
PILOT STUDY

Translating Military Skills to Civilian Employment

STUDY ON EQUIVALENCIES BETWEEN SKILLS DEVELOPED
IN MILITARY OCCUPATIONAL SPECIALTIES AND QUALIFICATIONS
REQUIRED FOR CIVILIAN EMPLOYMENT WITH THE PRIVATE SECTOR

*A report in response to Section 222 of the VOW to Hire Heroes Act,
passed by Congress on November 21, 2011, P.L. 112-56*

Presented to: U.S. Department of Labor,
Employment and Training Administration

Presented by: Solutions for Information Design, LLC (SOLID)



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Executive Summary

Military Service members are the beneficiaries of extensive high-quality training and work experience during military service that prepares them to successfully perform in a wide range of occupational specialties. However, due to differences between military and civilian occupational classification systems, it can be difficult for Service members and Veterans to identify jobs in the civilian workforce that are comparable to their military occupational specialties. Civilian employers also report difficulty translating military job titles to their own job titles. This lack of understanding of the comparability of military and civilian occupations can result in missed civilian employment opportunities for transitioning military Service members and Veterans. The potential lack of recognition of the extensive training and experience received in the military can have a number of adverse effects, including:

- Need for Veterans to attain potentially duplicative additional skills training (often paid for through government programs) in order to qualify for civilian jobs;
- Periods of unemployment or underemployment for Service members transitioning to the civilian workforce;
- Lack of use of qualified transitioning Service members and Veterans to fill labor shortages in the civilian workforce.

The Departments of Defense (DoD) and Labor (DOL) have addressed this issue by developing information and assistance resources to assist the military Service members and Veterans. Key among these is a crosswalk that matches military occupational titles with comparable civilian occupations. The linkages for the crosswalk are made by DOD's Defense Manpower Data Center (DMDC) and serve as the basis for various web-based military to civilian crosswalks developed by DOL and by other public and private organizations.

The existing DoD crosswalk provides a very good foundation for a military to civilian occupational crosswalk. However, it is developed based on a high level review of military job duties against civilian job duties and not a detailed assessment. Moreover, the majority of military occupations are matched to only one or two civilian jobs. As a result Service members may not consider the variety of civilian career options that might be relevant to them based on the training and experience accumulated during their military careers.

To address this issue, Public Law 112-56, Title II, VOW to Hire Heroes, Sec. 222, requires the Secretary of Labor, in consultation with the Secretaries of Defense and Veterans Affairs, to enhance the existing crosswalk. Specifically, the law requires DOL to "enter into a contract with a qualified organization to conduct a study to identify any equivalences between the skills

Study Purpose

To improve the ability of Service members and Veterans to translate their military training and experience to relevant civilian jobs through the development of an improved military to civilian crosswalk.

developed by members of the Armed Forces through various military occupational specialties (MOS), successful completion of resident training courses, attaining various military ranks or rates, or other military experiences and the qualifications required for various positions of civilian employment in the private sector.”

Study Purpose and Scope (See Chapter 1)

Across the military services, there are more than 3,000 enlisted military occupation and associated specialty codes. Prior to embarking on enhancing the existing crosswalk for all of these military occupations and specialties, DOL’s Employment and Training Administration (DOL/ETA), in partial fulfillment of Section 222, sponsored a study to pilot test a methodology for enhancing the existing military to civilian crosswalk. The study is intended to test a methodology for expanding on the linkages established by DoD in its existing crosswalk by going into greater depth beyond title equivalences, to make the comparison and analysis at the level of skills in order to provide more specialized and specific information to transitioning Service members.

The project built on recent research already conducted for DoD on the top 10 military occupations in each service and added an additional 28 military occupations that have 4,000 or more Service members in them – for a total of 68 military occupations. These 68 military occupations make up a significant portion of their respective service’s overall population and represent 57 percent of all enlisted Service members.

Study Results (see Chapter 4)

The Pilot methodology resulted in the creation of a more robust military to civilian crosswalk for the Pilot MOCs. The Pilot Crosswalk provides numerous additional career options for military Service members and Veterans to consider. Specifically, the Pilot Crosswalk maps a total of 962 civilian occupations as closely related to the 68 Pilot military occupations, a significant increase over the 100 occupations mapped by DMDC to the same 68 military occupations. The average number of military to civilian occupational linkages that was established per MOC also increased substantially. The DMDC crosswalk mapped, on average, 1.5 civilian occupations per MOC, while the Pilot Study Crosswalk mapped 14.1 on average.

To produce a crosswalk with more value for Service members, the Pilot Crosswalk expanded the analysis of the information beyond the matching of occupations. For each military to civilian occupational linkage, three indicators were developed to provide further specificity, including:

- **Type of Linkage** – (1) Directly Related – military and civilian occupation share approximately 80% of job duties; (2) Skill Related – civilian occupation is related to at least one critical task in military job duties;
- **Typical Minimum Pay Grade** – typical pay grade level at which a mapped civilian occupation can most likely be attained based on the level of experience acquired and the types of duties assigned; and

- **Military Attainability Level** – the likelihood that a Service member could transition to a given civilian occupation after one term of service based on the preparation level required for an occupation and how much of that preparation may be gained through military service:
 - *Level 1* – Civilian occupation is attainable within first term (4-6 years) of service.
 - *Level 2* – Civilian occupation is possibly attainable within first term (4-6 years) of service, but may require additional education, training or experience to transition.
 - *Level 3* – Civilian occupation is probably not attainable within first term (4-6 years) of service because it requires education, training, and/or experience likely not attainable during first term.
 - *Level 4* – Civilian occupation is not attainable within first term (4-6 years) of service because it requires education, training, and/or experience not attainable during first term.

The addition of these three new indicators enhances the Service member's or Veteran's ability to better discriminate among the identified related jobs, and to identify those that are likely to be most applicable and attainable based on their military training, experience, and rank.

Recommendations (see Chapter 5)

The Pilot Crosswalk completed for the selected MOCs and the information gained from the project can be made available to Service members through several methods. Recommendations for dissemination of the findings and analyzing the remaining military occupations include:

- Recommendation 1: Include results of the pilot crosswalk on DOL and DoD websites utilizing the current DoD crosswalk.
- Recommendation 2: Distribute the Pilot Crosswalk results through the Transition Assistance Program (TAP) program.
- Recommendation 3: Extend the Pilot Crosswalk to additional military occupations.
- Recommendation 4: Consider modifications to the Pilot Crosswalk methodology, including:
 - Explore the feasibility of collecting additional information beyond the job description; and
 - Consider the inclusion of additional skill identifiers to provide further information to Service members.

Example of How Pilot Crosswalk Data Could be Incorporated into DOL's My Next Move for Veterans

The screenshot shows the 'MY NEXT MOVE FOR VETERANS' website. The search results are for 'Information Technology Specialist'. A table lists the top 20 civilian careers similar to the Army MOS title. A red box highlights the first six rows of the table, which include the following data:

Where in the Army?	Link Type	Minimum Pay Grade	Attainability During 1st Term	Bright Outlook	green	REGISTERED APPRENTICESHIP
★ Computer and Information Systems Managers	D	E5	3	●	●	●
★ Information Security Analysts	S	E5	3	●	●	●
★ Network and Computer Systems Administrators	D	E4	1	●	●	●
★ Computer User Support Specialists	D	E4	1	●	●	●
★ Computer Network Support Specialists	D	E4	1	●	●	●
★ Information Technology Project Managers	S	E7	4	●	●	●
★ Computer Operators	D	E3	1	●	●	●

Below the table, there is a note: "If you didn't find what you're looking for, you can [browse all careers](#), or try a [key word search](#) with a short description of your job. Not all military classifications have related civilian careers."

Example of Interpretation of New Crosswalk Data:

Civilian Occupational Matches for Army 25B – Information Technology Specialist

- The “Computer and Information Systems Manager” O*NET code is **Directly Related** to approximately 80 percent of the Army IT Specialist’s duties.
- The 25B is most likely to be able to qualify for this occupation after reaching the **E5 pay grade**.
- The “Computer and Information Systems Manager” position is probably **not attainable to a Soldier within the first term of service** because it requires education, training, or experience not attainable during the first term.

Chapter 1 – Introduction

In November of 2011, Congress passed the VOW to Hire Heroes Act which addressed the transition of Veterans to civilian employment. Public Law 112-56, Title II, VOW to Hire Heroes, Sec. 222, requires the Secretary of Labor, in consultation with the Secretaries of Defense and Veterans Affairs, to “enter into a contract with a qualified organization to conduct a study to identify any equivalencies between the skills developed by members of the Armed Forces through various military occupational specialties (MOS), successful completion of resident training courses, attaining various military ranks or rates, or other military experiences and the qualifications required for various positions of civilian employment in the private sector.” In partial fulfillment of Section 222, the Department of Labor Employment and Training Administration (DOL/ETA) contracted with Solutions for Information Design, LLC (SOLID) to conduct a study that would pilot test a methodology that could be used to improve the existing crosswalk between military and civilian occupations taking into consideration the factors required by law. This report provides the results of that study.

Key Legislative Requirements

Section 222 of the VOW Act is intended to make it easier for military Service members and Veterans to identify civilian occupations for which they might qualify upon transition to the civilian workforce. In summary, the law states that the required study is to be used to prepare a report on the equivalencies and that the information will be made publicly available on an Internet website.

Furthermore, the law requires that the Department of Defense (DoD) ensure that each Service member who participates in the Transition Assistance Program (TAP) will receive an “individualized assessment of the various

positions of civilian employment in the private sector for which such member may be qualified as a result of the skills developed by such member through various military occupational specialties (MOS), successful completion of resident training courses, attaining various military ranks or rates, or other military experiences. “The assessment shall be performed using the results of the study.”

Key Legislative Requirements

- Conduct a study to identify equivalencies
- Report to Secretaries of Defense, Veterans Affairs, and Labor and transmitted to Congress
- Make equivalencies available on the internet and update regularly
- Provide individualized assessments based on study results to Service members through (TAP)

Study Purpose

Military Service members are the beneficiaries of extensive high-quality training and work experience during military service, which prepares them to successfully perform in a wide range of occupational specialties. However, due to differences between military and civilian occupational classification systems, it can be difficult for Service members and Veterans to identify jobs in the civilian workforce that are comparable to their military occupational

specialties. Civilian employers also report difficulty translating military job titles to their own job titles. This lack of understanding of the comparability of military and civilian occupations can result in missed civilian employment opportunities for transitioning military Service members and Veterans. The potential lack of recognition of the extensive training and experience received in the military can have a number of adverse effects, including:

- Need for Veterans to attain potentially duplicative additional skills training (often paid for through government programs) in order to qualify for civilian jobs;
- Periods of unemployment or underemployment for Service members transitioning to the civilian workforce;
- Lack of use of qualified transitioning Service members and Veterans to fill labor shortages in the civilian workforce.

