INSTITUTE FOR DEFENSE ANALYSES

Recording and Reporting Foreign Language Proficiency, Regional Expertise, and Cultural Knowledge of the Armed Forces

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Executive Summary

Introduction

In this follow-on report to Institute for Defense Analyses (IDA) document D-5610, The Defense Language and National Security Education Office (DLNSEO) asked IDA to develop a methodology to inventory core, regional/technical, and leadership/influence competency domains. This would be accomplished through an examination of relevant demographic, academic, military, professional education, and personal experience data, maintained at the enterprise level by the Defense Manpower Data Center (DMDC) via military service extract. This report outlines efforts associated with the development of a readiness inventory: obtaining relevant data from DMDC and documenting the completeness and quality of these elements.

Methodology

Unlike the previous research effort on this subject, in which IDA considered enterprise data within the Army's Person-Event Data Environment (PDE), for this analysis, IDA requested all data directly via the submission of Special Project Attachments (SPAs) to DMDC. While IDA worked with PDE for several months to meet the data request for this analysis, ultimately the PDE leadership determined that it could not support research efforts of the Federally Funded Research and Development Centers (FFRDCs), due to the large computing requirements. At this point, IDA began creating and certifying a personally identifiable information (PII) enclave that could host DMDC data for analyses. An authority to operate the PII enclave was granted and the process of requesting, receiving, reviewing, and curating data commenced.

For this project, IDA filed SPAs requesting the following relevant files from DMDC. IDA requested data from these files on a monthly basis (or as frequently as the files were developed) from 2001–2016, or as far back as the files were maintained.

- Master files containing demographic information
- Pay files with foreign language proficiency bonus (FLPB)
- Formal course offerings
- Training history of individuals linked to formal courses

- Contingency Tracking System (CTS) activation and deployment
- Defense Language Proficiency Test (DLPT) information
- Family and Transactions for both active and reserve components

The final set of files for this project was received in April 2018, but communication between IDA and DMDC continued, since DMDC does not produce or update data dictionaries associated with these enterprise holdings. IDA subsequently received additional data from DMDC, which were also incorporated in both curation efforts and analyses.

In addition to working with DMDC data, IDA also met with each of the military services to determine what language, regional expertise, and culture (LREC) were being captured in personnel, training, or educational databases. In some cases, IDA was granted access to these databases and could observe the extent to which these data were tracked. Finally, IDA conducted a literature review of relevant Department of Defense (DoD) policy documents associated with recording and reporting foreign language proficiency, regional expertise, and cultural knowledge.

Assessment of Data

While all data elements were requested back to 2001, in accordance with the preliminary SPA, not all data were collected or were maintained back to that date. IDA pieced each element together to identify what time periods could be used to permit validation. The preliminary data holdings permitted validation from 2012–2016. Through the numerous subsequent interactions between IDA and DMDC and the receipt of additional data, especially pay data, holdings increased to the point where validation could take place between the years of 2001 and 2016. Additional assessments of Master, Pay, and DLPT could also include the years of 2017 and 2018.

The first step in evaluating the potential usefulness of the data was to identify key variables and assess their completeness. A scrambled social security number (SSN) is used as an identifier across file holdings. We calculate the "completeness" of a scrambled SSN as the percentage of scrambled SSN for a given file that could be merged with the scrambled SSNs in the master personnel files. This allows us to understand if it would be possible to combine personnel data across files. Assessment of the completeness of these holdings from 2000–2018 yielded the following:

- **Master personnel files** lack education information.
  - Scrambled social security number (identifier): >99%
  - Component: >99%
  - Service: 100%

- Pay grade: 100%
- Education level code: >98%
- Education discipline code: 5%
- Professional Military Education (PME) level code: 10%
- Joint Professional Military Education (JPME) level code: 2%

Note that the incomplete education discipline data prevents us from determining if an individual has an academic background in a given region or culture. The lacking PME and JPME data prevent us from quickly evaluating the extent to which individuals have taken military education courses.

Shifting to the next assessment, it was unclear which personnel types are captured in the **training history file**.

