programs	1.417
60	43-2021	Telephone Operators	1.412
61	25-1022	Mathematical Science Teachers, Postsecondary	1.407
62	13-1131	Fundraisers	1.405
63	13-2052	Personal Financial Advisors	1.396
64	11-3061	Purchasing Managers	1.393
65	25-1021	Computer Science Teachers, Postsecondary	1.390
66	23-2093	Title Examiners, Abstractors, and Searchers	1.384
67	11-2031	Public Relations and Fundraising Managers	1.383
68	25-1191	Graduate Teaching Assistants	1.376
69	29-1066	Psychiatrists	1.366
70	29-1031	Dietitians and Nutritionists	1.364
71	19-3092	Geographers	1.363
72	13-1141	Compensation, Benefits, and Job Analysis Specialists	1.362
73	11-3121	Human Resources Managers	1.359
74	13-2061	Financial Examiners	1.358
75	13-1161	Market Research Analysts and Marketing Specialists	1.356
76	13-2071	Credit Counselors	1.355
77	21-2021	Directors, Religious Activities and Education	1.355
78	27-3091	Interpreters and Translators	1.352
79	41-9021	Real Estate Brokers	1.348
80	29-1127	Speech-Language Pathologists	1.343

81	25-1032	Engineering Teachers, Postsecondary	1.337
82	11-3131	Training and Development Managers	1.337
83	43-4031	Court, Municipal, and License Clerks	1.336
84	25-2053	Special Education Teachers, Middle School	1.334
85	23-2011	Paralegals and Legal Assistants	1.333
86	19-3011	Economists	1.330
87	19-3039	Psychologists, All Other	1.330
88	25-9031	Instructional Coordinators	1.324
89	13-1151	Training and Development Specialists	1.323
90	27-3042	Technical Writers	1.317
91	11-9111	Medical and Health Services Managers	1.315
92	11-1011	Chief Executives	1.309
93	13-2031	Budget Analysts	1.300
94	43-6013	Medical Secretaries	1.298
95	11-3031	Financial Managers	1.295
96	11-2022	Sales Managers	1.294
97	25-2022	Middle School Teachers, Except Special and Career/Technical Education	1.284
98	19-1041	Epidemiologists	1.284
99	19-3022	Survey Researchers	1.279
100	41-3041	Travel Agents	1.278
101	43-4131	Loan Interviewers and Clerks	1.274
102	13-2051	Financial Analysts	1.273
103	43-3011	Bill and Account Collectors	1.270
104	13-2053	Insurance Underwriters	1.262
105	41-3031	Securities, Commodities, and Financial Services Sales Agents	1.260
106	19-2021	Atmospheric and Space Scientists	1.259
107	41-1012	First-Line Supervisors of Non-Retail Sales Workers	1.259
108	43-9041	Insurance Claims and Policy Processing Clerks	1.257
109	43-5011	Cargo and Freight Agents	1.255
110	43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	1.254
111	13-2081	Tax Examiners and Collectors, and Revenue Agents	1.253
112	21-1023	Mental Health and Substance Abuse Social Workers	1.253
113	13-2099	Financial Specialists, All Other	1.253
114	25-2031	Secondary School Teachers, Except Special and Career/Technical Education	1.249
115	13-1011	Agents and Business Managers of Artists, Performers, and Athletes	1.248
116	25-1031	Architecture Teachers, Postsecondary	1.246
117	43-2011	Switchboard Operators, Including Answering Service	1.244
118	15-2041	Statisticians	1.243
119	41-3099	Sales Representatives, Services, All Other	1.242

120	11-9121	Natural Sciences Managers	1.241
121	25-1054	Physics Teachers, Postsecondary	1.240
122	15-2031	Operations Research Analysts	1.234
123	27-3021	Broadcast News Analysts	1.230
124	25-1071	Health Specialties Teachers, Postsecondary	1.226
125	11-9151	Social and Community Service Managers	1.225
126	11-2011	Advertising and Promotions Managers	1.217
127	11-9141	Property, Real Estate, and Community Association Managers	1.215
128	13-2011	Accountants and Auditors	1.214
129	21-1011	Substance Abuse and Behavioral Disorder Counselors	1.204
130	11-2021	Marketing Managers	1.204
131	43-4141	New Accounts Clerks	1.201
132	15-2011	Actuaries	1.200
133	11-9032	Education Administrators, Elementary and Secondary School	1.199
134	21-1012	Educational, Guidance, School, and Vocational Counselors	1.196
135	31-9094	Medical Transcriptionists	1.196
136	27-3041	Editors	1.191
137	43-4021	Correspondence Clerks	1.184
138	27-3043	Writers and Authors	1.170
139	19-1042	Medical Scientists, Except Epidemiologists	1.167
140	15-2021	Mathematicians	1.166
141	15-1133	Software Developers, Systems Software	1.166
142	43-3051	Payroll and Timekeeping Clerks	1.155
143	25-1041	Agricultural Sciences Teachers, Postsecondary	1.154
144	43-6012	Legal Secretaries	1.149
145	29-1065	Pediatricians, General	1.146
146	13-2082	Tax Preparers	1.144
147	43-3021	Billing and Posting Clerks	1.136
148	43-1011	First-Line Supervisors of Office and Administrative Support Workers	1.134
149	13-1051	Cost Estimators	1.134
150	43-5032	Dispatchers, Except Police, Fire, and Ambulance	1.128
151	19-4061	Social Science Research Assistants	1.126
152	27-3011	Radio and Television Announcers	1.124
153	41-3011	Advertising Sales Agents	1.122
154	17-2011	Aerospace Engineers	1.117
155	29-1062	Family and General Practitioners	1.115
156	13-1031	Claims Adjusters, Examiners, and Investigators	1.106
157	43-6011	Executive Secretaries and Executive Administrative Assistants	1.106
158	19-2012	Physicists	1.097
159	21-1022	Healthcare Social Workers	1.094
160	13-2041	Credit Analysts	1.092
161	19-3099	Social Scientists and Related Workers, All Other	1.085