Study Purpose

To improve the ability of Service members and Veterans to translate their military training and experience to relevant civilian jobs through the development of an improved military to civilian crosswalk.

The Departments of Defense and Labor have addressed this issue by developing information and assistance resources to assist the military Service members and Veterans. Key among these is a crosswalk that matches military occupational titles with equivalent civilian occupations. The linkages for the crosswalk are made by DoD's Defense Manpower Data Center (DMDC) and serve as the basis for various web-based military to civilian crosswalks developed by DOL.

The existing DoD crosswalk provides a very good foundation for a military to civilian occupational crosswalk. However, it is developed based on a high level review of military job duties against civilian job duties and not a detailed assessment. Moreover, the majority of military occupations are matched to only one or two civilian jobs. As a result Service members may not consider the variety of civilian career options that might be relevant to them based on the training and experience accumulated during their military careers.

This study is intended to test a methodology for expanding on the linkages established by DoD by going into greater depth beyond title equivalences, to make the comparison and analysis at the level of skills in order to provide more specialized and specific information to transitioning Service members. In particular the information will be used to provide tools for veterans to use themselves, as well as when they seek training and job placement assistance from a local American Job Center within the public workforce investment system, or from a Disabled Veterans' Outreach Program (DVOP) specialist or Local Veterans' Employment Representative (LVER).

Study Scope

Across the military services, there are more than 3,000 enlisted military occupation and associated specialty codes. To narrow the focus and test the methodology, this study effort focused on a specific subset of military occupations, specifically, those enlisted military

occupations with large numbers of Service members. The project built on recent research already conducted for DoD on the top 10 military occupations in each service and an additional 28 military occupations that have 4,000 or more Service members in them – for a total of 68 military occupations. As shown in Table 1-1, these 68 military occupations make up a significant portion of their respective service’s overall population and across services they represent 57 percent of all enlisted Service members.

Table 1-1 – Number and Percentage of Enlisted Service Members in Military Occupations Included in Study and Number of Military Occupations*

Service	Number of Military Occupations	Number of Service Members	Percentage of Service Members
Air Force	15	109,974	48
Army	24	306,830	66
Marine Corps	10	56,026	36
Navy	19	152,542	63
Total (All Services)	68	625,372	57

*Criteria for inclusion = military occupation was among top 10 (in terms of active strength) for that Service or military occupation had an active strength of 4,000 or more people (as of 9/30/2011)

As part of this study, the initial crosswalk developed by DoD was used as a base to identify relevant civilian occupations. However, analysis was also conducted to identify additional civilian occupational matches for each of the 68 military occupations. To organize the analysis, the primary civilian occupational equivalents from the existing DoD crosswalk were collected for the 68 military occupations included in the study. Each MOC was grouped into the Department of Labor’s O*NET Job Families based on their primary civilian occupational equivalent. Job Families are groups of occupations based upon work performed, skills, education, training, and credentials. Table 1-2 shows how the military occupational codes were distributed among Job Families. All military occupations in the same family were analyzed together to maintain consistency while evaluating civilian occupational requirements and to uncover similarities between the services within an occupation. While each MOC was assigned to a primary Job Family, civilian matches were not limited to that Job Family. As a result, the Pilot Crosswalk for a military occupation may have civilian equivalents across multiple occupational areas. In addition, if the Job Family designation was not representative of the main job duties, the MOC was moved to a more comparable Job Family for the analysis.

Table 1-2 – Breakdown of Total MOCs by Job Family

	Air Force	Army	Marine Corps	Navy	Total
Arts, Design, Entertainment, Sports, and Media		1	1		2
Computer and Mathematical	3			1	4
Construction and Extraction	1	3	1	1	6
Food Preparation and Serving Related	1	1		1	3
Health Care Support	1	1		1	3
Installation, Maintenance, and Repair	5	4	1	7	17
Office and Administrative	3	4	2	2	11
Protective Service	1	1	1	2	5
Transportation		2	1	2	5
None (Military Specific Occupation)		7	3	2	12
Totals	15	24	10	19	68

Report Organization

The remainder of this report is organized into four main sections.

- Chapter 2 – Background – provides an overview of military occupational classification, methodologies for matching military to civilian occupations, and existing resources for translating military jobs to civilian jobs;
- Chapter 3 – Pilot Crosswalk Methodology – provides a detailed description of the methodology used to develop the Pilot crosswalk;
- Chapter 4 – Pilot Crosswalk Results – includes findings and a discussion of the strengths, weaknesses and challenges related to the methodology; and
- Chapter 5 – Recommendations – outlines recommendations based on the Pilot crosswalk results.

The report also contains the following appendices:

- Appendix A – Public Law 112-56, Title II, VOW to Hire Heroes, Sec. 222; and
- Appendix B – Excel data file containing detailed analysis results (Tab 1) and guidelines for interpreting data elements (Tab 2).

Chapter 2 – Background

The complexities of matching military to civilian occupations and the goals of this Pilot Study are better understood with a foundational understanding of military and civilian occupational classification systems, methods to match military to civilian jobs, and existing tools that identify civilian equivalents of military occupations. This chapter provides an overview of these concepts.

Overview of Military Occupational Classification

Each service classifies military occupations differently, but in general, each organizes their personnel in broad occupational areas in the form of numerical or alphanumeric codes referenced, depending on the service, as military occupational specialties (MOSs), ratings, and Air Force Specialty Codes (AFSCs) (see Table 2-1). In addition to their main occupational identifiers, each service has different methods of documenting specific skills and abilities at an individual level. Service members typically hold one or two (at most) primary codes at any given time, but they may have held several different codes over the course of their careers. Service members can also hold multiple specialty codes. In some instances the specialty codes really define the majority of their duties. In other cases the specialty codes indicate a small subset of skills or represent a collateral duty. A brief description of each service’s enlisted classification system follows.

Table 2-1 – Enlisted Military Occupational Codes

Service	Military Occupation Codes (MOCs)*			Specialty Codes	
	Title	Total	Occupation-Specific	Title	#
Army	Military Occupational Specialty (MOS)	199	180	Additional Skill Identifiers (ASIs)/ Special Qualification Identifiers (SQIs)	243
Navy	Rating	110	84	Navy Enlisted Codes (NECs)	1,397
Air Force	Air Force Specialty Code (AFSC)	801	199	Special Duty Indicators (SDIs)/ Special Experience Identifiers (SEIs)	609
Marine Corps	Military Occupational Specialty (MOS)	385	211	N/A	
Total		1,495	674	Total	2,249

*DoD assigns an “occupation” code to every Service member regardless of whether they are officially performing in an occupation. Accordingly, the “Total” MOCs include individuals who may have a status, such as “trainee,” “patient,” or “prisoner.” The “occupation-specific” MOCs include only those codes that formally represent an occupation.

Army

The Army organizes enlisted personnel through the use of Military Occupational Specialties, or MOSs. Related MOSs are grouped together by Career Management Fields with broad occupational titles such as Aviation, Infantry, Signal, Transportation or Health Services. 2-2 shows the 24 Army MOSs included in the analysis as organized by O*NET Job Family. Six

of the 24 MOSs are considered to be military specific occupations, i.e., they do not have a direct equivalent in the civilian sector.

In addition to a Soldier’s MOS, additional skills, training and qualifications are documented in the Army through the use of Additional Skill Identifiers (ASIs) and Special Qualification Indicators (SQIs). There are some ASIs that are specific to an MOS while others may be awarded to a Soldier in any MOS. ASI’s can be equipment specific (Bradley M6 Linebacker System Maintainer), indicate an occupational specialty (Cardiovascular Specialist), or be more general (Court Reporter), but provide the most detail on an individual Soldier’s skill set. The number of ASIs and SQIs prohibited their use in the Pilot Crosswalk due to the limits of the scope of the project.

Table 2-2 – Army MOSs Included in Pilot

Arts, Design, Entertainment, Sports, and Media	Office and Administrative
35M Human Intelligence Collector	92A Automated Logistical Specialist
Construction and Extraction	42A Human Resources Specialist
74D Chemical, Biological, Radiological, and Nuclear (CBRN) Specialist	25B Information Technology Specialist
12B Combat Engineer	92Y Unit Supply Specialist
12N Horizontal Construction Engineer	Protective Service
Food Preparation and Serving Related	31B Military Police
92G Food Service Specialist	Transportation
Health Care Support	88M Motor Transport Operator
68W Health Care Specialist	92F Petroleum Supply Specialist
Installation, Maintenance, and Repair	None (Military Specific Occupation)
25Q Multichannel Transmission Systems Operator-Maintainer	13B Cannon Crewmember
25U Signal Support Systems Specialist	19D Cavalry Scout
15T UH-60 Helicopter Repairer	13F Fire Support Specialist
91B Wheeled Vehicle Repairer	11C Indirect Fire Infantryman
	11B Infantryman
	35F Intelligence Analyst
	19K M1 Armor Crewman

Navy

According to the Navy Enlisted Occupational Classification System (NEOCS) Manual, the Navy groups enlisted personnel into general occupations called General Ratings. For some occupations, Ratings are further subdivided into more specialized Service Ratings or combined into Compression Ratings at a higher pay grade. For purposes of the Pilot Crosswalk, both General and Service Ratings were included in the analysis and are referred to throughout using the term Rating. As shown in Table 2-3, of the 19 Ratings included in the analysis two are military specific occupations.

In addition to the Rating occupational classification, the Navy also employs Navy Enlisted Classifications (NECs) to further identify a skill, knowledge, ability or other qualification at the individual level for billet management purposes. Examples of NECs include identifying specific foreign language skills, equipment specialties, qualified instructors, and many others. There are thousands of NECs that are given to Sailors upon completion of training courses, on the job training or meeting other requirements. NEC codes are not necessarily tied to a specific Rating.

Due to the number of NECs and the limits of the scope of the project, an analysis of equivalent skills between the civilian sector and NECs was not conducted.

Table 2-3 – Navy Ratings Included in Pilot

Computer and Mathematical		Office and Administrative	
IT	Information Systems Technician	LS	Logistics Specialist
Construction and Extraction		YN	Yeoman
AO	Aviation Ordnanceman	Protective Service	
Food Preparation and Serving Related		ABH	Aviation Boatswain's Mate, Aircraft Handling
CS	Culinary Specialist	MA	Master-At-Arms
Health Care Support		Transportation	
HM	Hospital Corpsman	BM	Boatswain's Mate
Installation, Maintenance, and Repair		EN	Engineman
AE	Aviation Electrician's Mate	None (Military Specific Occupation)	
AT	Aviation Electronics Technician	FC	Fire Controlman
AD	Aviation Machinist's Mate	OS	Operations Specialist
AM	Aviation Structural Mechanic		
EM	Electrician's Mate		
ET	Electronics Technician		
MM	Machinist's Mate		

Air Force

The Air Force classifies enlisted personnel using five character Air Force Specialty Codes (AFSC), which are combined into overall Career Groups, such as Operations, Logistics, or Support. An Airman's specific AFSC will include a career group, career field, career subdivision, their skill level and specialty. For the Pilot Crosswalk, all skill levels of a specific AFSC were analyzed and an X in the AFSC code replaces the specific skill level indicator (1-Helper, 3-Apprentice, 5-Journeyman, 7-Craftsman, 9-Superintendent). The 15 AFSCs included in the analysis are shown in Table 2-4; none are military specific occupations.