- Scrambled social security number (identifier): 68%
- Course ID: 100%
- Start date: 100%
- End date: 100%
- Student's service: 74%
- Submitting service: 100%

Within the student's service values, only 60% are coded as Army, Air Force, Navy, or Marine Corps. It is possible that this data file also contains information on civilian personnel. The inclusion of civilians in these data may explain why we were unable to merge scrambled SSNs from the training history file and the master personnel file.

Combining **DLPT** scores highlights disparities in types of tests taken by a service member.

- Scrambled social security number (identifier): 90%
- Language: 100%
- Reading score: 76%
- Listening score: 83%
- Speaking score: 24%

The lack of speaking test scores is not necessarily a problem because many individuals only take that test when they first take the DLPT or if they need it for their billet. Some positions and occupations do not require an oral proficiency interview. Not being able to merge all scrambled SSNs from the DLPT file and the master personnel file leaves yet another problematic gap.

Pay files indicate the number of individuals being paid for language proficiencies.

- Scrambled social security number (identifier): 84%
- FLPB Language 1: 2%
- FLPB Amount 1: 2%
- FLPB Language 2: <1%
- FLPB Amount 2: <1%
- FLPB Language 3: <1%
- FLPB Amount 3: <1%

Of course, we did not expect FLPB to be 100% complete because not everyone is receiving FLPB. According to these data, there are approximately 24,000 service members receiving FLPB per year. Future assessments should be validated with military service databases. Again, there is a gap, since we cannot merge all scrambled SSNs from the pay files with those from the master personnel files, which is problematic.

When we assessed the **deployment files** there was missing information.

- Scrambled social security number (identifier): 100%
- Country: 89%

While the scrambled SSNs here sufficiently match those in the master personnel files, there is a gap in terms of incomplete information about where service members deployed.

Conclusions

Sufficient DoD policy and guidance exist regarding the recording of service member data and the extraction of these data to DMDC. Our assessment of DMDC enterprise DoD data associated with foreign language proficiency, regional expertise, and cultural knowledge was informed by existing policy issuances, which described the types of service member experiences, such as training, education, and deployments, that should be recorded and subsequently provided by the services to DMDC. DoD Directive 5160.41E, "Defense Language, Regional Expertise, and Culture (LREC) Program," stipulates that the secretaries of the military departments, will ensure that all foreign language, regional, and cultural education and training of personnel is tracked and documented in service personnel and training systems and made available.

The associated DoD Instruction (DoDI) 5160.70, "Management of the Defense Language, Regional Expertise, and Culture (LREC) Program," also charges the Assistant Secretary of Defense for Readiness with providing guidance to the DoD components for making data available to support language and regional proficiency readiness and risk assessments. Other related DoD issuances describe the need for foreign language and

regional and cultural training and education. For example, DoDI 3300.07, "Defense Intelligence Foreign Language and Regional and Culture Capabilities," describes how these capabilities are required to execute intelligence missions, that appropriate resources need to be made available, and that career path development and training activities include these competencies.

Recommendations

Improve the Quality and Completeness of the DMDC Data

DoD should consider processes to improve the enterprise-wide data at DMDC. DoD policies and guidance are in place; however, there are gaps in in the quality and completeness of data associated with compliance issues. Senior DoD leadership would have to make this a priority, with metrics associated with periodic assessments of data quality and completeness. Improvements would take time to observe and would require constant monitoring, stricter governance, and more oversight.

Consider Importing Directly from the Military Services all Data Related to Foreign Language Proficiency, Regional Expertise, and Cultural Knowledge

Since the service data is much more robust than what is found in the DoD-wide enterprise data, DoD could consider importing personnel; pay; training; civilian and professional military education; and deployment information directly from the services. With the inclusion of these data, DoD could improve the fidelity of future proficiency-level determination so that authoritative data from the services auto-populates as many fields as possible.

