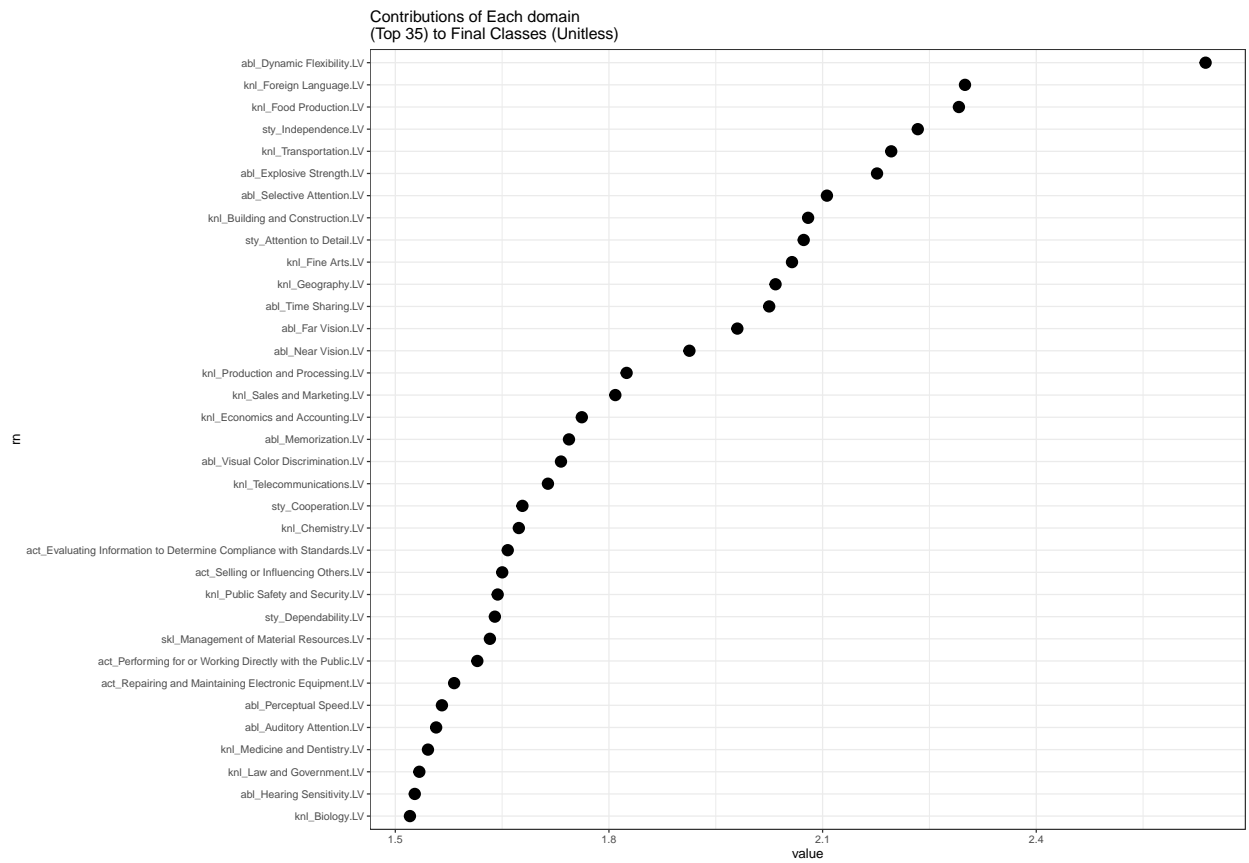


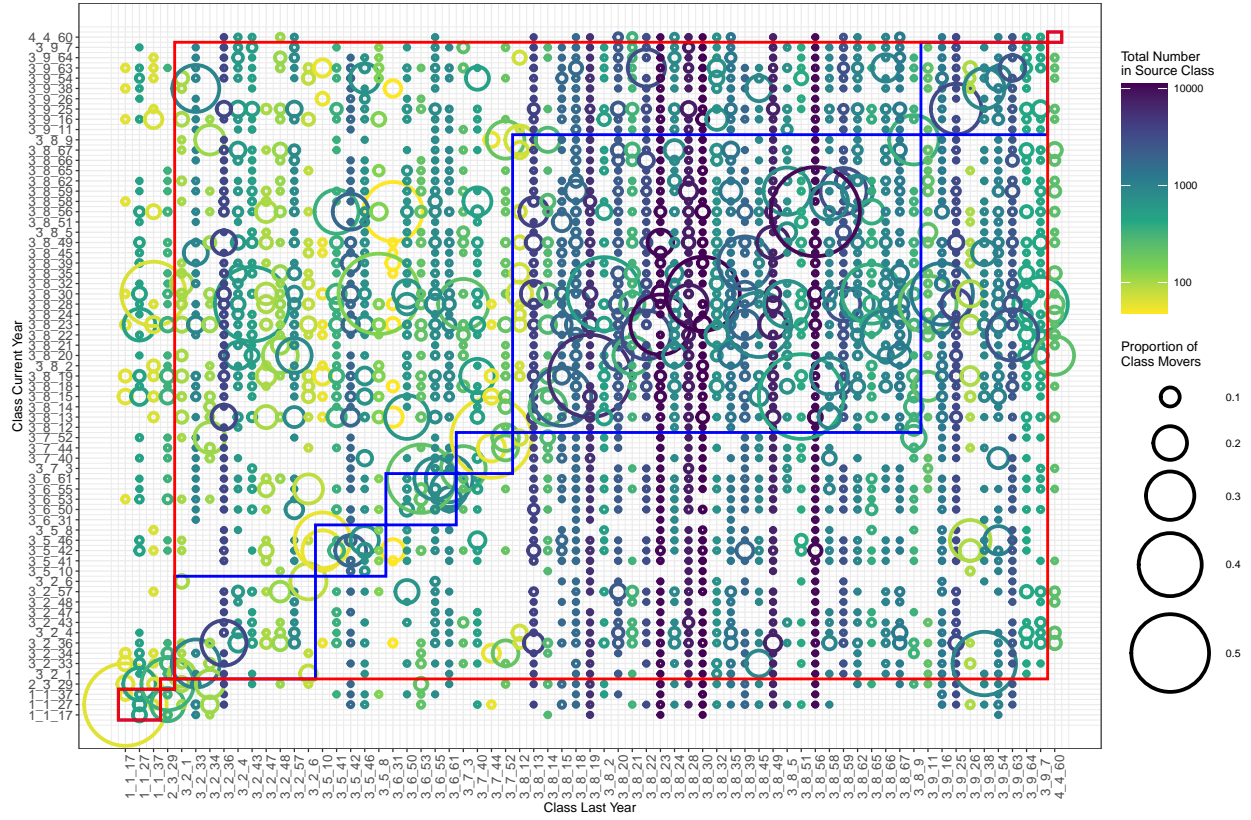
# analysis\_viii

Hunter York

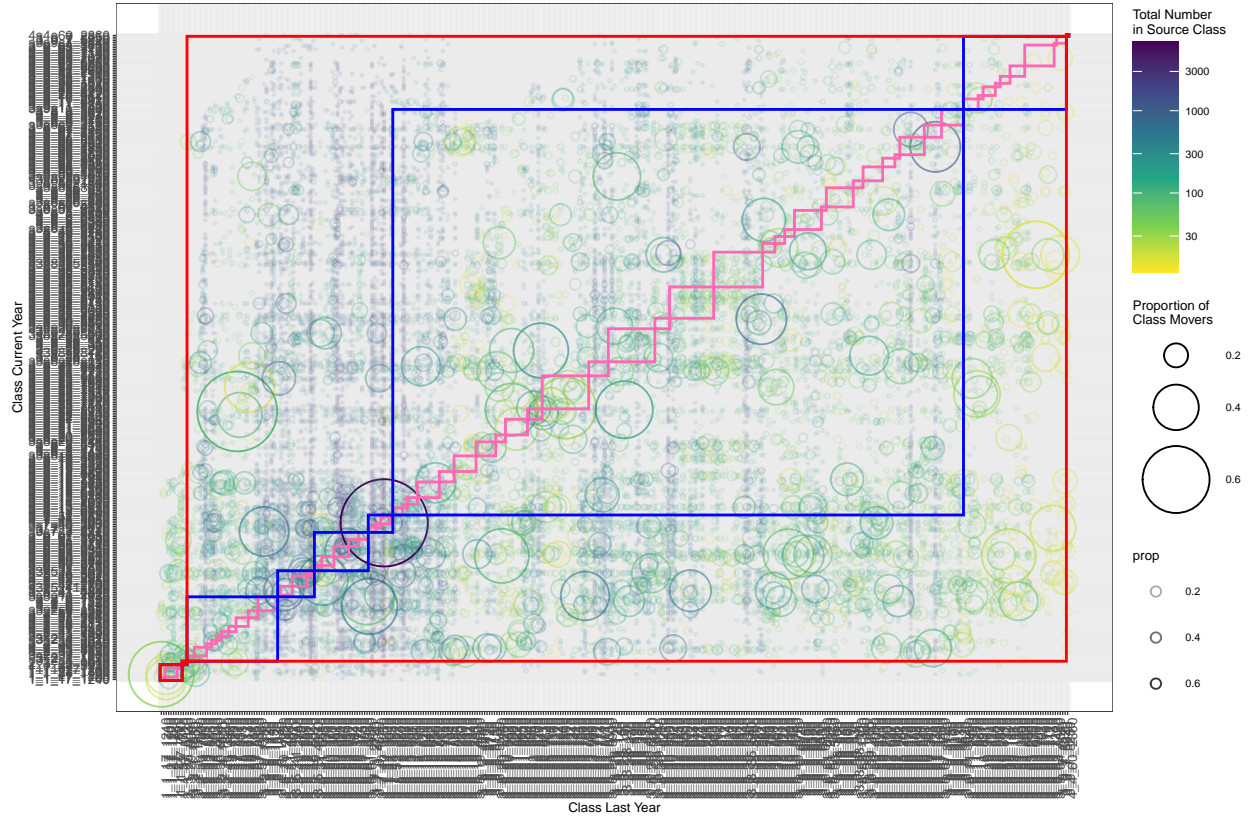
12/24/2020



Source and Sink Classes (K = 67)  
Superimposed with K=9 and K=4 Groupings



Source and Sink Classes (K = 67)  
Superimposed with K=9 and K=4 Groupings



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## [1] 0.2824477
```

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## [1] 0.6738862
```

```
## [1] 0.9884161
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**1**

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**2**

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**3**

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**4**

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**5**

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**6**

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**7**

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% latex table generated in R 4.0.2 by xtable 1.8-4 package % Sun Dec 27 11:33:51 2020
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**8**

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% latex table generated in R 4.0.2 by xtable 1.8-4 package % Sun Dec 27 11:33:51 2020
```

	Title	Class_67	Class_9	Class_4
1	Mathematicians, statisticians	1_1_17	1_1	1
2	Astronomers and physicists	1_1_17	1_1	1
3	Actuaries	1_1_27	1_1	1
4	Operations research analysts	1_1_27	1_1	1
5	Physical scientists, all other	1_1_27	1_1	1
6	Economists	1_1_27	1_1	1
7	Logisticians	1_1_27	1_1	1
8	Atmospheric and space scientis	1_1_37	1_1	1
9	Statistical assistants	1_1_37	1_1	1
10	Aircraft pilots and flight eng	2_3_29	2_3	2
11	Air traffic controllers and ai	2_3_29	2_3	2
12	Biological scientists	3_2_1	3_2	3
13	Medical scientists and life sc	3_2_1	3_2	3
14	Chemists and materials scienti	3_2_1	3_2	3
15	Biological technicians	3_2_4	3_2	3
16	Chemical technicians	3_2_4	3_2	3
17	Chemical engineers	3_2_6	3_2	3
18	Environmental engineers	3_2_6	3_2	3
19	Industrial engineers, includin	3_2_6	3_2	3
20	Marine engineers and naval arc	3_2_6	3_2	3
21	Materials engineers	3_2_6	3_2	3