Table 2-4 – Air Force Specialty Codes Included in Pilot

Computer and Mathematical		Office and Administrative	
3D0X2	Cyber Systems Operations	2S0X1	Materiel Management
3D1X2	Cyber Transport Systems	3S0X1	Personnel
3D0X1	Knowledge Operations Management	Protective Service	
Construction and Extraction		3P0X1	Security Forces
2W0X1	Munitions Systems	Transportation	
Food Preparation and Serving Related		2T2X1	Air Transportation
3M0X1	Services		
Health Care Support			
4N0X1	Aerospace Medical Service		
Installation, Maintenance, and Repair			
2A6X2	Aerospace Ground Equipment		
2A5X1	Aerospace Maintenance		
2A6X1	Aerospace Propulsion		
2W1X1	Aircraft Armament Systems		
2A3X3	Tactical Aircraft Maintenance		

In the Air Force, additional skills or qualifications are recognized by the addition of a suffix to an AFSC called a “shredout.” A shredout notes a position with a specific function within the career field subdivision although not all AFSCs have associated shredouts. For example, within the 3POX1 Security Forces AFSC, an Airman with the addition of an “A” at the end (3PoX1A) indicates their position as a Military Working Dog Handler. For the Pilot Crosswalk, shredouts were considered during the analysis only if they were documented in the information provided. Other skills or abilities that are not strictly associated with an AFSC (e.g., Training Instructor) may also be added as a prefix to an individual’s AFSC. The Pilot Crosswalk analysis did not consider this category of additional skills due to their cross-cutting nature.

Marine Corps

The Marine Corps classifies enlisted personnel through the use of a four digit MOS. The first two digits represent an Occupational Field such as Personnel and Administration or Motor Transport. The last two digits represent a specific job within an Occupational Field. Marines are assigned to a primary MOS but additional skills may be identified through a secondary MOS or a Skill Designator. In the Marine Corps, technical specialties or promotions may change an individual’s MOS. For example, upon reaching the E6 pay grade, Marines in 3521 Automotive Maintenance Technician have a change in MOS to 3529 Motor Transport Maintenance Chief. Table 2-5 contains the 10 Marine Corps MOSs included in the analysis.

Table 2-5 – Marine Corps MOSs Included in Pilot

Arts, Design, Entertainment, Sports, and Media	Protective Service
0621 Field Radio Operator	5811 Military Police
Construction and Extraction	Transportation
1371 Combat Engineer	3531 Motor Vehicle Operator
Installation, Maintenance, and Repair	None (Military Specific Occupation)
3521 Automotive Maintenance Technician	0331 Machine Gunner
Office and Administrative	0341 Mortarman
0111 Administrative Specialist	0311 Rifleman
3043 Supply Administration and Operations Specialist	

Overview of Civilian Occupational Classification

As with the military, the civilian workforce classifies occupations using a variety of classification systems. Federal agencies have a number of different coding systems for classifying occupations, including:

- **Standard Occupational Classification (SOC):** The SOC is the federal government’s official classification structure for occupations and it is used to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. All federal programs that classify workers use or are based on the SOC. All workers are classified into one of 840 detailed occupations according to their occupational definition.

- **Occupational Information Network (O*NET):** This classification is used by the Department of Labor to collect and distribute information about the characteristics of occupations. Its occupations are based on the Standard Occupational Classification.
- **Occupational Employment Statistics (OES):** This classification is used by the Bureau of Labor Statistics for a survey of employers for gathering staffing pattern and wage information. The survey uses occupations from the SOC.
- **Census Occupations:** Occupations used in the decennial census are based on the SOC; they are a more aggregated version of the SOC codes. The classification was modified for use in the 2003 Current Population Survey, the American Community Survey and other surveys done by the Census Bureau. This revision, the 2002 census occupations, adds another character to the 2000 census occupation codes by adding a zero after the 2000 code.

For purposes of the Pilot Study, linkages were made between military occupations and O*NET codes for a few reasons: (1) the Department of Labor’s Occupational Information Network (O*NET) classification is the nation’s primary source of occupational information, (2) it is the classification scheme used by DoD and DOL for their existing military to civilian crosswalks, and (3) the DoD and DOL MOC to O*NET crosswalks are widely disseminated for public and private use, so improvements to this base crosswalk will lead to improvements to other existing tools that have been developed based on the DOL crosswalk.

Overview of Methodologies Used to Develop Military to Civilian Crosswalks

Numerous resources have been developed by governmental and non-governmental agencies to match military jobs to civilian jobs. The scope of this study precluded an extensive review of existing military to civilian crosswalks and the methodologies used to develop them. However, it is important to point out that a variety of methods can be used to develop crosswalks and the methodology employed has a direct impact on the quality of the results. The factors described below were considered carefully in selecting a methodology for the Pilot Crosswalk.

Exhibit 2-1 – Occupational Crosswalk Analysis

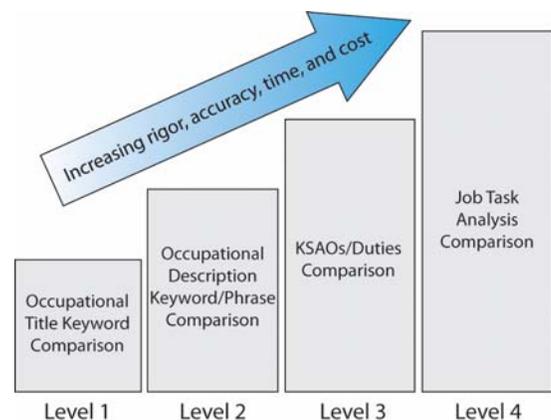


Exhibit 2-1 shows the four levels of analysis that might be used to develop military to civilian crosswalks. The degree of accuracy of a crosswalk will be dependent on the level of rigor employed in its development. The methodologies depicted in Exhibit 2-1 and Table 2-6, are divided into four levels of analysis with Level 1 requiring the least rigorous analysis and producing the least accurate results and Level 4 being the most rigorous and most accurate:

- Level 1 – Occupational Title Keyword Comparison
- Level 2 – Occupational Description Keyword/Phrase Comparison
- Level 3 – KSAOS/Duties Comparison
- Level 4 – Job Task Analysis Comparison

Clearly, the ideal methodology would be the most rigorous; however, as the level of rigor and accuracy increase, so does the amount of time required to conduct the analysis and the cost of the analysis. Level 3 and 4 analyses produce the most accurate results, but because they require significant analysis and interaction with subject-matter experts and/or the use of Industrial/Organizational Psychologists, they can be costly and time consuming.

Table 2-6 – Levels of Data Analysis for Military to Civilian Crosswalks

Level	Type of Data Analyzed		Description
	Military Occupation	Civilian Occupation	
1	MOC Title	O*NET Title	Occupational Title Keyword Matching – Matching key words in military and civilian occupational titles.
2	MOC Description	O*NET Description	Occupational Description Keyword/Phrase Comparison – Comparison of key words and phrases in military and civilian job descriptions.
3	Military KSAOs/Duties	KSAOs/Duties Defined in O*NET	KSAOs/Duties Comparison – Comparison of Knowledge Skills, Abilities, and Other (KSAOs) and/or job duties for military and civilian jobs combined with Subject Matter Expert (SME) input.
4	Military JTA	Civilian JTA	Job Task Analysis Comparison – SME and Industrial/Organizational Psychologist (I/O) Panel conduct Job Task Analyses (JTAs) involving observation, incumbent surveys, interviews, and validation studies.

It is important to note that in recent years, reliance on the use of automation to develop matches between military and civilian occupations has increased significantly. Automated matching can be relatively simple involving key word or phrase matching (Level 1 or 2 analyses) or it can be based on very sophisticated computer algorithms (Level 3 or 4 analyses). In either case, the accuracy of the results generated by a computer tends to be much less accurate than the results developed by trained analysts.

Computer-based analysis at Levels 1 and 2 is especially likely to yield very inaccurate results. For example, in one existing military to civilian crosswalk tool that is based on simple keyword

matching, typing in “DC” for the Navy “Damage Controlman” rating yields results, such as “Food Service Supervisor,” “Employee Benefits Advisor,” and “Sales Specialist Cardiology.” These civilian occupational matches are clearly inappropriate when the duties of a Navy DC – Damage Controlman are reviewed:

Perform organizational and intermediate level maintenance and repair of damage control equipment and systems; plan, supervise, and perform tasks necessary for damage control, ship stability, preservation of watertight integrity, firefighting, and chemical, biological and radiological (CBR) warfare defense; instruct and coordinate damage control parties; instruct personnel in the techniques of damage control and CBR defense; supervise and perform tasks in procurement and issuance of supplies and repair parts; prepare records and reports.

Further examination of the automated results shows that the match is being made based on the location of the civilian job (i.e., DC – District of Columbia) and the resulting civilian jobs have nothing to do with the actual training, skills, and duties associated with the military occupation.

Crosswalks developed based on an individual performing Level 1 or 2 analyses can also be somewhat limited in terms of the completeness or accuracy of the results. However, an individual doing Level 1 and 2 analyses can make some judgments about the veracity of the results.

More sophisticated computer algorithms attempt to mimic analysis that would be conducted at Levels 3 and 4. An algorithm is a mathematical or logical formula used to evaluate a set of variables according to defined rules and return an output or result. These algorithms might be designed to automatically consider the types of knowledge, skills and abilities present in a military occupation and compare them to a set of civilian occupations categorized by their knowledge, skills and abilities. The output of the program is designed to return a list of pre-defined “good” matches, or a list of matches sorted by the closeness of the match (i.e., how many skills matched or how many critical skills matched), or any other defined outcome.

No matter what format an algorithm’s results are programmed to return, the success of these tools depends on the validity of the input data and the logic used to calculate the matches. Considerable time must be spent at the front end designing an evaluation process that takes into account the many variables of a military occupation, from job tasks to duty stations to training programs. In addition, the data sources used to feed into the algorithm must be current, accurate, and formatted in a way that can be fed into an automated process. The time and expense required to successfully develop, maintain and update this type of tool could be substantial and may outweigh the benefits of automation in the short term.

As will be discussed further in Chapter 3, for purposes of the Pilot Study, the methodological approach taken involved Level 3 analysis and the analysis was performed by trained occupational analysts with military subject matter expert (SME) input.