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1. Introduction and Methodology

A. Purpose

In this follow-on report to Institute for Defense Analyses (IDA) document D-5610,[1] The Defense Language and National Security Education Office (DLNSEO) asked IDA to develop a methodology to inventory core, regional/technical, and leadership/influence competency domains. This would be accomplished through an examination of relevant demographic, academic, military, professional education, and personal experience data, maintained at the enterprise level by the Defense Manpower Data Center (DMDC) via military service extract. This report outlines efforts associated with the development of a readiness inventory: obtaining relevant data from DMDC and documenting the completeness and quality of these elements.

B. Methodology

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For this project, IDA filed SPAs requesting the following relevant files from DMDC. IDA requested data from these files on a monthly basis (or as frequently as the files were developed) from 2001–2016, or as far back as the files were maintained.

- Master files containing demographic information
- Pay files with foreign language proficiency bonus (FLPB)
- Formal course offerings

[1] Joseph F. Adams, et al, *Measuring and Reporting Leadership and Core Competency Domains*, IDA Document D-5610 (Alexandria, VA: Institute for Defense Analyses, September 2015).

- Training history of individuals linked to formal courses
- Contingency Tracking System (CTS) activation and deployment
- Defense Language Proficiency Test (DLPT) information
- Other file: Family and Transactions for both active and reserve components

The final set of files for this project was received in April 2018, but communication between IDA and DMDC continued, since DMDC does not produce or update data dictionaries associated with these enterprise holdings. IDA subsequently received additional data from DMDC, which was also incorporated in both curation efforts and analyses. The following timeline describes the process of requesting, receiving, understanding, and curating data from DMDC:

May 2016 – Memorandum of Agreement signed between DMDC and the Office of the Under Secretary of Defense for Acquisition Technology and Logistics for data sharing with IDA

August 2016 – Amendment 1 for this project signed

August 2016 – November 2016 – IDA works with Army PDE to access data but PDE is unable to support FFRDC requirements

November 2016 – Authorization to Operate signed for the IDA PII enclave; IDA allowed to receive PII data from DMDC

January 2017 – IDA works with DLNSEO to draft SPA #1

February 2017 – IDA submits SPA #1

March 2017 – DMDC reviews and approves SPA #1

Apr 2017 – DMDC requests that IDA review previously received DMDC data; DMDC sends IDA language files

May 2017 – November 2017 – IDA completes inventory of previously received DMDC data and identifies data issues from SPA #1; DMDC continually sends corrected files

November 2017 – January 2018 – IDA and DMDC have regular phone calls to discuss preliminary data questions and additional data needed

March 2018 – IDA submits SPA #2 for DLPT scores

Mar 2018 – DMDC reviews and approves SPA #2

April 2018 – DMDC sends IDA DLPT scores data

April 2018 – September 2019 – IDA attempts to validate files; IDA compares language course registration with DLPT scores; IDA compares DLPT scores and language bonuses

April 2018 – September 2019 – IDA and DMDC discuss questions regarding DLPT score data and training history data; data curation and creation of a sorting index

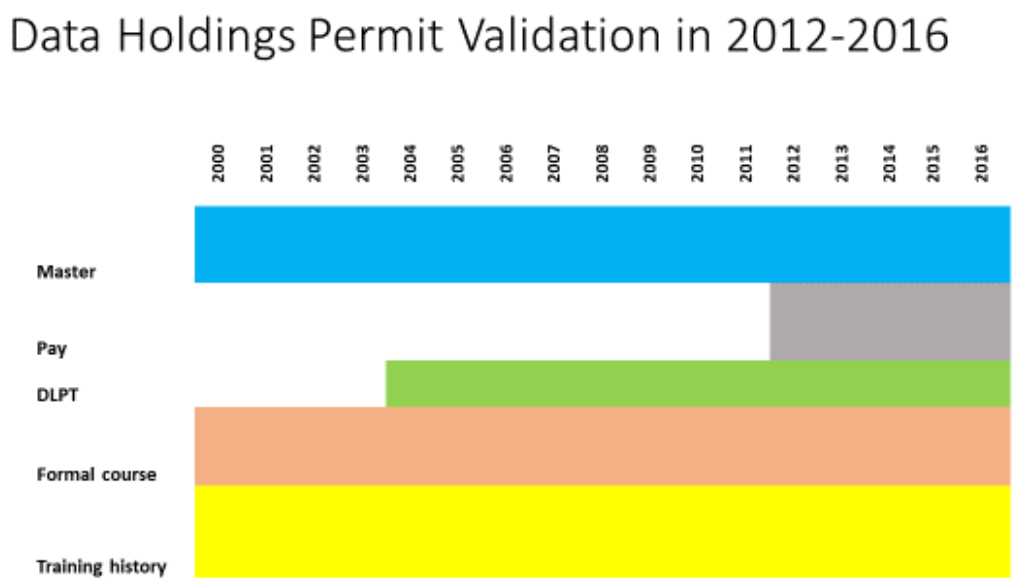
September 2019 – IDA submits SPA #3 for DMDC to insert original unscrambled social security numbers into the dataset and transmit these data to DLNSEO

