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## Talxcellenz® Job Family Structure

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This research brief introduces the Talxcellenz® job family structure. The number of jobs and occupations seems infinite and is overwhelming to job seekers. We grouped jobs into job families so that individuals participating in career coaching and career navigation activities can peel back the information on jobs one layer at a time. First, we identified nine workforce industry sectors and combined the 20 major NAICS codes into those nine groups. Then, we created a matrix of job families for each of the industry sectors. This way job seekers can approach the data in four steps by selecting the industry sector that is their primary interest, then selecting the Job Zone, then selecting a family within that zone, and finally selecting an occupation. This research brief documents our methodology to develop this structure and our analysis to ensure that jobs were appropriately grouped with other similar jobs.

This research brief is one in a series to support regional implementations of **Talent Supply Chain Management (TSCM)** published by Metrics Reporting, Inc. (MRI). The first page of each brief includes a summary of the topic along with publication date, title, authors, and suggested citation. The last page of each brief is an appendix that provides a one-page overview of the essential elements of TSCM. Pages two through eleven are the body of the brief. Each brief provides a pragmatic summary of one important element of TSCM. In addition to the research briefs we also publish three guidebooks that are available at Amazon.com.

- The **Stakeholder Guidebook** provides step-by-step guidance for creating local and regional initiatives around demand-driven, evidence-based career pathways.
- The **Career Navigation System Guidebook** provides step-by-step guidance for practitioners that defines and specifies components of demand-driven, evidence-based career pathways including the 7-step career pathway model, coaching, and profiles.
- The **Talent Excellence System Guidebook** provides an introduction to Talxcellenz® processes and tools for job analysis and validation studies to support robust demand-driven, evidence-based career pathways.

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# Talxcellenz® Job Family Structure

## Introduction

Open-source databases can be leveraged to create rigorous job families that cover most jobs in any organization or region across all U.S. economic sectors. We provide an overview of what job families are, a detailed description of how we built job families that cover each major sector of the U.S. economy, and some concluding examples of how these job families can be useful to individuals, employers, workforce professionals, and educators. We developed this framework to help employers and regions implement Talent Supply Chain Management (TSCM). The Talxcellenz® Job Family Structure (JFS) is a starting point that can be adapted to meet specific needs.

## What is a job family?

A job family is a set of jobs that are logically grouped by similar job characteristics such as knowledge, skills, abilities, behavioral skills, training requirements, education level, compensation and other factors.

In most organizations, each job is identified by a job title, a job description, and many times a job code to uniquely identify the job. Many large organizations have hundreds or even thousands of job codes and job descriptions. As mergers occur, job codes and job descriptions proliferate in ways that can make distinctions between job codes confusing and unhelpful.

For example, think of the extreme variety of jobs that fall under a vague title like “Coordinator” or “Team Leader” in any large organization. Titles like these tend to make sense within the department where they were created and are not clear to anyone else. Some large organizations may even have dozens of titles and job descriptions for what is essentially the same job. Licensing and credentialing requirements add another dynamic dimension. And, finally, there are multiple employers in each region that have their own unique job titles, job codes, and job descriptions. All of this makes regional collaboration among employers challenging.

The Talxcellenz® Job Family Structure arranges this information in a logical framework that can be useful for employers internally and in regional sector initiative projects with workforce professionals, education and training partners, and other community partners. Well-designed job families are organized for each sector so that each job code occurs in only one job family and is never placed in multiple job families. A single job family, however, may sometimes include job codes from different departments within an organization. We’ll get into some uses below, but first, let’s look at how to form these job families.

## Process for creating the Talxcellenz® Job Family Structure

**1. Combine NAICS 2-digit codes to create nine workforce industry sectors.** There are 20 major industry groups in the NAICS classification system, which we have sorted into nine broader workforce sectors. Some 2-digit NAICS industries such as *Manufacturing* remain their own industry sector, while another workforce sector such as *Professional and Business Services* is an amalgamation of six NAICS industry groups.