Overview of Selected Existing Resources Translating Military Training and Experience

The remainder of this chapter highlights some of the key governmental resources that have been developed to match military to civilian jobs. As noted above, the scope of this study precluded an exhaustive review of all of these resources. The information presented here focuses on those developed by DoD and DOL.

DoD Resources

The Department of Defense has two key initiatives that link military and civilian occupations.

DMDC Crosswalk

As noted above, the foundation of most of the existing tools used to match military to civilian occupations is the occupational crosswalk done by the DoD's Defense Manpower Data Center (DMDC). DoD Instruction 1312.01, *Department of Defense Occupational Information Collection and Reporting* (updated January 28, 2013), "establishes and implements policy, defines responsibilities, and provides procedures for the collection and maintenance of military and civilian occupational information to meet DoD requirements." Under this Instruction, DMDC is required to maintain an Occupational Database (ODB) containing detailed data from each service's military occupational classification systems. They are further required to complete the crosswalk analysis and enter associated civilian codes, including O*NET codes, in the ODB Master Crosswalks File. The DoD Instruction also establishes and implements the DoD Military Occupational Classification Joint Service Working Group.

As discussed in Chapter 1, DMDC personnel develop the military to civilian occupational crosswalk based on a high level comparison of the descriptions and job duties of military occupations provided by the services against the O*NET classification system. The analysis conducted by DoD is considered Level 2 analysis. Until recently, DMDC matched only one or two civilian occupations to each military occupation. In July 2013, DMDC added two additional fields to its database that allow matching up to four civilian occupations to provide more information on potential civilian occupational opportunities to Service members and Veterans.

DMDC makes its military to civilian crosswalk data files available to other federal agencies and to the public via, among other mechanisms, the National Crosswalk Service Center (NCSC) (<http://www.xwalkcenter.org/>), which is a federally-funded national clearinghouse for classification information about occupations, training programs and industries. The NCSC has been operated by the State of Iowa since 1983 under a series of grants from federal agencies. Funding for the Center has been provided by the Employment and Training Administration, U.S. Department of Labor since 1996. The DMDC crosswalk data files are the basis of many of the publicly and privately developed web-based tools that translate military to civilian jobs.

Army and Navy Credentialing Opportunities On-Line (COOL)

Two additional military programs that provide civilian equivalent information to Service members that is helpful as they transition from military service to the civilian sector are the Army and Navy Credentialing Opportunities On-Line (COOL) initiatives (<https://www.cool.navy.mil>, <https://www.cool.army.mil>). Among other things, these initiatives match Army and Navy military occupations to civilian jobs and related civilian credentials. The linkages to civilian occupations are based, initially, on the results of the DMDC crosswalk, but are expanded upon based on an extensive analysis done by occupational analysts and confirmed by service SMEs. (Note: The Air Force has recently kicked off its own COOL initiative that will produce similar linkages for Air Force occupations and the Marine Corps is considering a COOL initiative as well.)

Department of Labor Resources

The Department of Labor has developed a number of tools to help military Service members and Veterans explore relevant civilian jobs. DOL relies primarily on the DMDC crosswalk to populate the results of its military to civilian crosswalk tools. However, DOL supplements this information with the results of the analysis conducted for Army and Navy COOL.

*O*NET Crosswalk*

As part of its O*NET Online website, DOL has established a publicly accessible, web-based military to civilian occupation crosswalk (<http://www.onetonline.org/crosswalk/MOC/>). This tool allows individuals to enter a military occupation by service to receive a list of related civilian jobs (O*NET codes). The individual can then select the civilian occupation and find out more about it, including the associated tasks, knowledge, skills, abilities, work activities, education, etc. Information can also be found on wages, employment, and job openings.

My Next Move for Veterans

Another DOL tool that provides information on linkages between military and civilian jobs is the My Next Move for Veterans website (<http://www.mynextmove.org/vets/>). Modeled after the My Next Move website (which addresses civilian jobs), My Next Move for Veterans provides detailed information on civilian career options and allows users to search based on an MOC. As described on the O*NET Resource Center website, users can:

- Explore over 900 different careers and see important information including skills, tasks, salaries, and employment outlook on easy-to-read career reports.
- Look at related apprenticeships and training, and search actual job openings.
- Find careers through a keyword search; by browsing industries; or through a military transition search that recommends civilian careers relevant to their military experience.

The My Next Move for Veterans site makes use of O*NET data, but is presented in a user-friendly manner designed to be understandable by the layperson.

Chapter 3 – Pilot Crosswalk Methodology

In selecting a methodology for the Pilot Crosswalk, the factors described in Chapter 2 related to the various approaches for developing crosswalks were carefully considered. The Pilot Crosswalk methodology employs a mix of the aforementioned methodologies. The resulting pilot methodology is best categorized as a Level 3 analysis. It starts with the key word matches from the existing crosswalk as the base for the crosswalk and then incorporates data collection and analysis of job duties and skills with validation by military subject matter experts.

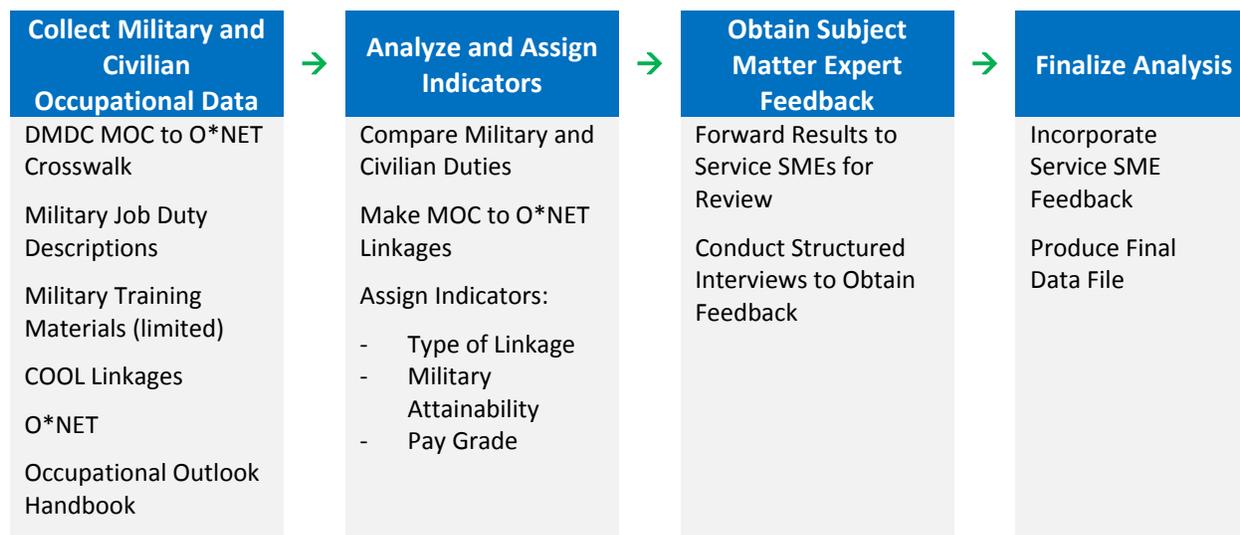
Addition of Indicators to Crosswalk to Aid in Interpreting Results

- Type of Linkage (Directly/Skill)
- Attainability During First Term of Service (Levels 1 to 4)
- Typical Minimum Pay Grade (E 1 to E 9)

To produce a crosswalk with more value for Service members, the Pilot Crosswalk expanded the analysis of the information beyond the matching of occupations. For each military to civilian occupational linkage, three indicators were developed to provide further specificity, including: (1) type of linkage, (2) typical minimum pay grade, and (3) military attainability level. These indicators provide Service members more information in regards to career options as they transfer from the military to the civilian sector. (Further description of each indicator is provided below).

As depicted in Exhibit 3-1, the process of constructing the VOW 222 Pilot Crosswalk for the selected military occupations included four main steps: (1) collection of information on military and civilian jobs, (2) analysis of military occupation job duties and requirements of related civilian occupations and assignment of indicators related to type of linkage, attainability level and skill level, (3) interviews with subject matter experts (SMEs) identified by each service to obtain feedback, and (4) revisions of the Pilot Crosswalk based on feedback from the services.

Exhibit 3-1 – Pilot Crosswalk Research and Analysis Process



Information Gathering

The first step in the Pilot Crosswalk analysis was to collect the most up-to-date information available for the Pilot military occupations from the Army, Navy, Air Force, and Marine Corps. To aid in this effort, the DoD's *Office of the Assistant Secretary of Defense for Readiness and Force Management* sent a formal "tasker" to representatives from each service. The tasker requested that the services provide current descriptions of the duties for the selected military occupational codes and any supporting job task analysis data available. It also requested access to service subject matter experts.

Along with the current MOC descriptions, additional information was gathered from other sources. Forty of the 68 MOCs were also part of the research effort for DOD's Veterans Employment Initiative Task Force that identified gaps between military training and civilian credentialing requirements. For these MOCs, training materials and other supporting information was available to assist in constructing the Pilot Crosswalk. Other available sources of information used to round out MOC knowledge included the Army and Navy Credentialing Opportunities On-Line (COOL) websites, the Air Force Career Field Education and Training Plans (CFETP) for individual AFSCs, and the existing DMDC crosswalk.

For the civilian occupations, the primary sources of job related information used to construct the Pilot Crosswalk were the Department of Labor's Occupational Information Network (O*NET) and Occupational Outlook Handbook. As noted in Chapter 2, O*NET is a standardized database of occupation-specific descriptors that summarizes the knowledge, skills and abilities of civilian occupations as well as a general understanding of the education, experience and training requirements necessary to perform a job in a given occupation. The O*NET code consists of eight digits. The first six digits represent SOC codes and a two digit extension is added to the SOC to further differentiate the occupation. The current version of the O*NET database (18.0) contains data on 921 occupations. Also as noted in Chapter 2, O*NET codes are also the basis for the existing military to civilian occupational crosswalk maintained by DoD.

Career information from the *Occupational Outlook Handbook* was also used to provide a general understanding of the civilian occupations targeted as potential military occupational matches. *The Occupational Outlook Handbook* is developed by DOL's Bureau of Labor Statistics and provides profiles of hundreds of occupations that describe, among other things, what individuals performing in the occupations do, the work environment, and how to qualify to perform in the occupational area. The information is relatively comparable to what is contained in O*NET, but occasionally provided some additional insight into various career considerations that might be relevant to military occupations.