22	Petroleum engineers	3_2_6	3_2	3
23	Engineers, all other, includin	3_2_6	3_2	3
24	Environmental scientists and g	3_2_6	3_2	3
25	Agricultural and food scientis	3_2_34	3_2	3
26	Dietitians and nutritionists	3_2_34	3_2	3
27	Food preparation workers	3_2_48	3_2	3
28	Waiters and waitresses	3_2_48	3_2	3
29	Food preparation and serving r	3_2_48	3_2	3
30	Dishwashers	3_2_48	3_2	3
31	Butchers and other meat, poult	3_2_48	3_2	3
32	Bakers	3_2_33	3_2	3
33	Food batchmakers	3_2_33	3_2	3
34	Food cooking machine operators	3_2_33	3_2	3
35	Cutting workers	3_2_33	3_2	3
36	Cleaning, washing, and metal p	3_2_33	3_2	3
37	Graders and sorters, agricultu	3_2_36	3_2	3
38	Packers and packagers, hand	3_2_36	3_2	3
39	Crossing guards	3_2_43	3_2	3
40	Ushers, lobby attendants, and	3_2_43	3_2	3
41	Models, demonstrators, and pro	3_2_43	3_2	3
42	Food and tobacco roasting, bak	3_2_47	3_2	3
43	Textile winding, twisting, and	3_2_47	3_2	3
44	Furniture finishers	3_2_47	3_2	3
45	Postal service mail sorters, p	3_2_57	3_2	3
46	Mail clerks and mail machine o	3_2_57	3_2	3
47	Sewing machine operators	3_2_57	3_2	3
48	Helpers-production workers	3_2_57	3_2	3
49	Door-to-door sales workers, ne	3_5_8	3_5	3

	Title	Class_67	Class_9	Class_4
1	Public relations specialists	3_5_41	3_5	3
2	Advertising sales agents	3_5_41	3_5	3
3	Insurance sales agents	3_5_41	3_5	3
4	Real estate brokers and sales	3_5_41	3_5	3
5	Agents and business managers o	3_5_41	3_5	3
6	Actors	3_5_42	3_5	3
7	Musicians, singers, and relate	3_5_42	3_5	3
8	Announcers	3_5_42	3_5	3
9	Writers and authors	3_5_42	3_5	3
10	Photographers	3_5_42	3_5	3
11	Television, video, and motion	3_5_42	3_5	3
12	Switchboard operators, includi	3_5_46	3_5	3
13	Telephone operators	3_5_46	3_5	3
14	Sales engineers	3_5_10	3_5	3
15	Couriers and messengers	3_6_31	3_6	3
16	Postal service mail carriers	3_6_31	3_6	3
17	Parking lot attendants	3_6_31	3_6	3
18	Conservation scientists and fo	3_6_55	3_6	3
19	First-line supervisors/manager	3_6_55	3_6	3
20	Fire fighters	3_6_55	3_6	3
21	Fire inspectors	3_6_55	3_6	3
22	Animal control workers	3_6_61	3_6	3
23	Security guards and gaming sur	3_6_61	3_6	3
24	Flight attendants	3_6_61	3_6	3