NAICS	NAICS Industry Name	Industry Sector
11	Agriculture, Forestry, Fishing and Hunting	Agriculture
61	Educational Services	Education
21	Mining, Quarrying, and Oil and Gas Extraction	Energy & Construction
22	Utilities	
23	Construction	
62	Health Care and Social Assistance	Health Care
51	Information	IT & Media
31-33	Manufacturing	Manufacturing
52	Finance and Insurance	Professional and Business Services
53	Real Estate and Rental and Leasing	
54	Professional, Scientific, and Technical Services	
55	Management of Companies and Enterprises	
56	Administrative and Support and Waste Management and Remediation Services	
92	Public Administration	
44-45	Retail Trade	Retail and Hospitality Services
71	Arts, Entertainment, and Recreation	
72	Accommodation and Food Services	
81	Other Services (except Public Administration)	
42	Wholesale Trade	Wholesale Trade and Transportation
48-49	Transportation and Warehousing	

Figure 1: Workforce Industry Sectors based on NAICS Codes.

**2. Use 2016-2026 Employment Projections SOC-to-NAICS tables to create SOC-level usable industry matrix.**

These tables, 1.8 and 1.9 in the Employment Projections dataset from the U.S. Bureau of Labor Statistics, include national staffing patterns for all SOC occupations and each 2-, 3-, and 4-digit industry groups. After this step, the user should end with a table that shows how each occupation, defined by an SOC code, is represented within each of the nine standard workforce sectors.

**3. Sort all occupations within each workforce sector (usually several hundred codes).**

According to this national data, these comprehensive lists cover the following percentage of employment within the sectors:

Workforce Sector	% of Employment
Agriculture	89.55%
Education	99.97%
Energy & Construction	99.82%
Health Care	99.96%
Information Technology & Media	99.80%
Manufacturing	99.94%
Professional and Business Services	99.59%
Retail and Hospitality Services	99.84%
Wholesale Trade & Transportation	99.82%

Figure 2: Table of % Employment included in each Workforce Sector.

**4. Cross occupations with O\*NET Job Zone data.** Job Zones are a single-number summary of approximate training needed for a given occupation and is a discrete integer from 1 to 5. Manually fill in occupations that do not have a Job Zone at the 6-digit SOC level (mainly but not necessarily *All Other* occupations), choosing the lowest or the middle Job Zone value.

**5. Using EEO-1 job groups (we are using adapted names for the EEO-1 groups, but the same occupation definitions), cross occupation types and levels for Job Family Codes (JFC).** The MRI Job Family and the Job Family Code (JFC) is a combination of the job level (based on O\*NET Job Zones) and job type (based on EEO-1 job groups). The JFC two-digit code has the job level as the first digit and the job type as the second digit. Both EEO-1 manager job groups were combined into one manager job type for our structure. Types 1 through 4 are jobs that are primarily physical work output and types 5 through 9 are jobs that are primarily technical/intellectual work output.

O*NET Job Zones					
Job Zone	Name	Experience	Education	Job Training	Examples
1	Job Zone One: Little or No Preparation Needed	Little or no previous work-related skill, knowledge, or experience is needed for these occupations. For example, a person can become a waiter or waitress even if he/she has never worked before.	Some of these occupations may require a high school diploma or GED certificate.	Employees in these occupations need anywhere from a few days to a few months of training. Usually, an experienced worker could show you how to do the job.	These occupations involve following instructions and helping others. Examples include taxi drivers, amusement and recreation attendants, counter and rental clerks, nonfarm animal caretakers, continuous mining machine operators, and waiters/waitresses.
2	Job Zone Two: Some Preparation Needed	Some previous work-related skill, knowledge, or experience is usually needed. For example, a teller would benefit from experience working directly with the public.	These occupations usually require a high school diploma.	Employees in these occupations need anywhere from a few months to one year of working with experienced employees. A recognized apprenticeship program may be associated with these occupations.	These occupations often involve using your knowledge and skills to help others. Examples include sheet metal workers, forest fire fighters, customer service representatives, physical therapist aides, salespersons (retail), and tellers.
3	Job Zone Three: Medium Preparation Needed	Previous work-related skill, knowledge, or experience is required for these occupations. For example, an electrician must have completed three or four years of apprenticeship or several years of vocational training, and often must have passed a licensing exam, in order to perform the job.	Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate's degree.	Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers. A recognized apprenticeship program may be associated with these occupations.	These occupations usually involve using communication and organizational skills to coordinate, supervise, manage, or train others to accomplish goals. Examples include food service managers, electricians, agricultural technicians, legal secretaries, occupational therapy assistants, and medical assistants.
4	Job Zone Four: Considerable Preparation Needed	A considerable amount of work-related skill, knowledge, or experience is needed for these occupations. For example, an accountant must complete four years of college and work for several years in accounting to be considered qualified.	Most of these occupations require a four-year bachelor's degree, but some do not.	Employees in these occupations usually need several years of work-related experience, on-the-job training, and/or vocational training.	Many of these occupations involve coordinating, supervising, managing, or training others. Examples include accountants, sales managers, database administrators, teachers, chemists, art directors, and cost estimators.
5	Job Zone Five: Extensive Preparation Needed	Extensive skill, knowledge, and experience are needed for these occupations. Many require more than five years of experience. For example, surgeons must complete four years of college and an additional five to seven years of specialized medical training to be able to do their job.	Most of these occupations require graduate school. For example, they may require a master's degree, and some require a Ph.D., M.D., or J.D. (law degree).	Employees may need some on-the-job training, but most of these occupations assume that the person will already have the required skills, knowledge, work-related experience, and/or training.	These occupations often involve coordinating, training, supervising, or managing the activities of others to accomplish goals. Very advanced communication and organizational skills are required. Examples include librarians, lawyers, sports medicine physicians, wildlife biologists, school psychologists, surgeons, treasurers, and controllers.