Mapping of Occupations

The process of mapping the job duties of military occupations to civilian occupations began with a comprehensive understanding of the military occupation. What are the main job duties? What skills are necessary to perform those duties? How do job duties change at various skill

levels? What is the process for advancing from one skill level to the next? Once that information was gathered, civilian occupations were searched and evaluated for equivalencies. The process of finding civilian occupations to evaluate included a review of the following:

- The primary and secondary O*NET matches as currently mapped by DMDC¹
- Job title and job task searches on O*NET
- Related occupations from the results of the O*NET searches
- Related occupations on Army and Navy COOL websites (for Air Force and Marine Corps, similar Army and Navy occupations were reviewed if applicable)

Civilian occupations that included similar job duties or had a similar application of skills were selected for further review. After a review of the civilian occupational job descriptions and requirements from O*NET and the *Occupational Outlook Handbook*, and a comparison with military job duties, civilian occupations were selected for inclusion in the Pilot Crosswalk.

Type of Linkage

The intent of the Pilot Crosswalk was to go beyond an initial matching of job titles of equivalent military and civilian occupations. The Pilot Crosswalk strives to provide additional information about comparable occupations to Service members through three new indicators, the first being the type of linkage. The type of linkage is an indicator of how strongly the military and civilian occupations are linked. Linkages are categorized as either Directly Related or Skill Related.

Types of Linkages between Military and Civilian Occupations

- **Directly Related** – military and civilian occupation share approximately 80% of job duties
- **Skill Related** – civilian occupation is related to at least one critical task in military job duties

A Directly Related linkage indicates that the military occupation and the civilian occupation were linked if at least 80 percent of the job duties for both the military occupation and the civilian occupation are similar. Civilian occupations were also linked as directly related if the job duties of the civilian occupation were similar to the core duties of an MOC performed by Service members on a regular basis. For example, the job duties of the Navy Information Systems Technician include tasks that are comparable to both network and computer system management and operating and maintaining radio communications systems. Whether or not an individual IT Sailor is responsible for both those duties on a daily basis may depend on their duty station, e.g., rotation between ship and shore duty. Because both tasks are part of the core IT duties and all IT Sailors are trained to perform them, civilian occupational equivalents for both network management and radio operators were linked as directly related.

A Skill Related linkage indicates that the civilian occupation for a given O*NET code is related to at least one critical task in MOC duties but not all MOC duties. Occupations may be designated

¹ The DMDC crosswalk is updated on a regular basis. The crosswalk available in July 2013 was the source for the original O*NET matches.

as skill related if they are based on a specialty of an MOC or on a task that not all Service members in an MOC may have been assigned. Civilian occupations may also be designated as Skill Related if Service members gain general knowledge and experience that can be applied to an occupation but may require additional experience or on the job training to gain employment in a specific position, for example a HM Hospital Corpsman transitioning to a job in the medical records field or an AD Aviation Machinist's Mate transferring experience maintaining aircraft engines to other diesel engines such as buses or trucks.

Having a distinction between Directly Related and Skill Related is important for two reasons. First, it recognizes the fact that not all military careers within an MOC develop exactly the same way. Some Service members develop specialties that others in their MOC may not, others gain more experience at a particular skill based on their duty station or assignment. And second, it captures skills gained during military service that are not necessarily captured during a general review of an MOC's main job duties.

When considering linkages between military and civilian occupations, it is important to keep in mind that in some instances although the knowledge and skills necessary for a job in the civilian sector in an occupational area are the same as skills gained in the military, some on the job training may be necessary in the civilian sector. For example, while the job duties of a Logistics Specialist in the Navy may be similar to logistics personnel in the civilian sector, there may still be differences between the automated systems used in the military compared to those used in the civilian sector or differences in terminology. Although the application may be different, the same skills could be applied.

Military Attainability Level

The second indicator developed for the Pilot Crosswalk is the Military Attainability Level. This indicator represents the **likelihood that a Service member could transition to the given civilian occupation after one term of service**, taking into account the preparation level required for an occupation and how much of that preparation may be gained through military experience. The indicator is expressed as a value from 1 to 4, with 1 indicating a civilian occupation is attainable after one term of service and 4 indicating that a civilian occupation is not attainable after one term of service. For example, the attainability level for a Navy CS-Culinary Specialist considering a transition into the civilian occupation represented by the O*NET code Cooks, Institution and Cafeteria, is a 1 (attainable within the first term of service), because the training and experience a Culinary Specialist receives in the Navy would qualify them to become a cook in the civilian sector with little to no additional preparation needed. Conversely, an attainability level of 4 (not attainable within the first term of service) was assigned for Soldiers in 31B Military Police in relation to the occupation of Emergency Management Directors. The number of years of experience and/or educational requirements for that position would not be gained during one term of service.

The guidelines used to determine attainability are shown in Table 3-1 below. In developing these guidelines, particular attention was paid to the typical requirements of a civilian occupation, including the general expectations of education, training and experience. Licensing or certification requirements for the civilian occupation were also included as a factor. To ensure that the indicator would be applicable to all Service members, it was defined to be the level of attainability after one term of service.

Table 3-1 – Military Attainability Ratings

Attainability Level	Description	Minimum Requirements	Consideration of Military Training & Experience	Licensing or Certification Required
1	Occupation is attainable within first term (4-6 years) of service.	High School or Less and/or Up to 4 Years Experience	Military training and experience qualifies service member to transition to occupation. Little to no additional preparation needed. Few states may require License.	Most likely not; if yes, obtained during military service.
2	Occupation is possibly attainable within first term (4-6 years) of service, but may require additional education, training or experience to transition.	Associate’s or graduation from approved /accredited program and/or Up to 6 Years Experience	Military training and experience partially meet civilian requirements; Military training program may not be accredited or approved; Civilian occupation may require some additional job related training. Medium level of additional preparation may be needed (training, education, license or certification).	May or may not be required; if required, most likely not obtained during military service.
3	Occupation is probably not attainable within first term (4-6 years) of service because it requires education, training, and/or experience likely not attainable during first term.	Bachelor’s Degree and/or More than 6 Years Experience	Military training and experience partially meets civilian requirements.	May or may not be required; if required, most likely not obtained during military service.
4	Occupation is not attainable within first term (4-6 years) of service because it requires education, training, and/or experience not attainable during first term.	Master’s Degree or Greater and/or More than 6 Years Experience	Military training and experience partially meet civilian requirements. Extensive level of preparation required (education, experience).	May or may not be required; if required, most likely not obtained during military service.

It is important to emphasize that the attainability indicator is intended to reflect the typical experience of a Service member completing his or her first term of service. Attainability may differ between individuals in an MOC due to differences in education or experience **prior to their enlistment or assignments while in the military**. For example, civilian

occupations that are linked as skill related may be more attainable for a Service member whose military experience grants them more experience in a particular job task compared to others in the same MOC. In addition, Service members with more than one term of service may find some civilian occupations more attainable given their additional years of experience. The Pilot Crosswalk indicator related to pay grade addresses the issue of skill level.

Typical Minimum Pay Grade

Military to civilian crosswalks can be one-dimensional in terms of capturing only one or two related occupations. They can also be one-dimensional in capturing the individual experience of Service members. The Pilot Crosswalk proposes to recognize the attainment of additional skills gained during multiple terms of service by including an indicator that reflects the level at which those skills are gained. The Typical Minimum Pay Grade indicator is the typical pay grade level at which a mapped civilian occupation can most likely be attained based on the level of experience acquired and the types of duties assigned. For example, civilian occupations requiring managerial skills are generally mapped to a minimum pay grade of E5 to reflect the level at which Service members typically reach supervisory positions.

Table 3-2 – Typical Minimum Pay Grade Range

Pay Grade	Typical Number of Years in Service To Reach*
E2	6 months - 9 months
E3	1 year - 18 months
E4	18 months - 3 years
E5	4 years - 5 years
E6	8 years- 13 years
E7	13 Years - 17 Years
E8	17 Years - 20 Years
E9	20 years - 22 years

In addition, pay grade can also be used as an indication of years of experience when considering the requirements of a civilian occupation. To use pay grade as an indicator of experience, the individual pay grades were associated with the number of years in service that were required before advancing, for the average Service member. Because each service has its own promotion process and criteria, each pay grade was defined as a range of years generally required to reach a pay grade that incorporates each service's

typical promotion process. These general ranges allowed for comparisons with civilian occupational requirements across all four services with one indicator (see Table 3-2). For example, a civilian occupation that requires four years of experience would be equated with the experience of a Service member at the E5 level and above. A typical Service member, on average, would reach the E5 level in approximately four to five years. Therefore, a Service member transitioning into the civilian occupation should be, at a minimum, at the E5 level in order to have gained the experience necessary to perform in the civilian job.

Many job search websites use the DOD military to civilian occupational crosswalk to show related job postings. Inclusion of a measure of skill level allows the Pilot Crosswalk to include additional civilian occupations that typically require more experience and a mix of skills that are likely not mastered during one term of service. At the same time, the Minimum Pay Grade

indicator offers the Service member a realistic view of when the skills required by a civilian occupation would typically be gained during military service.

Subject Matter Expert Feedback

At the end of the analysis phase, a spreadsheet was created for each military occupation containing the O*NET codes for the existing DMDC civilian occupational equivalents, the additional civilian occupational matches, and the indicators for type of linkage, attainability and minimum pay grade. To validate the results of the analysis, the Pilot Crosswalk methodology included discussions with Subject Matter Experts from each service to review the draft Pilot Crosswalk for each MOC.

As part of the DOD Tasker related to the VOW Act, each service provided contact information for a Subject Matter Expert (SME) for each MOC “who could speak to the main job duties and training associated with the MOC.” The SMEs serve in various positions, including Career Field Managers, Occupational Field Managers and MOS Specialists, Training Managers and Training Instructors. Upon completion of the draft Pilot Crosswalk for an MOC, a conference call was scheduled to examine the civilian occupational matches and the additional indicators. Prior to the call, SMEs were sent a draft of the Pilot Crosswalk for their MOC and supporting materials that described the Pilot Crosswalk methodology and defined the indicators. SMEs were asked to review the matches and offer their feedback in the following areas:

- What were their views on the appropriateness of the civilian occupations that were identified as comparable to the MOC and the degree to which they are related?
- Given what they know about the training and experience a Service member receives during one term of service, how appropriate was the attainability level assigned to each?
- How accurate were the typical minimum pay grade levels associated with each civilian occupation?
- Were there other factors that should be considered when considering the attainability level or minimum pay grade?
- Were there additional equivalent civilian occupations that could be mapped to the MOC that are not apparent from the job description documentation?

Revision of Pilot Crosswalk

Based on feedback received from the service SMEs, the draft Pilot Crosswalk spreadsheet for each MOC was revised and added to the master Pilot Crosswalk spreadsheet. Feedback from the SMEs on the mapped civilian occupations and the type of linkage validated the content of the Pilot Crosswalk. In addition, tweaks to the Minimum Pay Grade or Attainability level improved the accuracy of the indicators. In some cases, additional civilian occupations that were not apparent from the documentation were added while in others, occupations that were initially determined to be equivalent were determined to not be good matches.