162	13-1081	Logisticians	1.081
163	43-4051	Customer Service Representatives	1.076
164	19-3051	Urban and Regional Planners	1.075
165	17-2161	Nuclear Engineers	1.073
166	39-6012	Concierges	1.071
167	43-9111	Statistical Assistants	1.053
168	15-1121	Computer Systems Analysts	1.046
169	15-1122	Information Security Analysts	1.045
170	17-2081	Environmental Engineers	1.044
171	15-1199	Computer Occupations, All Other	1.044
172	41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	1.039
173	19-2011	Astronomers	1.035
174	17-2171	Petroleum Engineers	1.033
175	43-4171	Receptionists and Information Clerks	1.033
176	27-2041	Music Directors and Composers	1.032
177	17-2151	Mining and Geological Engineers, Including Mining Safety Engineers	1.031
178	43-4011	Brokerage Clerks	1.026
179	41-9031	Sales Engineers	1.026
180	15-1131	Computer Programmers	1.025
181	25-2021	Elementary School Teachers, Except Special Education	1.017
182	39-1011	Gaming Supervisors	1.015
183	25-1121	Art, Drama, and Music Teachers, Postsecondary	1.007
184	29-1063	Internists, General	1.001
185	25-2054	Special Education Teachers, Secondary School	1.000
186	15-1141	Database Administrators	0.996
187	25-4021	Librarians	0.978
188	17-2061	Computer Hardware Engineers	0.977
189	19-1011	Animal Scientists	0.972
190	21-1091	Health Educators	0.968
191	15-1111	Computer and Information Research Scientists	0.968
192	11-9031	Education Administrators, Preschool and Childcare Center/Program	0.967
193	21-1021	Child, Family, and School Social Workers	0.957
194	41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	0.953
195	11-3021	Computer and Information Systems Managers	0.945
196	27-4013	Radio Operators	0.941
197	25-2052	Special Education Teachers, Kindergarten and Elementary School	0.937
198	17-2051	Civil Engineers	0.927
199	13-1199	Business Operations Specialists, All Other	0.925
200	19-2099	Physical Scientists, All Other	0.913

201	43-9061	Office Clerks, General	0.911
202	11-9199	Managers, All Other	0.910
203	17-2041	Chemical Engineers	0.906
204	17-2112	Industrial Engineers	0.905
205	11-3071	Transportation, Storage, and Distribution Managers	0.905
206	23-2091	Court Reporters	0.903
207	17-2071	Electrical Engineers	0.901
208	11-9161	Emergency Management Directors	0.901
209	21-1092	Probation Officers and Correctional Treatment Specialists	0.897
210	19-1029	Biological Scientists, All Other	0.883
211	15-1132	Software Developers, Applications	0.882
212	19-2041	Environmental Scientists and Specialists, Including Health	0.870
213	11-9131	Postmasters and Mail Superintendents	0.866
214	27-2012	Producers and Directors	0.860
215	17-1012	Landscape Architects	0.836
216	21-1015	Rehabilitation Counselors	0.835
217	25-3021	Self-Enrichment Education Teachers	0.825
218	27-1025	Interior Designers	0.822
219	43-3031	Bookkeeping, Accounting, and Auditing Clerks	0.818
220	19-1021	Biochemists and Biophysicists	0.794
221	13-1022	Wholesale and Retail Buyers, Except Farm Products	0.791
222	15-1134	Web Developers	0.789
223	19-2032	Materials Scientists	0.786
224	25-9021	Farm and Home Management Advisors	0.784
225	17-2131	Materials Engineers	0.780
226	43-5031	Police, Fire, and Ambulance Dispatchers	0.774
227	27-3012	Public Address System and Other Announcers	0.773
228	11-3011	Administrative Services Managers	0.768
229	17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	0.764
230	43-4151	Order Clerks	0.761
231	25-9041	Teacher Assistants	0.748
232	25-1072	Nursing Instructors and Teachers, Postsecondary	0.744
233	19-3091	Anthropologists and Archeologists	0.739
234	13-1021	Buyers and Purchasing Agents, Farm Products	0.737
235	39-7011	Tour Guides and Escorts	0.736
236	17-2031	Biomedical Engineers	0.734
237	27-1011	Art Directors	0.727
238	11-9071	Gaming Managers	0.719
239	43-4081	Hotel, Motel, and Resort Desk Clerks	0.711
240	39-9041	Residential Advisors	0.711
241	41-9022	Real Estate Sales Agents	0.701
242	29-1181	Audiologists	0.696