Figure 3: Chart of Job Zone Definitions from the National Center for O\*NET Development.

Illustration of Talxcellenz® Job Family Structure and Codes							
Second Digit	Form EEO-1 Job Groups	Job Types	Job Levels (First Digit)				
			Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
1	Service Workers	Service Workers	11	21	31	41	51
2	Labors and Helpers	Laborers and Helpers	12	22	32	42	52
3	Operatives	Semi-Skilled Laborers	13	23	33	43	53
4	Craft Workers	Skilled Laborers	14	24	34	44	54
5	Administrative Support Workers	Administrative Support	15	25	35	45	55
6	Sales Workers	Sales and Customer Service	16	26	36	46	56
7	Technicians	Technicians	17	27	37	47	57
8	Professionals	Professionals	18	28	38	48	58
9	First/Mid Offs & Mgrs. Exec/Senior Offs & Mgrs.	Managers and Executives	19	29	39	49	59

Figure 4: Structure of Talxcellenz® Job Families and Job Family Codes (JFC).

**6. Within a sector, create job families.** This is done in several steps:

- a. First, find the appropriate employment cutoff. Each occupation as a percent of occupational employment that is within a sector—order the data by this value and find a cutoff which results in around 225 remaining occupations. For each of the sectors created, the cutoffs were:

Workforce Sector	Cutoff
Health Care	2%
Manufacturing	5%
Retail & Hospitality Services	7%
Professional and Business Services	15%
Education	4%
Information Technology & Media	1%
Wholesale Trade and Transportation	3%
Energy and Construction	2%
Agriculture	No cutoff

Figure 5: Employment Cutoff for each Workforce Sector.

- b. With the remaining list of 200 to 250 occupations, sort the list by Job Family Code, 11 through 59.
7. **Spot-check the job families.** Each job family will ideally have three or more occupations that are in the job family and above the employment cutoff. If there are only one or two occupations, run through the following steps:
  - a. First, see if the job family can be dissolved. If employment in the sector is barely above the cutoff, it can possibly be dropped. If it has significant employment in the sector, it can possibly be added to an adjacent job family.
  - b. If there are two codes that cannot be dissolved, add to the job family from the list of occupations below the cutoff that have the same JFC until there are at least three occupations.
8. **Expand occupations to 8-digit O\*NET codes.** Because these occupation lists were derived from data from the U.S. Bureau of Labor Statistics, SOC codes have been 6-digit codes. After the sorting above, it is now necessary to switch to 8-digit O\*NET occupation codes. Many codes will remain the same with a “.00” at the end. However, some codes have “sub” occupation codes, which adds “.01”, “.02”, etc. to the end of the code. These should all be expanded within their job family.
9. **Strengthen job families using the Talxcellenz® Euclidean distance calculator.** After importing all job families into the Talxcellenz® database system, the Euclidean distances within each job family can be used to confirm the likeness between grouped occupations or to revise placement of occupations within families that don’t fit well. Job family fit can be achieved in several ways:
  - a. Occupations with a high Euclidean distance from the rest of the job family which are not relevant or necessary to the industry sector (small employment overall or a small percentage of employment in the sector) can be dropped.
  - b. Occupations with a high Euclidean distance relative to the rest of the job family can be moved to another job family. Using the Talxcellenz® Unique Job Alignment Tool, a user can see the Euclidean distance of that occupation from all job families in the industry sector. It can then be ascertained whether another family will be a better fit, or whether the occupation needs to be dropped.