An example illustrates the value of the SME feedback. The job description for the Army MOS 25U Signal Support Systems Specialist indicates that Soldiers in 25U gain technology experience related to computers and networking:

The Signal Support Systems Specialist supervises, installs, employs, maintains, troubleshoots and assists users with battlefield signal support systems, terminal devices, satellite communications equipment and automated telecommunications computer systems, to include local area networks, wide area networks and routers.

Based on the complete job description, MOS 25U was mapped to a computer related civilian occupation, Network and Computer Systems Administrators. During the SME call, it was reported that although Soldiers in 25U are cross-trained for these computer skills, in reality, the typical 25U Soldier does little computer work as part of their day to day job. As a result the type of linkage for that O*NET code was changed from directly related to skill related to reflect that it was not a part of a 25U's core job duties. The attainability level was adjusted to a 3, indicating that the civilian occupation is probably not attainable within the first term because it would require more training or experience likely not acquired during the first term of service.

Chapter 4 – Pilot Crosswalk Results

During the Pilot Crosswalk analysis process, two distinct areas were kept in mind for consideration of findings – the civilian occupational equivalents that were mapped to the military occupations and the methodology used in the analysis.

Findings realized during the course of mapping those occupations are presented below in the first findings section. Findings related to the Pilot Crosswalk methodology are in the second findings section. Finally, challenges faced in implementing the Pilot Crosswalk as well as strengths and weaknesses of the methodology are addressed in the last section of this chapter. An excerpt of the Pilot Crosswalk data file along with guidelines for interpreting data are included in Appendix B.

Findings Related to Linkages between Military and Civilian Occupations

1. **The complexity of the analysis was dependent upon the degree of alignment between the military and civilian occupation.** For some occupations like information technology, health care or office administration, the military and civilian occupations are closely related because the tasks in the civilian sector were very similar to tasks performed in the military. Other occupations were more difficult due to the nature of military occupations and the differences between military mission training and civilian work requirements. The Navy's Aviation Ordnanceman or Boatswain's mate and military specific occupations such as the Army's Combat Engineer or the Marine Corps Machine Gunner are examples of military occupation that required more analysis to understand the skills gained by Service members that could be related to a civilian occupation.

Even for military occupations that appeared to have a direct civilian counterpart, the comparison of military and civilian occupations required a consideration of the differences between the two sectors. The focus of training and experience for the military mission may leave gaps between military and civilian occupations. For example:

- Military automotive technician (Army 91B, Marines 3521) mission requirements emphasize replacement over repair leading to lack of experience in diagnostic assessment, troubleshooting and repair that may be required for an equivalent civilian occupation.
- Service members who work with explosives (Air Force 2W0X1 Munitions, Navy AO Aviation Ordnanceman) work with explosives in a weapons environment rather than construction or mining. In addition, the types of explosives used in the military are different than those used in commercial applications. Additional training will likely be required for Service members to transfer into a civilian explosives occupation.
- Air Force aircraft military occupations perform general maintenance but typically replace instead of overhaul components/equipment.

The analysis considered these issues while mapping civilian occupations and assigning the relatedness, attainability and minimum pay grade indicators.

- The Pilot Crosswalk resulted in identification of many more occupational linkages than represented in the DMDC crosswalk.** As shown in Table 4-1, the Pilot Crosswalk resulted in mapping a total of 962 civilian occupations as comparable to the 68 Pilot military occupations, a significant increase over the 100 occupations mapped by DMDC to the same 68 military occupations. The average number of linkages between the military and civilian occupation per MOC also increased substantially. The DMDC crosswalk mapped, on average, 1.5 civilian occupations per MOC, while the Pilot Study Crosswalk mapped 14.1 on average.

Table 4-1 – Number of Civilian Occupations Mapped by Service

Service	# of MOCs per Service	Civilian Occupations Mapped in DMDC Crosswalk		Civilian Occupations Mapped in Pilot Study Crosswalk	
		Total	Average per MOC	Total	Average per MOC
Air Force	15	36	2.4	248	16.5
Army	24	24	1	297	12.3
Marine	10	13	1.3	101	10.1
Navy	19	27	1.4	316	16.6
Total	68	100	1.5	962	14.1

- Matching occupations to major duties and embedded skill sets led to an increase in number of civilian occupations mapped.** The increase in the number of linkages was based on the addition of links to civilian occupations that are considered “directly related” to the majority of military job duties as well as links to those that are related to an embedded skill set (“skill related”). As shown in Table 4-2, across all services, the number of skill related matches was slightly higher than the number of directly related matches suggesting that focusing on embedded skill sets can yield significant additional career options for Service members and Veterans.

Some examples of additional skills mapped in the Pilot Crosswalk include:

- Army 25U Signal Support Systems Specialist is cross trained in networking/computer skills.
- Army 35M Human Intelligence Collector is linked in DMDC to only Translator/Interpreter; intelligence gathering skills are not captured.

- Navy AO Aviation Ordnanceman is mapped to Explosives Workers, Ordnance Handling Experts, and Blasters but AOs are also responsible for logistics tasks (storage and accounting).

The Pilot also showed that for some military occupations, the primary DMDC link may not be the best representation of the core duties performed by Service members. For example, Air Force 2WOX1, Munitions, has a primary link to the O*NET code for Explosives Workers, Ordnance Handling Experts, and Blasters, a civilian occupation involving the use of explosives. Feedback from the SMEs revealed that only a small number of Airmen in Munitions work with explosives on a daily basis and their experience is limited to constructing weapons and delivering them to aircraft pilots. Job duties in Munitions are more similar to logistics than explosives.

Table 4-2 – Number of Civilian Occupations Mapped by Service in DMDC and Pilot Crosswalks

Service	# of MOCs per Service	# of Civilian Occupations Mapped in DMDC Crosswalk	Civilian Occupations Mapped in Pilot Study Crosswalk		
			Total Occupations	# of Directly Related	# of Skill Related
Air Force	15	36	248	114	134
Army	24	24	297	91	206
Marine	10	13	101	47	54
Navy	19	27	316	130	186
Total	68	100	962	382	580

*Note: Total Number of Civilian Occupations, Mapped by Service represents data which includes a civilian occupation that may have been counted more than once because it is mapped to different MOCs across four Services.

- 4. The Pilot Crosswalk maps military occupations to civilian occupations across pay grades.** The existing DoD crosswalk generally maps each military occupation at a high level without consideration of skill level or pay grade, with the exception of the Air Force. DoD currently maps the Air Force AFSCs at the skill level, but even then typically limits the matches to one or two. (Note: while skill level and pay grade are not synonymous as Service members increase in skill level, they typically are increasing in pay grade as well.) The Pilot Crosswalk offers more information on civilian equivalents for Service members beyond the first term of service by including occupations that might be attained at all pay grades/career levels, including managerial level civilian occupations.
- 5. Cross-cutting skills that apply to many MOCs, particularly at the supervisory or higher level pay grades are difficult to map.** Some of the cross-cutting skills do not have an equivalent O*NET code or a Service member may gain skills in a few but not all tasks related to that occupation. For example, in supervisory positions Service members

may be responsible for quality assurance or serve as a safety officer. The O*NET codes related to quality assurance refer to specific areas such as software, lab testing, or inspection. The closest match for a safety officer, Occupational Health and Safety Specialists, is technical in nature and involves numerous tasks not necessarily found in the military outside a specific related MOC.

An additional issue that arose while evaluating cross-cutting skills is how qualified a Service member would be to perform a civilian occupation if they only have experience in some but not all of the tasks associated with the civilian occupation. For example, Service members gain skills in human resources management as they are promoted. These staffing and resource management skills are typical in the human resources field, however, other tasks in a civilian human resources job include activities either not typical in the military (e.g., defining compensation, selecting benefit plans, hiring and firing) or are usually not performed by the human resource related MOCs.

Examples of other cross-cutting skills at the higher pay grades include administrative contract management, logistics management, training management, records management, deployment management, base/unit functional management, and awards programs. Cross-cutting skills in these occupations have been mapped in the Pilot Crosswalk if the discussion with the SME indicated the skills gained during military service were significant enough to transfer into the civilian sector. Outside of the specific occupational MOC, these skills are typically acquired through training and may be documented in ASIs.

- 6. Supervisory or managerial level civilian occupational equivalents can be mapped for most military occupations and may be mapped as directly or skill related.** Since the Pilot Crosswalk takes all pay grades into account, the resulting linkages include supervisory or managerial level civilian occupations for all of the Pilot MOCs. In general, by the time Service members reach an E5 level, they have received military education and training related to leadership and management, and most will have applied those skills. Even if a promotion to E5 does not immediately involve supervisory duties, Service members at the E5 level are deemed supervisory ready and would have the supervisory skills required in the civilian sector for a first line supervisory position.

In addition, supervisory or managerial level civilian occupational equivalents may be mapped as either directly or skill related depending on how similar the supervisory civilian occupation is to the MOC. For example, a First Line Supervisor of Mechanics, Installers and Repairers may be directly related for a Marine Automotive Maintenance Technician but skill related for a Field Radio Operator. Other supervisory civilian equivalents, such as Administrative Service Managers are more general, and are more likely to be a directly related equivalent. Finally, directly and skill related supervisory or managerial civilian occupations must also be considered in the context of minimum pay grade. These

occupations may be considered directly related not because it is a core duty for *every* Service member in an MOC but because it is a core duty for Service members in the MOC *at a certain pay grade*. The minimum pay grade communicates the level at which a Service member has obtained the skills necessary to perform the civilian occupation.

7. **Military occupations are often more narrowly focused than O*NET**

occupations. The Pilot showed that there are many instances where the most closely related O*NET occupational description is broader than and involves additional skills or duties that are not required in the military. As a result, although the O*NET code is the closest match to the MOC, the O*NET code may not be entirely equivalent to some military occupations. Some examples of this are described below.

Many O*NET descriptions combine equipment repair with maintenance and adjustment whereas the military occupational classification system may split these tasks between two MOC's. Examples of this can be found in other occupational areas as well.

- 49-3011.00 Aircraft Mechanics and Service Technicians O*NET code description: “Diagnose, adjust, repair, or overhaul aircraft engines and assemblies, such as hydraulic and pneumatic systems. Includes helicopter and aircraft engine specialists.” In the Army one MOS is responsible for working on engines and another on hydraulics. The Army 15T UH-60 Helicopter Repairer Soldier works on maintenance and replacement of an entire engine but not repair of any particular engine component. Similarly, the Air Force 2A3X3 Tactical Aircraft Maintenance Airman diagnoses, adjusts and repairs aircraft engines but does not overhaul engines and may not work on small components.
- 47-4051.00 Highway Maintenance Workers O*NET description: **Maintain highways, municipal and rural roads, airport runways, and rights-of-way.** Duties include patching broken or eroded pavement, repairing guard rails, **highway markers, and snow fences. May also mow or clear brush from along road or plow snow from roadway.** The Army 12N Horizontal Construction Engineer Soldiers perform the tasks in bold; the 12V Concrete and Asphalt Equipment Operator's perform the other tasks (patch pavement and repair guard rails).