243	25-4011	Archivists	0.693
244	17-2021	Agricultural Engineers	0.690
245	29-1199	Health Diagnosing and Treating Practitioners, All Other	0.679
246	17-2141	Mechanical Engineers	0.678
247	11-1021	General and Operations Managers	0.678
248	17-3012	Electrical and Electronics Drafters	0.676
249	19-1020	Biologists	0.662
250	43-5061	Production, Planning, and Expediting Clerks	0.661
251	27-4032	Film and Video Editors	0.657
252	15-1152	Computer Network Support Specialists	0.657
253	25-4012	Curators	0.656
254	25-2051	Special Education Teachers, Preschool	0.655
255	25-2012	Kindergarten Teachers, Except Special Education	0.653
256	53-2021	Air Traffic Controllers	0.648
257	11-9041	Architectural and Engineering Managers	0.647
258	25-2023	Career/Technical Education Teachers, Middle School	0.647
259	11-9021	Construction Managers	0.636
260	13-2021	Appraisers and Assessors of Real Estate	0.628
261	39-1021	First-Line Supervisors of Personal Service Workers	0.628
262	11-9039	Education Administrators, All Other	0.628
263	29-1069	Physicians and Surgeons, All Other	0.619
264	33-9021	Private Detectives and Investigators	0.615
265	17-1011	Architects, Except Landscape and Naval	0.610
266	19-1013	Soil and Plant Scientists	0.609
267	29-9011	Occupational Health and Safety Specialists	0.598
268	13-1032	Insurance Appraisers, Auto Damage	0.582
269	17-2199	Engineers, All Other	0.581
270	27-2011	Actors	0.578
271	19-1012	Food Scientists and Technologists	0.573
272	13-1041	Compliance Officers	0.572
273	29-1051	Pharmacists	0.571
274	19-2042	Geoscientists, Except Hydrologists and Geographers	0.567
275	27-1021	Commercial and Industrial Designers	0.560
276	21-1093	Social and Human Service Assistants	0.557
277	19-2043	Hydrologists	0.555
278	17-3011	Architectural and Civil Drafters	0.554
279	29-1081	Podiatrists	0.554
280	17-3022	Civil Engineering Technicians	0.553
281	39-7012	Travel Guides	0.553
282	29-2071	Medical Records and Health Information Technicians	0.552
283	27-1024	Graphic Designers	0.527
284	13-1121	Meeting, Convention, and Event Planners	0.513
285	27-1022	Fashion Designers	0.508

286	43-9022	Word Processors and Typists	0.507
287	43-3041	Gaming Cage Workers	0.496
288	15-1143	Computer Network Architects	0.495
289	15-1142	Network and Computer Systems Administrators	0.475
290	19-1022	Microbiologists	0.474
291	17-1021	Cartographers and Photogrammetrists	0.472
292	11-9081	Lodging Managers	0.464
293	29-2092	Hearing Aid Specialists	0.458
294	17-2072	Electronics Engineers, Except Computer	0.457
295	15-2091	Mathematical Technicians	0.438
296	33-9031	Gaming Surveillance Officers and Gaming Investigators	0.433
297	27-1014	Multimedia Artists and Animators	0.432
298	43-3071	Tellers	0.431
299	43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	0.423
300	25-2032	Career/Technical Education Teachers, Secondary School	0.422
301	51-8011	Nuclear Power Reactor Operators	0.409
302	43-9011	Computer Operators	0.408
303	29-1125	Recreational Therapists	0.401
304	25-1194	Vocational Education Teachers, Postsecondary	0.390
305	17-3013	Mechanical Drafters	0.382
306	39-3012	Gaming and Sports Book Writers and Runners	0.365
307	29-1064	Obstetricians and Gynecologists	0.364
308	41-2031	Retail Salespersons	0.357
309	11-3051	Industrial Production Managers	0.354
310	17-3026	Industrial Engineering Technicians	0.347
311	17-2121	Marine Engineers and Naval Architects	0.343
312	27-4014	Sound Engineering Technicians	0.338
313	11-9061	Funeral Service Managers	0.337
314	41-9011	Demonstrators and Product Promoters	0.334
315	29-9012	Occupational Health and Safety Technicians	0.329
316	19-1023	Zoologists and Wildlife Biologists	0.327
317	19-2031	Chemists	0.327
318	15-1151	Computer User Support Specialists	0.326
319	25-2011	Preschool Teachers, Except Special Education	0.322
320	27-2022	Coaches and Scouts	0.319
321	29-1128	Exercise Physiologists	0.307
322	29-1161	Nurse Midwives	0.305
323	29-1171	Nurse Practitioners	0.302
324	27-2042	Musicians and Singers	0.290
325	39-3093	Locker Room, Coatroom, and Dressing Room Attendants	0.279
326	29-9099	Healthcare Practitioners and Technical Workers, All Other	0.279
327	43-4121	Library Assistants, Clerical	0.276
328	29-1141	Registered Nurses	0.272