In addition to working with DMDC data, IDA also met with each of the military services to determine what language, regional expertise, and culture (LREC) were being captured in personnel, training, or educational databases. In some cases, IDA was granted access to these databases and could observe the extent to which these data were tracked. Finally, IDA conducted a literature review of relevant Department of Defense (DoD) policy documents associated with recording and reporting foreign language proficiency, regional expertise, and cultural knowledge. In the next chapter, we present assessments of the various DMDC data, followed by a chapter where we present findings associated with these and other gaps in DMDC and service data.

2. Assessment of Data

A. Introduction

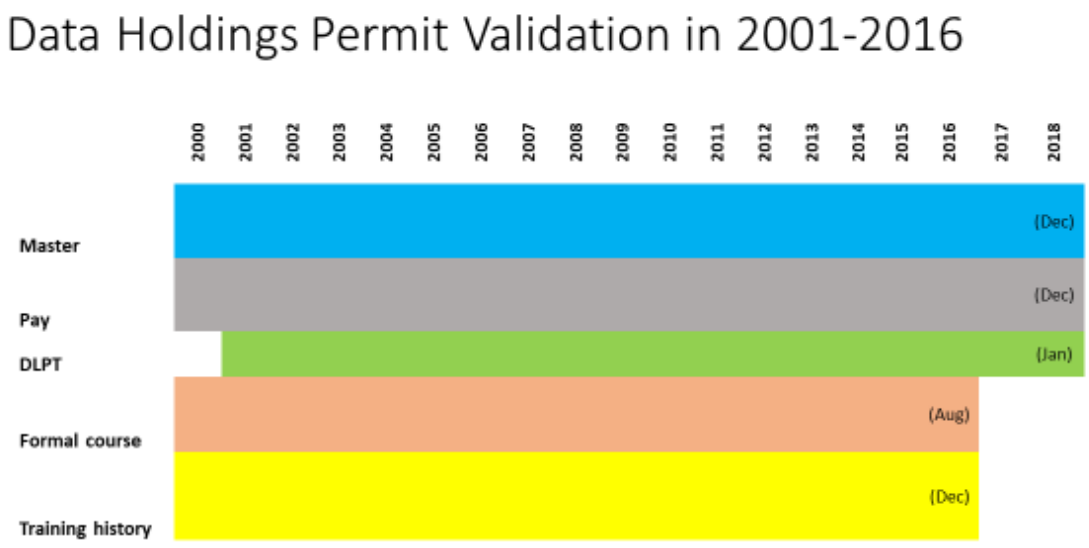
While all data elements were requested back to 2001, in accordance with the preliminary SPA, not all data were collected or were maintained back to that date. IDA pieced together each element to identify what time periods could be used to permit validation. The following chart shows the time period for which IDA received data of each type. The preliminary data holdings permitted validation from 2012–2016.



Source: IDA-created chart, June 2019.

Figure 1. DMDC Data Holdings Initially Received

Through the numerous subsequent interactions between IDA and DMDC and the receipt of additional data, especially pay data, holdings increased to the point where validation could take place between the years of 2001 and 2016. Additional assessments of Master, Pay, and DLPT could also include the years of 2017 and 2018.



Source: IDA-created chart, June 2019.