25	Transportation inspectors	3_6_61	3_6	3
26	First-line supervisors/manager	3_6_50	3_6	3
27	First-line supervisors/manager	3_6_50	3_6	3
28	Bailiffs, correctional officer	3_6_50	3_6	3
29	Detectives and criminal invest	3_6_50	3_6	3
30	Private detectives and investi	3_6_50	3_6	3
31	Locomotive engineers and opera	3_6_53	3_6	3
32	Railroad brake, signal, switch	3_6_53	3_6	3
33	Subway, streetcar, and other r	3_6_53	3_6	3
34	Sailors and marine oilers, and	3_6_53	3_6	3
35	Ship and boat captains and ope	3_6_53	3_6	3
36	Other transportation workers,	3_6_53	3_6	3
37	Athletes, coaches, umpires, an	3_7_3	3_7	3
38	Dancers and choreographers	3_7_3	3_7	3
39	Recreation and fitness workers	3_7_3	3_7	3
40	Dentists	3_7_40	3_7	3
41	Veterinarians	3_7_40	3_7	3
42	Chiropractors	3_7_44	3_7	3
43	Optometrists	3_7_44	3_7	3
44	Pharmacists	3_7_44	3_7	3
45	Other healthcare practitioners	3_7_44	3_7	3
46	Opticians, dispensing	3_7_52	3_7	3
47	Bartenders	3_8_2	3_8	3
48	Gaming services workers	3_8_2	3_8	3
49	Miscellaneous entertainment at	3_8_2	3_8	3
50	Cashiers	3_8_2	3_8	3

	Title	Class_67	Class_9	Class_4
1	Counter and rental clerks	3_8_2	3_8	3
2	Gaming cage workers	3_8_2	3_8	3
3	Tellers	3_8_2	3_8	3
4	Postal service clerks	3_8_2	3_8	3
5	Audiologists	3_8_9	3_8	3
6	Occupational therapists	3_8_9	3_8	3
7	Physical therapists	3_8_9	3_8	3
8	Radiation therapists	3_8_9	3_8	3
9	Recreational therapists	3_8_9	3_8	3
10	Speech-language pathologists	3_8_9	3_8	3
11	Occupational therapist assista	3_8_9	3_8	3
12	Physical therapist assistants	3_8_9	3_8	3
13	Dental assistants	3_8_9	3_8	3
14	Psychologists	3_8_14	3_8	3
15	Counselors	3_8_14	3_8	3
16	Social workers	3_8_14	3_8	3
17	Lawyers, Judges, magistrates,	3_8_14	3_8	3
18	First-line supervisors/manager	3_8_15	3_8	3
19	Boilermakers	3_8_15	3_8	3
20	Insulation workers	3_8_15	3_8	3
21	Hazardous materials removal wo	3_8_15	3_8	3
22	Derrick, rotary drill, and ser	3_8_15	3_8	3
23	Millwrights	3_8_15	3_8	3
24	First-line supervisors/manager	3_8_15	3_8	3
25	Water and liquid waste treatme	3_8_15	3_8	3
26	Material moving workers, inclu	3_8_15	3_8	3
27	Postsecondary teachers	3_8_19	3_8	3
28	Preschool and kindergarten tea	3_8_19	3_8	3