## Output Summary

Metrics Reporting, Inc. has completed a universal Job Family Structure, consisting of 31 job families. These include all nine industry sectors, and an array of occupations, many of which appear in multiple sectors. A summary of the distribution of O\*NET job codes follows:

**Job Family Structure – Total, All Sectors (includes duplicates)**

Job Family Title	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Total
Service Workers	25	58	32	0	0	115
Laborers and Helpers	15	35	7	0	0	57
Semi-skilled Laborers	19	164	10	0	0	193
Skilled Laborers	8	95	143	0	0	246
Administrative Support	0	127	68	13	0	208
Sales and Customer Service	7	21	8	18	0	54
Technicians	0	3	164	41	6	214
Professionals	0	16	66	306	171	559
Managers and Executives	0	31	47	131	41	250
	74	550	545	509	218	1896

Figure 6: Distribution of O\*NET Codes across Talxcellenz® Job Families.

**Use Cases**

There are several ways to use job families.

1. Employers, workforce organizations, and economic development agencies can use job families to make supply-demand calculations
2. Employers can use job families to organize jobs into logical groups for job analysis
3. Job Analysts can use job families to organize jobs into logical groups for validation studies
4. Education and workforce training partners can use job families to organize data for curriculum development by education and training partners

**Employers**

Employers can use job families to gather job relevant metrics, organize internal career pathways, and build career pathways with external community partners.

Internally, managers and human resources professionals can use job families to clarify career progression and specify the competencies and training individuals need to move within the organization. They can use job families to sort data and track population-specific metrics, better understand regional labor market data, and align internal pay scales with market rates. Job families ensure consistency in compensation and other decisions.

List of Talxcellenz® Job Families		
Job Family Code	Job Level	Job Family Title
11	1	Z1 - Service Workers
12	1	Z1 - Laborers and Helpers
13	1	Z1 - Semi-skilled Laborers
14	1	Z1 - Skilled Laborers
16	1	Z1 - Sales and Customer Service
21	2	Z2 - Service Workers
22	2	Z2 - Laborers and Helpers
23	2	Z2 - Semi-skilled Laborers
24	2	Z2 - Skilled Laborers
25	2	Z2 - Administrative Support
26	2	Z2 - Sales and Customer Service
27	2	Z2 - Technicians
28	2	Z2 - Professionals
29	2	Z2 - Managers and Executives
31	3	Z3 - Service Workers
32	3	Z3 - Laborers and Helpers
33	3	Z3 - Semi-skilled Laborers
34	3	Z3 - Skilled Laborers
35	3	Z3 - Administrative Support
36	3	Z3 - Sales and Customer Service
37	3	Z3 - Technicians
38	3	Z3 - Professionals
39	3	Z3 - Managers and Executives
45	4	Z4 - Administrative Support
46	4	Z4 - Sales and Customer Service
47	4	Z4 - Technicians
48	4	Z4 - Professionals
49	4	Z4 - Managers and Executives
57	5	Z5 - Technicians
58	5	Z5 - Professionals
59	5	Z5 - Managers and Executives

Figure 7: List of Talxcellenz® Job Families and Job Family Codes.

## **Education and Training Partners**

Grouping jobs in “families” with common foundational competency requirements massively simplifies the process of defining competencies that job seekers need to be successful. Since each job family will be defined around a common set of foundational competency requirements for the vast majority of job tasks, this information can be very useful when shared with education and training partners.

## **Other Community Partners**

As a result, career coaches and career navigators can speak generally about what competencies and conditions are required for an individual to perform in different positions within an organization. Job families also help individuals compare different kinds of work to find reasonable “next steps” or target occupations as they develop or pursue a career path. Similarly, coaching participants can measure their competencies and attributes on the same scales. In this way, evidence-based career coaching leverages the O\*NET data to help individuals make informed decisions about next steps in their career and result in better job-fit decisions.