329	25-9011	Audio-Visual and Multimedia Collections Specialists	0.272
330	29-1122	Occupational Therapists	0.266
331	51-8012	Power Distributors and Dispatchers	0.257
332	31-9099	Healthcare Support Workers, All Other	0.252
333	53-2022	Airfield Operations Specialists	0.246
334	43-4071	File Clerks	0.240
335	31-9092	Medical Assistants	0.236
336	29-1061	Anesthesiologists	0.212
337	41-1011	First-Line Supervisors of Retail Sales Workers	0.201
338	17-3021	Aerospace Engineering and Operations Technicians	0.201
339	29-1041	Optometrists	0.200
340	35-9031	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	0.182
341	25-4031	Library Technicians	0.180
342	19-4099	Life, Physical, and Social Science Technicians, All Other	0.176
343	43-9021	Data Entry Keyers	0.172
344	33-3021	Detectives and Criminal Investigators	0.151
345	41-2021	Counter and Rental Clerks	0.143
346	53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	0.138
347	21-1094	Community Health Workers	0.135
348	29-1151	Nurse Anesthetists	0.134
349	19-4021	Biological Technicians	0.133
350	53-6041	Traffic Technicians	0.129
351	29-2091	Orthotists and Prosthetists	0.126
352	39-9032	Recreation Workers	0.097
353	29-2057	Ophthalmic Medical Technicians	0.083
354	17-3023	Electrical and Electronic Engineering Technicians	0.078
355	19-1031	Conservation Scientists	0.074
356	53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	0.068
357	47-4011	Construction and Building Inspectors	0.068
358	11-9051	Food Service Managers	0.061
359	29-1011	Chiropractors	0.052
360	29-1071	Physician Assistants	0.040
361	39-3011	Gaming Dealers	0.030
362	29-2081	Opticians, Dispensing	0.029
363	39-1012	Slot Supervisors	0.027
364	29-1023	Orthodontists	0.021
365	19-4092	Forensic Science Technicians	0.010
366	29-2053	Psychiatric Technicians	-0.001
367	51-5111	Prepress Technicians and Workers	-0.001
368	45-2011	Agricultural Inspectors	-0.008
369	41-2022	Parts Salespersons	-0.014

370	33-9099	Protective Service Workers, All Other	-0.017
371	29-2033	Nuclear Medicine Technologists	-0.023
372	29-2052	Pharmacy Technicians	-0.023
373	19-4041	Geological and Petroleum Technicians	-0.027
374	31-9095	Pharmacy Aides	-0.028
375	51-1011	First-Line Supervisors of Production and Operating Workers	-0.037
376	39-5094	Skincare Specialists	-0.037
377	29-2011	Medical and Clinical Laboratory Technologists	-0.042
378	19-4011	Agricultural and Food Science Technicians	-0.049
379	29-1123	Physical Therapists	-0.059
380	43-9031	Desktop Publishers	-0.065
381	31-2011	Occupational Therapy Assistants	-0.075
382	39-5092	Manicurists and Pedicurists	-0.079
383	17-3029	Engineering Technicians, Except Drafters, All Other	-0.079
384	29-1131	Veterinarians	-0.084
385	29-2054	Respiratory Therapy Technicians	-0.088
386	19-4051	Nuclear Technicians	-0.091
387	19-4031	Chemical Technicians	-0.094
388	29-9091	Athletic Trainers	-0.095
389	41-2012	Gaming Change Persons and Booth Cashiers	-0.104
390	41-2011	Cashiers	-0.107
391	27-4012	Broadcast Technicians	-0.111
392	25-4013	Museum Technicians and Conservators	-0.111
393	39-3031	Ushers, Lobby Attendants, and Ticket Takers	-0.111
394	49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	-0.114
395	39-4031	Morticians, Undertakers, and Funeral Directors	-0.114
396	53-6061	Transportation Attendants, Except Flight Attendants	-0.118
397	27-4011	Audio and Video Equipment Technicians	-0.120
398	17-1022	Surveyors	-0.121
399	17-3025	Environmental Engineering Technicians	-0.124
400	29-2051	Dietetic Technicians	-0.128
401	29-2031	Cardiovascular Technologists and Technicians	-0.131
402	29-2035	Magnetic Resonance Imaging Technologists	-0.137
403	19-4091	Environmental Science and Protection Technicians, Including Health	-0.143
404	29-1067	Surgeons	-0.145
405	27-2023	Umpires, Referees, and Other Sports Officials	-0.145
406	35-1012	First-Line Supervisors of Food Preparation and Serving Workers	-0.150
407	33-2021	Fire Inspectors and Investigators	-0.152
408	51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	-0.156
409	39-4021	Funeral Attendants	-0.158
410	11-9013	Farmers, Ranchers, and Other Agricultural Managers	-0.158
411	27-1027	Set and Exhibit Designers	-0.160