29	Elementary and middle school t	3_8_19	3_8	3
30	Secondary school teachers	3_8_19	3_8	3
31	Special education teachers	3_8_19	3_8	3
32	Other teachers and instructors	3_8_19	3_8	3
33	Other education, training, and	3_8_19	3_8	3
34	Child care workers	3_8_19	3_8	3
35	Residential advisors	3_8_19	3_8	3
36	Library technicians	3_8_20	3_8	3
37	File Clerks	3_8_20	3_8	3
38	Library assistants, clerical	3_8_20	3_8	3
39	Weighers, measurers, checkers,	3_8_20	3_8	3
40	Extruding and drawing machine	3_8_21	3_8	3
41	Grinding, lapping, polishing,	3_8_21	3_8	3
42	Metalworkers and plastic worke	3_8_21	3_8	3
43	Chemical processing machine se	3_8_21	3_8	3
44	Crushing, grinding, polishing,	3_8_21	3_8	3
45	Extruding, forming, pressing,	3_8_21	3_8	3
46	Packaging and filling machine	3_8_21	3_8	3
47	Tire builders	3_8_21	3_8	3
48	Production workers, including	3_8_21	3_8	3
49	Metal furnace and kiln operato	3_8_22	3_8	3
50	Molders and molding machine se	3_8_22	3_8	3

	Title	Class_67	Class_9	Class_4
1	Plating and coating machine se	3_8_22	3_8	3
2	Textile knitting and weaving m	3_8_22	3_8	3
3	Furnace, kiln, oven, drier, an	3_8_22	3_8	3
4	Machine feeders and offbearers	3_8_22	3_8	3
5	Electric motor, power tool, an	3_8_23	3_8	3
6	Automotive body and related re	3_8_23	3_8	3
7	Automotive glass installers an	3_8_23	3_8	3
8	Bus and truck mechanics and di	3_8_23	3_8	3
9	Heavy vehicle and mobile equip	3_8_23	3_8	3
10	Small engine mechanics	3_8_23	3_8	3
11	Miscellaneous vehicle and mobi	3_8_23	3_8	3
12	Control and valve installers a	3_8_23	3_8	3
13	Heating, air conditioning, and	3_8_23	3_8	3
14	Home appliance repairers	3_8_23	3_8	3
15	Maintenance and repair workers	3_8_23	3_8	3
16	Electrical power-line installe	3_8_23	3_8	3
17	Locksmiths and safe repairers	3_8_23	3_8	3
18	Manufactured building and mobi	3_8_23	3_8	3
19	Riggers	3_8_23	3_8	3
20	Helpers—installation, mainten	3_8_23	3_8	3
21	Other installation, maintenanc	3_8_23	3_8	3
22	Service station attendants	3_8_23	3_8	3
23	Pumping station operators	3_8_23	3_8	3
24	Computer and information syste	3_8_28	3_8	3
25	Financial managers	3_8_28	3_8	3
26	Industrial production managers	3_8_28	3_8	3