Figure 2. DMDC Data Holdings Received

B. Overview of Completeness of the Data

The first step in evaluating the potential usefulness of the data was to identify key variables and assess their completeness. This section presents findings for the data that contained the most key variables. The following sections provide additional details.

A scrambled social security number (SSN) is used as an identifier across file holdings. We calculate the "completeness" of a scrambled SSN as the percentage of scrambled SSN for a given file that could be merged with the scrambled SSNs in the master personnel files. This allows us to understand if it would be possible to combine personnel data across files. A preliminary assessment of the completeness of these holdings from 2012–2016 yielded the following:

- **Master personnel files** lack education information.
  - Scrambled social security number (identifier): 100%
  - Component: 100%
  - Service: 100%
  - Pay grade: 100%
  - Education level code: 98%
  - Education discipline code: 10%
  - Professional Military Education (PME) level code: 11%

  - Joint Professional Military Education (JPME) level code: 2%

The addition of the 2000 and 2017–2018 curated data permitted an additional assessment involving the most current data available at that time. While completeness remained relatively the same for some fields below, the educational discipline code actually became less complete, given the 2017 and 2018 data.

- Scrambled social security number (identifier): >99%
- Component: >99%
- Service: 100%
- Pay grade: 100%
- Education level code: >98%
- Education discipline code: 5%
- PME level code: 10%
- JPME level code: 2%

Note that the incomplete education discipline data prevents us from determining if an individual has an academic background in a given region or culture. The lacking PME and JPME data prevent us from quickly evaluating the extent to which individuals have taken military education courses.

Shifting to the next assessment, it was unclear which personnel types are captured in the **training history file**.

- Scrambled social security number (identifier): 68%
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Within the students' service values, only 60% are coded as Army, Air Force, Navy, or Marine Corps. It is possible that this data file also contains information on civilian personnel. The inclusion of civilians in these data may explain why we were unable to merge scrambled SSNs from the training history file and the master personnel file.

Combining **DLPT** scores highlights disparities in types of tests taken by a service member.

- Scrambled social security number (identifier): 90%

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The lack of speaking test scores is not necessarily a problem because many individuals only take that test when they first take the DLPT or if they need it for their billet. Some positions and occupations do not require an oral proficiency interview. Not being able to merge all scrambled SSNs from the DLPT file and the master personnel file leaves yet another problematic gap.

Pay files indicate the number of individuals being paid for language proficiencies.

- Scrambled social security number (identifier): 84%
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Of course, we did not expect FLPB to be 100% complete because not everyone is receiving FLPB. According to these data, there are approximately 24,000 service members receiving FLPB per year. Future assessments should be validated with military service databases. Again, there is a gap, since we cannot merge all scrambled SSNs from the pay files with those from the master personnel files, which is problematic.

When we assessed the **deployment files** there was missing information.