412	39-9011	Childcare Workers	-0.167
413	33-3011	Bailiffs	-0.171
414	35-1011	Chefs and Head Cooks	-0.172
415	19-1032	Foresters	-0.196
416	33-1012	First-Line Supervisors of Police and Detectives	-0.196
417	29-1126	Respiratory Therapists	-0.199
418	39-9021	Personal Care Aides	-0.206
419	29-1024	Prosthodontists	-0.214
420	27-1023	Floral Designers	-0.219
421	39-3091	Amusement and Recreation Attendants	-0.229
422	25-2059	Special Education Teachers, All Other	-0.236
423	31-2021	Physical Therapist Assistants	-0.247
424	31-9097	Phlebotomists	-0.253
425	49-2091	Avionics Technicians	-0.264
426	17-3027	Mechanical Engineering Technicians	-0.274
427	29-2032	Diagnostic Medical Sonographers	-0.274
428	31-1013	Psychiatric Aides	-0.275
429	29-2099	Health Technologists and Technicians, All Other	-0.281
430	29-2056	Veterinary Technologists and Technicians	-0.282
431	29-2012	Medical and Clinical Laboratory Technicians	-0.283
432	43-5051	Postal Service Clerks	-0.284
433	17-3031	Surveying and Mapping Technicians	-0.290
434	39-3092	Costume Attendants	-0.296
435	29-2061	Licensed Practical and Licensed Vocational Nurses	-0.298
436	35-3021	Combined Food Preparation and Serving Workers, Including Fast Food	-0.308
437	33-9092	Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	-0.316
438	29-1124	Radiation Therapists	-0.316
439	53-6051	Transportation Inspectors	-0.318
440	35-3022	Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	-0.321
441	29-1022	Oral and Maxillofacial Surgeons	-0.330
442	51-6092	Fabric and Apparel Patternmakers	-0.333
443	51-4012	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	-0.341
444	33-2022	Forest Fire Inspectors and Prevention Specialists	-0.342
445	31-9091	Dental Assistants	-0.346
446	29-1021	Dentists, General	-0.348
447	29-2021	Dental Hygienists	-0.352
448	43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	-0.353
449	31-2012	Occupational Therapy Aides	-0.357
450	49-9061	Camera and Photographic Equipment Repairers	-0.360

451	47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	-0.360
452	33-1011	First-Line Supervisors of Correctional Officers	-0.361
453	53-2031	Flight Attendants	-0.365
454	37-1011	First-Line Supervisors of Housekeeping and Janitorial Workers	-0.367
455	27-4021	Photographers	-0.382
456	33-9011	Animal Control Workers	-0.390
457	35-2011	Cooks, Fast Food	-0.391
458	33-9091	Crossing Guards	-0.397
459	13-1074	Farm Labor Contractors	-0.404
460	31-1011	Home Health Aides	-0.405
461	29-2034	Radiologic Technologists	-0.405
462	35-3011	Bartenders	-0.411
463	33-9032	Security Guards	-0.423
464	51-3092	Food Batchmakers	-0.427
465	51-9081	Dental Laboratory Technicians	-0.437
466	51-8013	Power Plant Operators	-0.441
467	35-3041	Food Servers, Nonrestaurant	-0.445
468	49-2011	Computer, Automated Teller, and Office Machine Repairers	-0.454
469	35-3031	Waiters and Waitresses	-0.469
470	51-3011	Bakers	-0.474
471	37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	-0.486
472	39-5091	Makeup Artists, Theatrical and Performance	-0.497
473	51-9151	Photographic Process Workers and Processing Machine Operators	-0.498
474	39-5093	Shampooers	-0.501
475	41-9012	Models	-0.503
476	33-3031	Fish and Game Wardens	-0.506
477	31-1014	Nursing Assistants	-0.515
478	33-9093	Transportation Security Screeners	-0.523
479	43-5081	Stock Clerks and Order Fillers	-0.523
480	39-2021	Nonfarm Animal Caretakers	-0.528
481	49-9062	Medical Equipment Repairers	-0.537
482	29-2055	Surgical Technologists	-0.542
483	39-5011	Barbers	-0.543
484	51-9082	Medical Appliance Technicians	-0.548
485	45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers	-0.558
486	35-2012	Cooks, Institution and Cafeteria	-0.559
487	51-8031	Water and Wastewater Treatment Plant and System Operators	-0.559
488	51-8091	Chemical Plant and System Operators	-0.560
489	53-5031	Ship Engineers	-0.567
490	35-2015	Cooks, Short Order	-0.567

491	17-3024	Electro-Mechanical Technicians	-0.568
492	51-8092	Gas Plant Operators	-0.574
493	43-9071	Office Machine Operators, Except Computer	-0.577
494	53-4031	Railroad Conductors and Yardmasters	-0.579
495	51-8021	Stationary Engineers and Boiler Operators	-0.580
496	49-9063	Musical Instrument Repairers and Tuners	-0.584
497	31-9096	Veterinary Assistants and Laboratory Animal Caretakers	-0.590
498	51-6052	Tailors, Dressmakers, and Custom Sewers	-0.607
499	31-2022	Physical Therapist Aides	-0.615
500	39-5012	Hairdressers, Hairstylists, and Cosmetologists	-0.616
501	51-3093	Food Cooking Machine Operators and Tenders	-0.619
502	49-9064	Watch Repairers	-0.619
503	33-3041	Parking Enforcement Workers	-0.627
504	27-4031	Camera Operators, Television, Video, and Motion Picture	-0.629
505	51-2093	Timing Device Assemblers and Adjusters	-0.635
506	33-1021	First-Line Supervisors of Fire Fighting and Prevention Workers	-0.636
507	51-9071	Jewelers and Precious Stone and Metal Workers	-0.637
508	35-2013	Cooks, Private Household	-0.639
509	33-3051	Police and Sheriff's Patrol Officers	-0.640
510	53-2012	Commercial Pilots	-0.644
511	39-3021	Motion Picture Projectionists	-0.649
512	51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	-0.651
513	51-2023	Electromechanical Equipment Assemblers	-0.652
514	39-4011	Embalmers	-0.657
515	49-3052	Motorcycle Mechanics	-0.666
516	33-3012	Correctional Officers and Jailers	-0.669
517	49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	-0.672
518	51-9011	Chemical Equipment Operators and Tenders	-0.678
519	31-9011	Massage Therapists	-0.682
520	49-2098	Security and Fire Alarm Systems Installers	-0.685
521	51-4111	Tool and Die Makers	-0.687
522	27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	-0.698
523	29-2041	Emergency Medical Technicians and Paramedics	-0.699
524	49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	-0.703
525	45-4023	Log Graders and Scalers	-0.703
526	43-9051	Mail Clerks and Mail Machine Operators, Except Postal Service	-0.711
527	51-9141	Semiconductor Processors	-0.713
528	53-3031	Driver/Sales Workers	-0.722
529	37-2021	Pest Control Workers	-0.724
530	53-3022	Bus Drivers, School or Special Client	-0.729