In other instances, the O*NET code description includes skills that may not be relevant to the military occupation, causing uncertainty in the linkage.

- 49-2011.00 Computer, Automated Teller and Office Machine Repairers combines the following items: Repair, maintain or install computers, word processing systems, automated teller machines and electronic office machines such as duplicating and fax machines. This O*NET code is the secondary DMDC link for Navy IT – Information Systems Technician. Navy IT's repair, maintain and install computers but are not responsible for ATM machines or office equipment. And while some components of

computers may be similar to ATMs and copy machines, additional training is usually required to transition to a position that repairs such equipment.

- 47-5031.00 Explosives Workers, Ordnance Handling Experts, and Blasters is the primary map for Navy AO Aviation Ordnanceman in the DMDC crosswalk. However, AO's only perform the tasks in bold: "Place and detonate explosives to demolish structures or to loosen, remove or displace earth, rock or other materials. **May perform specialized handling, storage, and accounting procedures.** Includes seismograph shooters. AO's would need significant training to work with commercial explosives as a blaster.

8. Military occupations can be difficult to equate to O*NET civilian occupational descriptions based on the level of responsibility ascribed to a civilian occupation as compared to a military occupation.

In some instances, the military Service member may be asked to perform higher level duties at lower pay grades and without advanced education than their civilian counterparts are required to have.

- For example, Airman in 3D0X1 Knowledge Operations Management are responsible for ensuring that rules related to publication guidelines are followed as well as ensuring compliance with the Privacy Act and Freedom of Information Act procedures. The closest O*NET code to reflect these duties is 11-9199.02 Compliance Managers, an occupation typically requiring a Bachelor's degree. While the SME indicated that 3D0X1's at the E4 level perform these tasks, the level of responsibility suggested by the O*NET description and job zone (*Plan, direct, or coordinate activities of an organization to ensure compliance with ethical or regulatory standards*) does not directly relate to managing these tasks at a lower unit level and calls for the minimum pay grade level to be set at E5 for this MOC.

In other instances, the use of the word "officer" may be confusing to a military audience and may cause some to overlook an occupation that would otherwise be appropriate for an entry-level applicant.

- 33-3012.00-Correctional Officers and Jailers is a directly related match to AFSC 3P0X1 - Security Forces (SF). Correctional Officers and Jailers: *Guard inmates in penal or rehabilitative institutions in accordance with established regulations and procedures. May guard prisoners in transit between jail, courtroom, prison, or other point. Includes deputy sheriffs and police who spend the majority of their time guarding prisoners in correctional institutions.* SFs perform this task in their first term at E3 /E4 pay grade and are experienced in guarding prisoners in transit between jail, courtroom, prison, or other point. While they qualify for an entry level position, some Service members assume the job could be only for those at Officer Level because the O*NET title and associated job titles use the word "officer" in the title.

9. **While the DoD crosswalk identifies 12 MOCs as having no civilian occupational equivalents, the Pilot study found civilian occupational links for all of the Pilot military occupations based on embedded skill sets.** The DoD crosswalk identifies certain MOCs as not having any direct civilian equivalents in the civilian workforce. All of these MOCs are linked by DoD to O*NET codes that begin with “55” – an O*NET job family that represents such occupations as “Artillery and Missile Officers,” “Infantry,” and “Special Forces.” However, an analysis of the embedded skills sets for these 12 MOCs allowed matching to numerous civilian occupations. Some examples of military specific occupations and their skill related civilian occupations include:
- Army 11B Infantryman is mapped to Light Truck or Delivery Service Drivers because it is a critical task performed by many 11Bs within their unit. (88M, Motor Transport Operators, perform delivery and transport duties for the Army as a whole.)
 - Army 19D Cavalry Scouts “lead, serve or assist as a member of scout crews squads, sections, or platoons in reconnaissance, security, cordon/search, and other combat operations.” Because security related tasks are a core job duty for 19D, Security Guards is mapped as a skill related civilian occupation.

Some additional civilian occupations identified as skill related for military specific occupations include categories such as Radio Operators, Construction Laborers, Airfield Operations Specialists, Machinery Maintenance Workers, and Electrical and Electronics Repairers.

Finally, at pay grade E5 and above, supervisory and managerial civilian occupations have also been mapped to these 12 MOCs. Service members at the E5 level are typically mapped to first line supervisory civilian occupations, for example First Line Supervisors of Construction Trades and Extraction Workers or First Line Supervisors of Transportation and Material Moving Machine and Vehicle Operators. Service members at the E6 level and above are mapped to managerial level civilian occupations such as General and Operations Managers, Training and Development Managers, Transportation Managers, or Storage and Distribution Managers.

Findings Related to the Pilot Crosswalk Methodology

10. **New indicators offer additional information for Service members to consider during transition, including type of linkage, minimum pay grade and military attainability.**

- The addition of directly and skill related occupations provide Service members with a greater number of career options to consider during their transition. For example, the Pilot crosswalk offers Army 35M equivalents a wider range of civilian occupations for consideration than just the interpreter/translator identified by DoD, including intelligence analysts, investigators or interviewers.
- Additional civilian occupations reflecting managerial responsibilities at all skill levels were added to the Pilot Crosswalk and made accessible through the minimum pay grade indicator.
- The military attainability level offers an indication of the ease of transition into a comparable civilian occupation, including an indication of the type of additional preparation necessary for civilian occupations not reasonably attainable.

11. **Multiple military pathways through training or specialties led to broad review of skill related occupations for the overall MOC.** The job responsibilities and experience of an individual Service member may depend upon duty station, types of assignments, and career specializations. Some skills and experiences of Service members were not documented in the MOC job description. To map skill-related occupations, the following guidelines were followed.

- Only those skills that are related to the core duties of an MOC or duties that all Service members are trained for but may not regularly perform were included in the crosswalk.
- Individual skills gained through training and specialties are typically captured in military skill identifiers outside of the primary MOC (e.g., Army - Additional Skill Identifiers and Navy Enlisted Codes). The scope of the project did not include the addition of this level of skill information.
- Civilian occupations that use skills gained in the military that could be applied to a different setting with on-the-job training (OJT) only if they were similar enough to the core duties. Examples include electrical or electronic skills that could be applied to similar equipment, or the application of military logistics skills to the logistics needs of the civilian manufacturing sector.

12. **A combination of data sources and SME feedback provided the most accurate results.** Job Descriptions supplemented by other sources led to a more accurate representation of skills gained in an MOC. Although it requires more resources to review, training materials and career education plans improve the results of the analysis. An

example of helpful documentation for the Air Force MOCs was the review of the Career Field Education and Training Program (CFETP) which outlined MOC job duties and their associated skill level.

In addition, SME feedback was a critical element in validating relatedness, attainability and minimum pay grade. Clarifications were made regarding a service's promotion process and for some MOCs, new skills were uncovered during SME discussions. For example:

- Army 74D Chemical, Biological, Radiological, and Nuclear (CBRN) Specialist: interview with SME revealed skills in firefighting allowing a linkage in the Pilot Crosswalk to the O*NET code for 33-2011.01 Municipal Firefighters.
- Air Force Security Forces 3POX1 was clearly directly related to Police Patrol Officer, but the SME interview revealed that Security Forces personnel received training and certification in electronic security system equipment so an additional skill related linkage was established to O*NET's 19-4099.03 Remote Sensing Technician occupation.

13. **The military attainability indicator was the most subjective measure and communicating the guidelines on how to interpret it will be important where the indicator is used.** Defining an attainability level is a way to compare military occupations with the requirements of a related civilian occupation and determine whether or not a Service member could transition to a civilian occupation immediately or with additional preparation. Although the Pilot Crosswalk developed very specific guidelines, the application of the indicator still held an element of subjectivity. In addition, SME's initial interpretation of the attainability level varied. Some appeared to judge attainability based on the more general ranking of whether a Service member could perform the job or not, while others considered the education and experience levels typically associated with each level. These issues were addressed during SME interviews to maximize the consistency of the application of the attainability indicator.

Defining the attainability indicator and communicating the guidelines will be important for users to fully understand its application. It should be emphasized that the indicator reflects attainability after the first-term and that the attainability indicator is applicable to the MOC as a whole, not for an individual Service member. Different duty stations where certain skills are utilized may be the difference between an attainability of a 1 or 2 for an individual Service member. The attainability level is meant as a guideline for the MOC and it will be up to the individual Service member to adjust that assessment based on their experience.

14. **The typical minimum pay grade is more accurate at lower pay grades.** There was more agreement from the SMEs when the typical minimum pay grade was set at E4 or less. With the exception of the Marine Corps, after E4, promotions depend not just on skills attained but also on supply and demand (the density of the MOC and the number of positions open at higher pay grades). As a result, Service members may have the skills

associated with a higher pay grade, and may be performing duties of a higher pay grade, prior to a promotion. For example:

- Air Force 3D1x2 Cyber Transport Systems: minimum pay grade for 11-3021.00 Computer and Information Systems Manager was proposed to be at the E5 level. SME indicated that was appropriate, but also indicated that an E4 with more than four years of service could also perform the job.

Assessment of Pilot Crosswalk Methodology

With the goal of improving the existing military to civilian occupational crosswalk, the methodology for the Crosswalk Pilot was selected to balance the necessity of conducting a deeper analysis into the skills gained by Service members with limited resources. A review of materials, the development of additional indicators, and input from Subject Matter Experts became the basis of the Crosswalk Pilot methodology. Like all methodologies, this approach has strengths and weaknesses. A brief review of the strengths, weaknesses and challenges faced in implementing the Pilot Crosswalk methodology are discussed below.

Strength: The Pilot Crosswalk captures more skills.

Analyzing military occupation job descriptions and other documentation with a goal of ascertaining *all* skills of Service members in an MOC led to an increased number of identified comparable civilian occupations. Where a high level, key word matching approach may provide only a primary and secondary link, the Pilot Crosswalk maps all skills gained in an MOC that could be transferred to an equivalent civilian occupation.

Strength: The Pilot Crosswalk provides Service members with more information.

Along with an expanded list of civilian occupations that are comparable to an MOC, the Pilot Crosswalk provides additional information about those equivalents to help Service members interpret the relationship between their MOC and the civilian occupation. With the addition of the indicators of relatedness, minimum pay grade and attainability, a Service member can more easily discern which occupations are the most related to their MOC, what skill level may be required to gain employment in a civilian occupation, and which offers the easiest transition into a civilian job.

Strength: The Pilot Crosswalk data was verified by Subject Matter Experts.