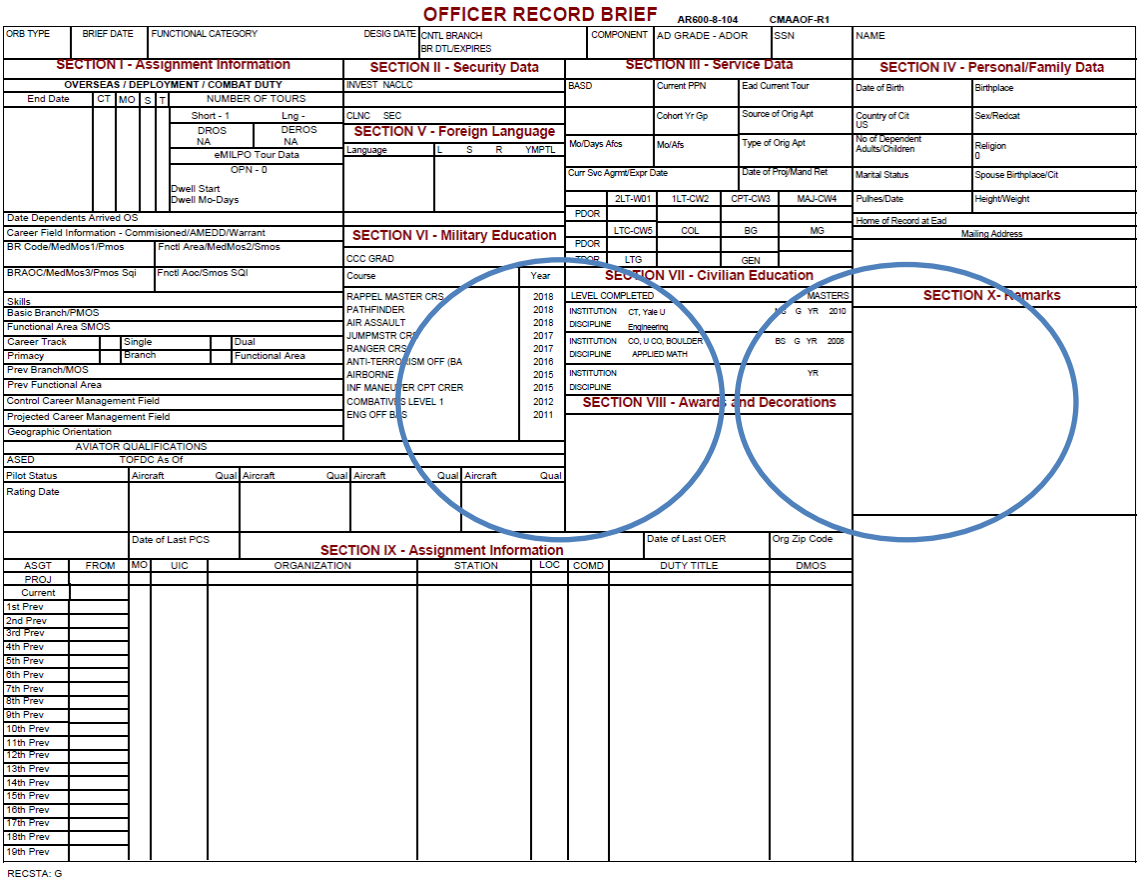
- Scrambled social security number (identifier): 100%
- Country: 89%

While the scrambled SSNs here sufficiently match those in the master personnel files, there is a gap in terms of incomplete information about where service members deployed. In the next section, we delve into the subject of the missing education data within the DMDC data.

C. Missing Education Data

As explained in the previous section, the DMDC master file, which is the main enterprise-level data source for education data, is missing key variables. These data

currently permit us to recognize only the highest level of academic education achieved by an individual. We cannot see what discipline was studied, nor can we identify other academic achievements below the highest level attained. The absence of these data prevent us from determining if a service member has an academic background in a given region or culture. In addition, DMDC lacks detailed PME and JPME data; therefore, we cannot accurately assess how much military education an individual has, and we have no insight as to what the focus of this military education was. We have seen, however, that the services collect and maintain much of this information. In fact, service data often includes information on service member completion of online training and certifications. This is how the services track both completion and compliance of mandatory annual training requirements and pre-requisite training for their PME courses. The following officer record brief is one example of how the Army tracks some of this educational data on soldiers.



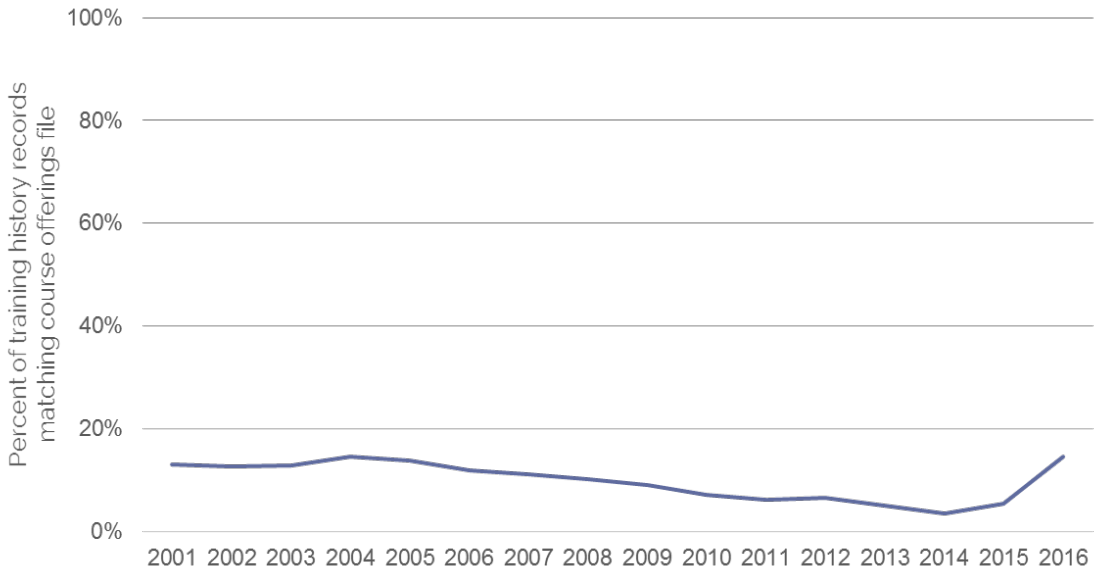
Source: IDA-created chart, June 2019.