531	39-2011	Animal Trainers	-0.729
532	49-2097	Electronic Home Entertainment Equipment Installers and Repairers	-0.730
533	27-1026	Merchandise Displayers and Window Trimmers	-0.735
534	43-5071	Shipping, Receiving, and Traffic Clerks	-0.738
535	49-2021	Radio, Cellular, and Tower Equipment Installers and Repairers	-0.743
536	47-4041	Hazardous Materials Removal Workers	-0.744
537	33-3052	Transit and Railroad Police	-0.745
538	53-1011	Aircraft Cargo Handling Supervisors	-0.751
539	51-2022	Electrical and Electronic Equipment Assemblers	-0.752
540	53-2011	Airline Pilots, Copilots, and Flight Engineers	-0.758
541	35-2014	Cooks, Restaurant	-0.759
542	19-4093	Forest and Conservation Technicians	-0.761
543	51-9194	Etchers and Engravers	-0.775
544	31-9093	Medical Equipment Preparers	-0.776
545	49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	-0.781
546	51-4062	Patternmakers, Metal and Plastic	-0.788
547	51-3091	Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders	-0.790
548	53-5021	Captains, Mates, and Pilots of Water Vessels	-0.793
549	49-9099	Installation, Maintenance, and Repair Workers, All Other	-0.793
550	53-6011	Bridge and Lock Tenders	-0.799
551	51-7031	Model Makers, Wood	-0.802
552	51-8099	Plant and System Operators, All Other	-0.811
553	49-3011	Aircraft Mechanics and Service Technicians	-0.814
554	49-3091	Bicycle Repairers	-0.823
555	51-4193	Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	-0.828
556	51-2092	Team Assemblers	-0.832
557	51-5112	Printing Press Operators	-0.844
558	53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	-0.844
559	51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	-0.845
560	53-7011	Conveyor Operators and Tenders	-0.846
561	51-9051	Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	-0.847
562	49-9091	Coin, Vending, and Amusement Machine Servicers and Repairers	-0.852
563	51-4035	Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	-0.867
564	51-4061	Model Makers, Metal and Plastic	-0.868
565	51-2021	Coil Winders, Tapers, and Finishers	-0.869
566	49-3092	Recreational Vehicle Service Technicians	-0.869

567	49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	-0.870
568	47-4099	Construction and Related Workers, All Other	-0.871
569	53-7071	Gas Compressor and Gas Pumping Station Operators	-0.873
570	47-5012	Rotary Drill Operators, Oil and Gas	-0.880
571	51-4022	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	-0.881
572	27-2032	Choreographers	-0.886
573	51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	-0.887
574	51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	-0.888
575	51-6011	Laundry and Dry-Cleaning Workers	-0.889
576	49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	-0.896
577	49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	-0.910
578	53-4041	Subway and Streetcar Operators	-0.913
579	51-5113	Print Binding and Finishing Workers	-0.914
580	39-6011	Baggage Porters and Bellhops	-0.914
581	53-4011	Locomotive Engineers	-0.916
582	47-2111	Electricians	-0.916
583	27-1012	Craft Artists	-0.917
584	51-9196	Paper Goods Machine Setters, Operators, and Tenders	-0.917
585	51-9083	Ophthalmic Laboratory Technicians	-0.918
586	43-5021	Couriers and Messengers	-0.922
587	51-6061	Textile Bleaching and Dyeing Machine Operators and Tenders	-0.923
588	51-6091	Extruding and Forming Machine Setters, Operators, and Tenders, Synthetic and Glass Fibers	-0.924
589	51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	-0.927
590	47-4021	Elevator Installers and Repairers	-0.928
591	49-9031	Home Appliance Repairers	-0.928
592	37-3012	Pesticide Handlers, Sprayers, and Applicators, Vegetation	-0.934
593	35-2021	Food Preparation Workers	-0.934
594	51-4192	Layout Workers, Metal and Plastic	-0.936
595	49-3051	Motorboat Mechanics and Service Technicians	-0.938
596	53-3041	Taxi Drivers and Chauffeurs	-0.938
597	49-2022	Telecommunications Equipment Installers and Repairers, Except Line Installers	-0.939
598	51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	-0.941
599	45-2021	Animal Breeders	-0.941
600	51-9031	Cutters and Trimmers, Hand	-0.946
601	47-4091	Segmental Pavers	-0.949
602	51-9123	Painting, Coating, and Decorating Workers	-0.951
603	47-5031	Explosives Workers, Ordnance Handling Experts, and Blasters	-0.955