27	Purchasing managers	3_8_28	3_8	3
28	Transportation, storage, and d	3_8_28	3_8	3
29	General and operations manager	3_8_28	3_8	3
30	Construction managers	3_8_28	3_8	3
31	Education administrators	3_8_28	3_8	3
32	Engineering managers	3_8_28	3_8	3
33	Gaming managers	3_8_28	3_8	3
34	Medical and health services ma	3_8_28	3_8	3
35	Natural sciences managers	3_8_28	3_8	3
36	Property, real estate, and com	3_8_28	3_8	3
37	Social and community service m	3_8_28	3_8	3
38	Managers, all other	3_8_28	3_8	3
39	First-line supervisors/manager	3_8_28	3_8	3
40	Production, planning, and expe	3_8_28	3_8	3
41	Cost estimators	3_8_28	3_8	3
42	Management analysts	3_8_28	3_8	3
43	Machinists	3_8_30	3_8	3
44	Tool grinders, filers, and sha	3_8_30	3_8	3
45	Upholsterers	3_8_30	3_8	3
46	Cabinetmakers and bench carpen	3_8_30	3_8	3
47	Miscellaneous woodworkers, inc	3_8_30	3_8	3
48	Molders, shapers, and casters,	3_8_30	3_8	3
49	Pest control workers	3_8_32	3_8	3
50	Grounds maintenance workers	3_8_32	3_8	3

	Title	Class_67	Class_9	Class_4
1	Animal trainers	3_8_32	3_8	3
2	Meter readers, utilities	3_8_32	3_8	3
3	First-line supervisors of farm	3_8_32	3_8	3
4	Miscellaneous agricultural wor	3_8_32	3_8	3
5	Forest and conservation worker	3_8_32	3_8	3
6	Logging workers	3_8_32	3_8	3
7	Pipelayers, plumbers, pipefitt	3_8_32	3_8	3
8	Fence erectors	3_8_32	3_8	3
9	Rail-track laying and maintena	3_8_32	3_8	3
10	Miscellaneous construction and	3_8_32	3_8	3
11	Other extraction workers, incl	3_8_32	3_8	3
12	Coin, vending, and amusement m	3_8_32	3_8	3
13	Textile cutting machine setter	3_8_32	3_8	3
14	Driver/sales workers and truck	3_8_32	3_8	3
15	Industrial truck and tractor o	3_8_32	3_8	3
16	Laborers and freight, stock, a	3_8_32	3_8	3
17	Bill and account collectors	3_8_35	3_8	3
18	Billing and posting clerks and	3_8_35	3_8	3
19	Bookkeeping, accounting, and a	3_8_35	3_8	3
20	Payroll and timekeeping clerks	3_8_35	3_8	3
21	Brokerage clerks	3_8_35	3_8	3
22	Credit authorizers, checkers,	3_8_35	3_8	3
23	Customer service representativ	3_8_35	3_8	3
24	Eligibility interviewers, gove	3_8_35	3_8	3
25	Interviewers, except eligibili	3_8_35	3_8	3