## **Job Families and Job Analysis**

To get the most out of job families, employers may want to complement them with a confirmatory job analysis process. Evidence-based career pathways (EBCP) and the evidence-based selection process (EBSP) rely on job analysis to confirm the accuracy of the job grouping and the characteristics of the jobs in the family.

Job analysts use generally accepted principles of Industrial/Organizational Psychology and different forms of quantitative data to identify, evaluate and document the competencies related to job performance for each job family. Metrics Reporting Inc.’s confirmatory job analysis process relies on open-access data from the US Department of Labor’s O\*NET database. The job information is then confirmed by subject matter experts (SMEs). SMEs are people with three to five years of experience in the job and are familiar with the activities and responsibilities of the individuals performing the jobs included in the job families. They may be highly experienced individuals in the jobs, on-the-job trainers, or supervisors with a broad knowledge of the job duties. The whole process is called “confirmatory job analysis,” because the baseline information from the O\*NET is confirmed for accuracy by local SMEs. Please refer to our research brief on Job Analysis and Validation for more about the Talxcenz® job analysis process.

**Relevant Links:**

<https://www.bls.gov/emp/tables.htm>

<https://www.eeoc.gov/eeoc/statistics/employment/jobpat-eeo1/glossary.cfm>

**Glossary:**

SOC: Standard Occupation Classification

NAICS: North American Industry Classification System

O\*NET: The Occupational Information Network. The O\*NET competency framework is an extensive competency model that includes knowledge, skills, abilities, work styles, work interests, work values, work activities, work contexts, and other helpful information.

Ryan Gimarc is Director of Workforce Analytics at Metrics Reporting. He is an economic researcher who has experience working with business and community leaders to draw actionable insights out of complex and technical data. He spent over three years at Talent 2025, a West Michigan-based coalition of over 115 employers with a goal to catalyze an aligned talent system in the region. As the head of all research at Talent 2025, Ryan successfully elevated the organization to become a regional thought leader in planning for the future of jobs, skills, and competencies by producing research on macro- and microeconomic trends, as well as overseeing impactful qualitative studies about area employers and job seekers. Prior to his time at Talent 2025, Ryan worked for the State of Michigan’s Bureau of Labor Market Information and Strategic Initiatives, where as an Economic Analyst he enhanced the Bureau’s use of Geographic Information Systems (GIS), and also served as a stopgap for the state’s demographer for a full program year. Ryan has a bachelor’s degree in Economics from Michigan State University and resides in Seattle, Washington.

## Appendix

**Talent Supply Chain Management (TSCM)** is a holistic set of solutions that enables employers and regions to build reliable pipelines of high-quality talent to meet their needs. The mission of Metrics Reporting, Inc. (MRI) is to design and implement the best TSCM systems in the world. MRI designs and implements demand-driven, evidence-based career pathways that meet the needs of regional employers and provide a clear path for individuals to prepare for and secure good jobs. There are three essential components of TSCM:

**1. Evidence-Based Selection Process (EBSP)** is a decision-making model that elevates reliable evidence of applicant characteristics that are measurably related to job performance and reduces the use of elements that are not valid predictors of performance.

- Cognitive measures that indicate critical thinking and problem-solving skills
- Personality measures that indicate workplace behavioral skills
- Measures of previous workplace behaviors via structured interviews and references
- Continuous improvement based on talent analytics

**2. Evidence-Based Career Pathways (EBCP)** meet the talent needs of employers and provide clear pathways for individuals to develop the skills to get and keep good jobs.

- Seven-step career pathway model to support career navigation
- Four-step evidence-based career coaching to define and document career plans
- Use career profiles including evidence of skills aligned with employer requirements indicating that an individual is a highly qualified applicant

**3. Support Activities: Sectors, Jobs, Job Families, Job Analysis, and Validation Studies**

Employers need to be organized into sector-based career councils, and job information needs to be gathered, analyzed, and published.

- Regional careers councils are organized for each industry sector to prioritize needs
- Regional competency models create a common language around skills
- Careers councils organize and confirm supply-demand data
- Jobs are aligned with SOC codes and O\*NET codes to leverage occupational information
- Jobs are grouped into job families with common competency requirements
- Consortia-style job analysis engages subject matter experts (SMEs) from employers
- Job information is published with foundational competencies, occupational competencies, tools and technologies lists, and credentials requirements
- Validation studies confirm that hiring requirements are related to job performance

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