604	49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	-0.961
605	43-5052	Postal Service Mail Carriers	-0.967
606	53-7072	Pump Operators, Except Wellhead Pumpers	-0.972
607	51-3021	Butchers and Meat Cutters	-0.977
608	51-4041	Machinists	-0.978
609	49-2092	Electric Motor, Power Tool, and Related Repairers	-0.980
610	49-9081	Wind Turbine Service Technicians	-0.984
611	49-9094	Locksmiths and Safe Repairers	-0.991
612	47-5021	Earth Drillers, Except Oil and Gas	-0.999
613	45-4011	Forest and Conservation Workers	-1.000
614	51-6041	Shoe and Leather Workers and Repairers	-1.007
615	43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	-1.007
616	51-9111	Packaging and Filling Machine Operators and Tenders	-1.011
617	53-7063	Machine Feeders and Offbearers	-1.013
618	49-9043	Maintenance Workers, Machinery	-1.015
619	51-6051	Sewers, Hand	-1.019
620	53-4013	Rail Yard Engineers, Dinkey Operators, and Hostlers	-1.021
621	51-3022	Meat, Poultry, and Fish Cutters and Trimmers	-1.026
622	43-5041	Meter Readers, Utilities	-1.027
623	37-2012	Maids and Housekeeping Cleaners	-1.031
624	51-9193	Cooling and Freezing Equipment Operators and Tenders	-1.031
625	49-3023	Automotive Service Technicians and Mechanics	-1.031
626	45-2041	Graders and Sorters, Agricultural Products	-1.032
627	47-2231	Solar Photovoltaic Installers	-1.037
628	53-6021	Parking Lot Attendants	-1.038
629	51-2031	Engine and Other Machine Assemblers	-1.045
630	51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	-1.048
631	51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	-1.048
632	47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	-1.049
633	53-3021	Bus Drivers, Transit and Intercity	-1.050
634	51-6042	Shoe Machine Operators and Tenders	-1.052
635	49-9052	Telecommunications Line Installers and Repairers	-1.054
636	49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	-1.058
637	47-5013	Service Unit Operators, Oil, Gas, and Mining	-1.068
638	49-9071	Maintenance and Repair Workers, General	-1.070
639	53-4012	Locomotive Firers	-1.073
640	51-2041	Structural Metal Fabricators and Fitters	-1.078
641	47-2132	Insulation Workers, Mechanical	-1.080
642	49-9092	Commercial Divers	-1.082
643	31-1015	Orderlies	-1.088

644	45-2093	Farmworkers, Farm, Ranch, and Aquacultural Animals	-1.089
645	37-2011	Janitors and Cleaners, Except Maids and Housekeeping Cleaners	-1.093
646	51-4194	Tool Grinders, Filers, and Sharpeners	-1.097
647	53-7073	Wellhead Pumpers	-1.099
648	51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic	-1.108
649	53-6031	Automotive and Watercraft Service Attendants	-1.108
650	51-6062	Textile Cutting Machine Setters, Operators, and Tenders	-1.116
651	49-9051	Electrical Power-Line Installers and Repairers	-1.119
652	47-2152	Plumbers, Pipefitters, and Steamfitters	-1.120
653	47-2011	Boilermakers	-1.122
654	51-9192	Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	-1.124
655	51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	-1.126
656	53-7041	Hoist and Winch Operators	-1.127
657	51-9021	Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	-1.136
658	51-9041	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	-1.138
659	51-4052	Pourers and Casters, Metal	-1.143
660	49-9097	Signal and Track Switch Repairers	-1.148
661	51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	-1.150
662	51-6063	Textile Knitting and Weaving Machine Setters, Operators, and Tenders	-1.156
663	51-4191	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	-1.171
664	47-2073	Operating Engineers and Other Construction Equipment Operators	-1.174
665	53-5022	Motorboat Operators	-1.177
666	47-2151	Pipelayers	-1.181
667	51-4023	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	-1.186
668	53-7064	Packers and Packagers, Hand	-1.193
669	51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	-1.194
670	47-2044	Tile and Marble Setters	-1.196
671	51-9032	Cutting and Slicing Machine Setters, Operators, and Tenders	-1.199
672	49-3021	Automotive Body and Related Repairers	-1.199
673	53-3033	Light Truck or Delivery Services Drivers	-1.200
674	51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	-1.204
675	51-7032	Patternmakers, Wood	-1.208