26	Loan interviewers and clerks	3_8_35	3_8	3
27	New accounts clerks	3_8_35	3_8	3
28	Correspondence clerks and orde	3_8_35	3_8	3
29	Human resources assistants, ex	3_8_35	3_8	3
30	Claims adjusters, appraisers,	3_8_35	3_8	3
31	Receptionists and information	3_8_35	3_8	3
32	Secretaries and administrative	3_8_35	3_8	3
33	Data entry keyers	3_8_35	3_8	3
34	Word processors and typists	3_8_35	3_8	3
35	Insurance claims and policy pr	3_8_35	3_8	3
36	Office clerks, general	3_8_35	3_8	3
37	Engineering technicians, excep	3_8_39	3_8	3
38	Aircraft mechanics and service	3_8_39	3_8	3
39	Power plant operators, distrib	3_8_39	3_8	3
40	Stationary engineers and boile	3_8_39	3_8	3
41	Miscellaneous plant and system	3_8_39	3_8	3
42	Tool and die makers	3_8_49	3_8	3
43	Miscellaneous textile, apparel	3_8_49	3_8	3
44	Inspectors, testers, sorters,	3_8_49	3_8	3
45	Medical, dental, and ophthalmi	3_8_49	3_8	3
46	Securities, commodities, and f	3_8_56	3_8	3
47	Procurement clerks	3_8_56	3_8	3
48	Accountants and auditors	3_8_56	3_8	3
49	Budget analysts	3_8_56	3_8	3
50	Credit analysts	3_8_56	3_8	3



	Title	Class_67	Class_9	Class_4
1	Personal financial advisors	3_8_56	3_8	3
2	Insurance underwriters	3_8_56	3_8	3
3	Financial examiners	3_8_56	3_8	3
4	Loan counselors and officers	3_8_56	3_8	3
5	Tax examiners, collectors, and	3_8_56	3_8	3
6	Tax preparers	3_8_56	3_8	3
7	Chief executives	3_8_58	3_8	3
8	Architects, except naval	3_8_58	3_8	3
9	Civil engineers	3_8_58	3_8	3
10	Urban and regional planners	3_8_58	3_8	3
11	Farmers, ranchers, and other a	3_8_59	3_8	3
12	Food service managers	3_8_59	3_8	3
13	Chefs and head cooks	3_8_59	3_8	3
14	First-line supervisors/manager	3_8_59	3_8	3
15	First-line supervisors/manager	3_8_59	3_8	3
16	First-line supervisors/manager	3_8_59	3_8	3
17	First-line supervisors/manager	3_8_59	3_8	3
18	First-line supervisors/manager	3_8_59	3_8	3
19	Paving, surfacing, and tamping	3_8_62	3_8	3
20	Construction equipment operato	3_8_62	3_8	3
21	Crane and tower operators	3_8_62	3_8	3
22	Hoist and winch operators, and	3_8_62	3_8	3
23	Refuse and recyclable material	3_8_62	3_8	3
24	Clergy	3_8_65	3_8	3
25	Directors, religious activitie	3_8_65	3_8	3