A key component of the Pilot Crosswalk methodology is the inclusion of verification of the analysis and additional indicators by Subject Matter Experts. The SMEs from each service are experts in their career field and were able to assess the accuracy of the Pilot Crosswalk. They provided feedback on the civilian occupations mapped to their MOC and verified the assignment of the relatedness, minimum pay grade and attainability level indicators.

Weakness: The Pilot Crosswalk results have an element of subjectivity.

Without the investment into a full Job Task Analysis to validate the relatedness, minimum pay grade and attainability indicators, the Pilot Crosswalk contains a certain level of subjectivity. While the subjectivity of the analysis can be partially mitigated by SME feedback, two SMEs from the same MOC may disagree on the inclusion of a particular civilian occupation or the indicators assigned.

Weakness: The Pilot Crosswalk is time intensive.

Although the Pilot Crosswalk methodology does not require the same level of time and resources typically needed to conduct a Job Task Analysis, the methodology does require more time to complete than a simple keyword matching approach. Collecting the documentation, conducting the analysis and obtaining feedback all require significantly more time than keyword matching. Additional time may also need to be spent reviewing the crosswalk at regular intervals to ensure that it remains current and up to date.

Weakness: The Pilot Crosswalk does not include additional skill data from services.

For an individual Service member, the most complete information on the skills they've gained may be found in the additional skill indicator data that is not included in the Pilot Crosswalk. Additional skill indicators in the form of ASIs, NECs, or shredouts may or may not be specific to an MOC, but the number of skill indicators and their application by the services adds a layer of complexity to a military to civilian crosswalk that was not in the scope of the Pilot Crosswalk. The addition of this level of data in a crosswalk could create a more complete picture of transferable skills gained during military service.

Challenge: A strength of relatedness indicator was considered and rejected.

As the additional indicators to the Pilot Crosswalk were taking shape, in addition to the relatedness of the link between the military and civilian occupation (directly and skill related), the inclusion of an indicator for the strength of that linkage was considered. The strength of linkage indicator would have been expressed in a numerical form where 1=very related, 2=related, and 3=somewhat related. This turned out to be ineffective. The strength indicator overlapped with the relatedness indicator to the point where it offered minimal additional information that could be of use to Service members. Considering the nature of their descriptors, wouldn't directly related occupations always be very related? Under what circumstances would a directly related civilian occupation be only related or somewhat related? After determining the strength indicator offered little value, it was removed in favor of including only the relatedness measure (directly related and skill related).

Challenge: Defining a directly related and skill related civilian occupation.

Defining what it means to be a directly related and a skill related occupation was also a challenge. While the original definition of a directly related occupation stated that a military

and civilian occupation were directly related if 80 percent of the job duties for both were similar, the limits of the job description data made a calculation of a percentage unlikely for most MOCs. To make a definitive comparison at the task level requires a critical task list for both military and civilian occupations, neither of which were readily available. As a result, civilian occupations were also linked as directly related if the job duties of the civilian occupation were similar to the core duties of an MOC performed by Service members on a regular basis.

During the analysis however, we continually reviewed what it meant to be skill related and clarified the definition to include civilian occupations related to at least one critical task in MOC duties, civilian occupations based on a specialty of an MOC, and civilian occupations similar enough to an MOC where general knowledge and experience could be applied with additional experience or on the job training. Going forward, the addition of a potential category to the relatedness indicator may be beneficial. A third category could be an Other/Associated linkage to represent those skills gained in the military that could be applied to an occupation in a setting other than the directly related occupation.

Challenge: Defining military attainability.

Developing the guidelines for the military attainability level was challenging. Consideration was given to the number of attainability categories to include and what factors to consider when evaluating whether military training and experience met requirements for a position in a civilian occupation. To simplify the guidelines and make them applicable to all, a decision was made to restrict the attainability level to the experience of a Service member after one term of service.

While the guidelines were intended to include enough detail to make consistent linkages, they also needed to be flexible in order to apply to all occupational areas with differing requirements. For example, some occupations allow experience to substitute for educational requirements while others do not. And while descriptions in the attainability guidelines contain words such as “considerable” that are left undefined to allow for flexibility in their application, some SMEs suggested that they be further defined.

Challenge: Supplemental documentation combined with job descriptions improved the analysis phase, but supplemental documentation is not always readily available and can be time consuming to collect and review.

The Pilot Crosswalk methodology includes an in-depth review of the military occupation job descriptions during the analysis phase and for some MOCs, the job description was the only source of information. Other MOCs benefitted from a review of materials previously gathered for the VEI taskforce in 2012. The better the documentation, the more informed the analysts were prior to the SME feedback calls. Relying on job descriptions alone will not present a full picture of the skills gained in an MOC and places even greater importance on the SME feedback calls.

Chapter 5 – Conclusions and Recommendations

The Pilot methodology resulted in the creation of a more robust military to civilian crosswalk for the Pilot MOCs. The Pilot Crosswalk provides numerous additional career options for military Service members and Veterans to consider. Moreover, the addition of three new indicators enhances the Service member's or Veteran's ability to better discriminate among the identified related jobs, and identify those that are likely to be most applicable to them based on their military training, experience, and rank. While the Pilot only included 68 MOCs, these MOCs represented a significant portion of Service members (57 percent) across the four services.

The Pilot Crosswalk completed for the selected MOCs and the information gained from the project can be made available to Service members through several methods. Recommendations for dissemination of the findings, analyzing the remaining military occupations, and additional considerations are discussed below.

Dissemination of Pilot Results by DOL and DoD

As required by Section 222 of the VOW Act, the information found in studying the equivalencies between military and civilian occupations is required to be made publicly available on an Internet website. In addition, the DoD is required to provide each Service member who participates in the Transition Assistance Program with an individualized assessment of the various positions of civilian employment in the private sector for which they may be qualified as a result of the skills developed by during their military service.

Recommendation 1: Include Results of Pilot Crosswalk on DOL and DoD websites utilizing the current DoD crosswalk.

The Department of Labor and Department of Defense should work together to determine how to best disseminate the Pilot Crosswalk results. Both short-term and long-term implementation plans for disseminating the crosswalk results might be considered. In the short-term, simple methods of disseminating the information for the 68 MOCs should be considered. In the long-term, as the crosswalk is extended to additional military occupations, more sophisticated mechanisms for automated dissemination that would allow for searching and/or sorting results based on attainability level, minimum pay grade, or type of linkage might be considered.

Since the DoD crosswalk and the DOL O*NET crosswalk results are disseminated publicly and form the basis of many publicly and privately developed military to civilian skill translators, consideration should be given to, including the new crosswalk data in the publicly disseminated data files. This would allow enhancement of these tools – some of which include links to specific job announcements.

Exhibit 5-1 – Example of How Pilot Crosswalk Data Could be Incorporated into My Next Move for Veterans

The screenshot shows the 'MY NEXT MOVE FOR VETERANS' website interface. The main heading is 'Careers similar to Army MOS title Information Technology Specialist'. Below this, it states 'Showing top 20 civilian careers similar to the Army MOS title Information Technology Specialist. Closest matches are shown first. These careers may require additional training, education, or experience.' A search bar contains 'Army (MOS)' and 'Information Technology Specialist'. A table lists several civilian careers with their corresponding link types, minimum pay grades, and attainability during the first term. A red box highlights the first three rows of this table.

Where in the Army?	Link Type	Minimum Pay Grade	Attainability During 1st Term	Bright Outlook	green	REGISTERED APPRENTICESHIP
★ Computer and Information Systems Managers	D	E5	3	•	•	•
★ Information Security Analysts	S	E5	3	•	•	•
★ Network and Computer Systems Administrators	D	E4	1	•	•	•
★ Computer User Support Specialists	D	E4	1	•	•	•
★ Computer Network Support Specialists	D	E4	1	•	•	•
★ Information Technology Project Managers	S	E7	4	•	•	•
★ Computer Operators	D	E3	1	•	•	•

Example of Interpretation of New Crosswalk Data:
Civilian Occupational Matches for Army 25B – Information Technology Specialist

- The “Computer and Information Systems Manager” O*NET code is **Directly Related** to approximately 80 percent of the Army IT Specialist’s duties.
- The 25B is most likely to be able to qualify for this occupation after reaching the **E5 pay grade**.
- The “Computer and Information Systems Manager” position is probably **not attainable to a Soldier within the first term of service** because it requires education, training, or experience not attainable during the first term.

Recommendation 2: Distribute Pilot Crosswalk through TAP program.

To fulfill the legislative requirements of Section 222 of the VOW Act, the Department of Labor should work with the DoD to incorporate the findings of the Pilot Crosswalk into the TAP program. In the short-term, since the Pilot only applies to 68 MOCs, consideration might be given to providing the information in a summary format for each of the 68 MOCs. In the longer-term, if DOL incorporates the results of the Pilot Crosswalk into My Next Move for Veterans, the TAP program could refer Service members to that tool.

Analyzing Remaining Military Occupations

Due to the large number of military occupations, the number of MOCs included in the Crosswalk Pilot was limited, in part, to those affecting the most Service members. The study was also an opportunity to test the methodology selected to provide additional information on equivalent

civilian occupations and consider the value of extending the Pilot to additional military occupations.

Recommendation 3: Extend the Pilot Crosswalk to additional military occupations.

The study was successful in identifying additional civilian occupational matches for the 68 MOCs included in the Pilot, representing 57 percent of enlisted personnel. Service members in the remaining MOCs would benefit from having access to the same information on civilian equivalents. The Department of Labor should consider the feasibility of applying the Pilot Crosswalk methodology to additional MOCs. A phased implementation plan could be developed that targets groups of the most populated MOCs.

Recommendation 4: Consider modifications to the Pilot Crosswalk methodology.

In the event the Pilot Crosswalk is extended to additional MOCs, the Department of Labor should consider the following modifications to the methodology to improve the results:

- Explore the feasibility of collecting additional information beyond the job description from DoD for those services where additional information was not readily available. For example, the Air Force’s Career Field Education and Training Plans for AFSCs provided valuable information related to core tasks and skill levels. The DOL should explore the burden of requesting that DoD provide similar sources of information for the other services, particularly the Army and Marine Corps.
- Consider the inclusion of additional skill identifiers to provide further information to Service members. Additional skill information linked to a specific MOC could be systematically included in the analysis and cross-cutting skills, those not linked to a specific MOC, could be incorporated into the crosswalk. In addition, the crosswalk could be adjusted to mark those skill related occupations that are linked to the achievement of an additional skill identifier.

Additional Considerations

As a result of the study, the Department of Labor might also consider:

- The cost and schedule of regularly updating the Pilot Crosswalk.
- Assessing other existing tools that match military to civilian occupations and comparing: (1) the quality of the results for specific occupations to the Pilot crosswalk results, (2) the cost of developing and maintaining the tool compared to the cost of implementing the Pilot Crosswalk methodology.