676	49-9045	Refractory Materials Repairers, Except Brickmasons	-1.209
677	49-9041	Industrial Machinery Mechanics	-1.217
678	51-9022	Grinding and Polishing Workers, Hand	-1.220
679	49-3022	Automotive Glass Installers and Repairers	-1.235
680	51-7021	Furniture Finishers	-1.238
681	49-3041	Farm Equipment Mechanics and Service Technicians	-1.239
682	45-2091	Agricultural Equipment Operators	-1.240
683	51-9195	Molders, Shapers, and Casters, Except Metal and Plastic	-1.241
684	47-2211	Sheet Metal Workers	-1.245
685	47-2031	Carpenters	-1.245
686	53-7031	Dredge Operators	-1.256
687	39-9031	Fitness Trainers and Aerobics Instructors	-1.257
688	49-3042	Mobile Heavy Equipment Mechanics, Except Engines	-1.259
689	47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	-1.260
690	53-7081	Refuse and Recyclable Material Collectors	-1.263
691	51-7041	Sawing Machine Setters, Operators, and Tenders, Wood	-1.265
692	47-2121	Glaziers	-1.267
693	53-5011	Sailors and Marine Oilers	-1.269
694	51-6031	Sewing Machine Operators	-1.273
695	51-2091	Fiberglass Laminators and Fabricators	-1.277
696	49-9096	Riggers	-1.278
697	51-9121	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	-1.279
698	47-4051	Highway Maintenance Workers	-1.282
699	49-9011	Mechanical Door Repairers	-1.282
700	47-5042	Mine Cutting and Channeling Machine Operators	-1.283
701	49-9044	Millwrights	-1.284
702	51-9191	Adhesive Bonding Machine Operators and Tenders	-1.285
703	33-2011	Firefighters	-1.287
704	27-2021	Athletes and Sports Competitors	-1.290
705	51-4121	Welders, Cutters, Solderers, and Brazers	-1.298
706	47-2071	Paving, Surfacing, and Tamping Equipment Operators	-1.303
707	51-4051	Metal-Refining Furnace Operators and Tenders	-1.304
708	53-4021	Railroad Brake, Signal, and Switch Operators	-1.306
709	49-9098	Helpers--Installation, Maintenance, and Repair Workers	-1.321
710	51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	-1.325
711	51-7011	Cabinetmakers and Bench Carpenters	-1.327
712	47-2082	Tapers	-1.345
713	53-7021	Crane and Tower Operators	-1.352
714	45-4022	Logging Equipment Operators	-1.355
715	47-5041	Continuous Mining Machine Operators	-1.355
716	51-9198	Helpers--Production Workers	-1.355

717	51-9199	Production Workers, All Other	-1.363
718	53-7032	Excavating and Loading Machine and Dragline Operators	-1.364
719	47-3012	Helpers--Carpenters	-1.370
720	45-3021	Hunters and Trappers	-1.374
721	47-2141	Painters, Construction and Maintenance	-1.381
722	53-7033	Loading Machine Operators, Underground Mining	-1.390
723	47-5011	Derrick Operators, Oil and Gas	-1.391
724	53-3032	Heavy and Tractor-Trailer Truck Drivers	-1.400
725	53-7121	Tank Car, Truck, and Ship Loaders	-1.403
726	47-2061	Construction Laborers	-1.405
727	51-6093	Upholsterers	-1.405
728	47-2041	Carpet Installers	-1.414
729	51-6064	Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	-1.417
730	49-3093	Tire Repairers and Changers	-1.423
731	45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	-1.432
732	35-9011	Dining Room and Cafeteria Attendants and Bartender Helpers	-1.433
733	49-9095	Manufactured Building and Mobile Home Installers	-1.440
734	47-3013	Helpers--Electricians	-1.445
735	47-2072	Pile-Driver Operators	-1.455
736	47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	-1.462
737	51-9197	Tire Builders	-1.463
738	49-9093	Fabric Menders, Except Garment	-1.464
739	47-2022	Stonemasons	-1.483
740	49-3043	Rail Car Repairers	-1.485
741	47-2081	Drywall and Ceiling Tile Installers	-1.496
742	47-4061	Rail-Track Laying and Maintenance Equipment Operators	-1.497
743	53-7111	Mine Shuttle Car Operators	-1.497
744	53-7062	Laborers and Freight, Stock, and Material Movers, Hand	-1.498
745	47-5071	Roustabouts, Oil and Gas	-1.500
746	47-2131	Insulation Workers, Floor, Ceiling, and Wall	-1.510
747	45-3011	Fishers and Related Fishing Workers	-1.511
748	53-7061	Cleaners of Vehicles and Equipment	-1.535
749	51-3023	Slaughterers and Meat Packers	-1.543
750	47-2181	Roofers	-1.553
751	35-9021	Dishwashers	-1.561
752	47-2142	Paperhangers	-1.566
753	51-9122	Painters, Transportation Equipment	-1.568
754	47-5081	Helpers--Extraction Workers	-1.572
755	47-2043	Floor Sanders and Finishers	-1.574
756	53-7051	Industrial Truck and Tractor Operators	-1.575
757	47-2161	Plasterers and Stucco Masons	-1.578
758	37-3013	Tree Trimmers and Pruners	-1.581

759	47-5061	Roof Bolters, Mining	-1.593
760	47-2021	Brickmasons and Blockmasons	-1.607
761	47-5051	Rock Splitters, Quarry	-1.614
762	51-4071	Foundry Mold and Coremakers	-1.642
763	37-3011	Landscaping and Groundskeeping Workers	-1.656
764	47-3016	Helpers--Roofers	-1.668
765	47-4031	Fence Erectors	-1.675
766	47-2051	Cement Masons and Concrete Finishers	-1.678
767	47-2053	Terrazzo Workers and Finishers	-1.685
768	47-2221	Structural Iron and Steel Workers	-1.701
769	47-3014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	-1.711
770	47-2171	Reinforcing Iron and Rebar Workers	-1.781
771	45-4021	Fallers	-1.791
772	27-2031	Dancers	-1.793
773	47-3011	Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	-1.822
774	51-6021	Pressers, Textile, Garment, and Related Materials	-1.854