26	Baggage porters, bellhops, and	3_8_66	3_8	3
27	Parts salespersons	3_8_66	3_8	3
28	Retail salespersons	3_8_66	3_8	3
29	Travel agents	3_8_66	3_8	3
30	Sales representatives, wholesa	3_8_66	3_8	3
31	Telemarketers	3_8_66	3_8	3
32	Hotel, motel, and resort desk	3_8_66	3_8	3
33	Reservation and transportation	3_8_66	3_8	3
34	Cargo and freight agents	3_8_66	3_8	3
35	Shipping, receiving, and traff	3_8_66	3_8	3
36	Massage therapists	3_8_67	3_8	3
37	Hosts and hostesses, restauran	3_8_67	3_8	3
38	Nonfarm animal caretakers	3_8_67	3_8	3
39	Embalmers and funeral attendan	3_8_67	3_8	3
40	Barbers	3_8_67	3_8	3
41	Hairdressers, hairstylists, an	3_8_67	3_8	3
42	Miscellaneous personal appeara	3_8_67	3_8	3
43	Brickmasons, blockmasons, and	3_8_5	3_8	3
44	Carpet, floor, and tile instal	3_8_5	3_8	3
45	Cement masons, concrete finish	3_8_5	3_8	3
46	Construction laborers	3_8_5	3_8	3
47	Drywall installers, ceiling ti	3_8_5	3_8	3
48	Glaziers	3_8_5	3_8	3
49	Painters, construction and mai	3_8_5	3_8	3
50	Plasterers and stucco masons	3_8_5	3_8	3

	Title	Class_67	Class_9	Class_4
1	Roofers	3_8_5	3_8	3
2	Helpers, construction trades	3_8_5	3_8	3
3	Highway maintenance workers	3_8_5	3_8	3
4	Carpenters	3_8_12	3_8	3
5	Reinforcing iron and rebar wor	3_8_12	3_8	3
6	Sheet metal workers	3_8_12	3_8	3
7	Structural iron and steel work	3_8_12	3_8	3
8	Dispatchers	3_8_13	3_8	3
9	Agricultural inspectors	3_8_13	3_8	3
10	Industrial and refractory mach	3_8_18	3_8	3
11	Maintenance workers, machinery	3_8_18	3_8	3
12	Rolling machine setters, opera	3_8_18	3_8	3
13	Cutting, punching, and press m	3_8_18	3_8	3
14	Woodworking machine setters, o	3_8_18	3_8	3
15	Cementing and gluing machine o	3_8_18	3_8	3
16	Aircraft structure, surfaces,	3_8_24	3_8	3
17	Electrical, electronics, and e	3_8_24	3_8	3
18	Engine and other machine assem	3_8_24	3_8	3
19	Structural metal fabricators a	3_8_24	3_8	3
20	Lathe and turning machine tool	3_8_24	3_8	3
21	Welding, soldering, and brazin	3_8_24	3_8	3
22	Sawing machine setters, operat	3_8_24	3_8	3
23	Paper goods machine setters, o	3_8_24	3_8	3
24	Physician assistants	3_8_45	3_8	3
25	Respiratory therapists	3_8_45	3_8	3
26	Diagnostic related technologis	3_8_45	3_8	3
27	Licensed practical and license	3_8_45	3_8	3
28	Mining machine operators	3_8_51	3_8	3
29	Dredge, excavating, and loadin	3_8_51	3_8	3
30	Drafters	3_9_7	3_9	3
31	Court, municipal, and license	3_9_7	3_9	3
32	Office and administrative supp	3_9_7	3_9	3
33	Prepress technicians and worke	3_9_7	3_9	3
34	Food servers, nonrestaurant	3_9_25	3_9	3
35	Janitors and building cleaners	3_9_25	3_9	3
36	Maids and housekeeping cleaner	3_9_25	3_9	3
37	Laundry and dry-cleaning worke	3_9_25	3_9	3
38	Shoe and leather workers and r	3_9_25	3_9	3
39	Technical writers	3_9_26	3_9	3
40	Proofreaders and copy markers	3_9_26	3_9	3
41	Aerospace engineers	3_9_38	3_9	3
42	Computer hardware engineers	3_9_38	3_9	3
43	Electrical and electronic engi	3_9_38	3_9	3
44	Mechanical engineers	3_9_38	3_9	3
45	Surveyors, cartographers, and	3_9_54	3_9	3
46	Surveying and mapping technici	3_9_54	3_9	3
47	Archivists, curators, and muse	3_9_54	3_9	3
48	Artists and related workers	3_9_54	3_9	3
49	Designers	3_9_54	3_9	3
50	Construction and building insp	3_9_54	3_9	3

	Title	Class_67	Class_9	Class_4
1	Broadcast and sound engineerin	3_9_63	3_9	3
2	Electricians	3_9_63	3_9	3
3	Elevator installers and repair	3_9_63	3_9	3
4	Computer, automated teller, an	3_9_63	3_9	3
5	Radio and telecommunications e	3_9_63	3_9	3
6	Avionics technicians	3_9_63	3_9	3
7	Electrical and electronics rep	3_9_63	3_9	3
8	Electronic equipment installer	3_9_63	3_9	3
9	Electronic home entertainment	3_9_63	3_9	3
10	Security and fire alarm system	3_9_63	3_9	3
11	Automotive service technicians	3_9_63	3_9	3
12	Telecommunications line instal	3_9_63	3_9	3
13	Office machine operators, exce	3_9_11	3_9	3
14	Precision instrument and equip	3_9_11	3_9	3
15	Tailors, dressmakers, and sewe	3_9_11	3_9	3
16	Jewelers and precious stone an	3_9_11	3_9	3
17	Photographic process workers a	3_9_11	3_9	3
18	Etchers and engravers	3_9_11	3_9	3
19	Pressers, textile, garment, an	3_9_16	3_9	3
20	Cleaners of vehicles and equip	3_9_16	3_9	3
21	Painting workers	3_9_64	3_9	3
22	Miscellaneous media and commun	4_4_60	4_4	4
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