Figure 3. Army Record Data Depicting PME and Academic Details

If IDA was able to access all service-level educational information, we would be better positioned to assess cultural and regional proficiencies across the DoD enterprise. In this current state, the gap in DMDC data does not permit an enterprise-wide assessment.

D. Investigating Training History Data

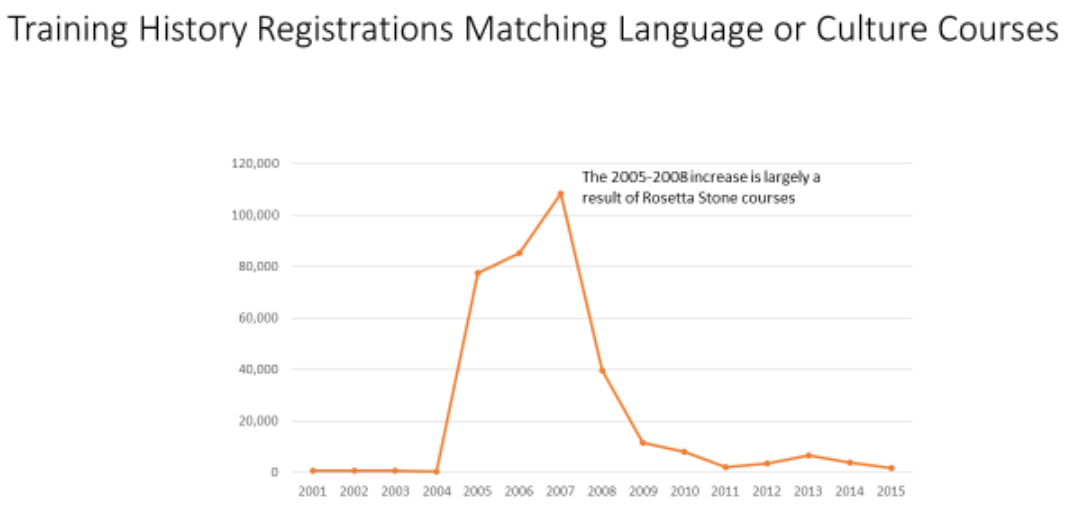
The training history files tell us when individuals are in courses, given by course identification or course ID. The formal course offerings file lists the course IDs and names and/or descriptions of the courses. Within the formal course offerings file, course descriptions providing more information than the title alone are often missing (more than 50%). In addition, identification of courses that relate to language and/or culture must be done by hand. Perhaps the biggest problem, however, is that course IDs in the training history file often do not match a course in the course offerings file, thus making the training history data impossible to analyze.



Source: IDA-created chart, June 2019.

Figure 4. Low Percent of Training History Files Matching Course Offerings

To make some use of these files, we manually identified some courses related to language and culture competencies. We then attempted to see how often these courses were taken by individuals in the training history files. We find that the volume of courses we have identified as language or culture varies greatly across time.



Source: IDA-created chart, June 2019.

Figure 5. Language or Culture Courses Matched to Training History Registrations

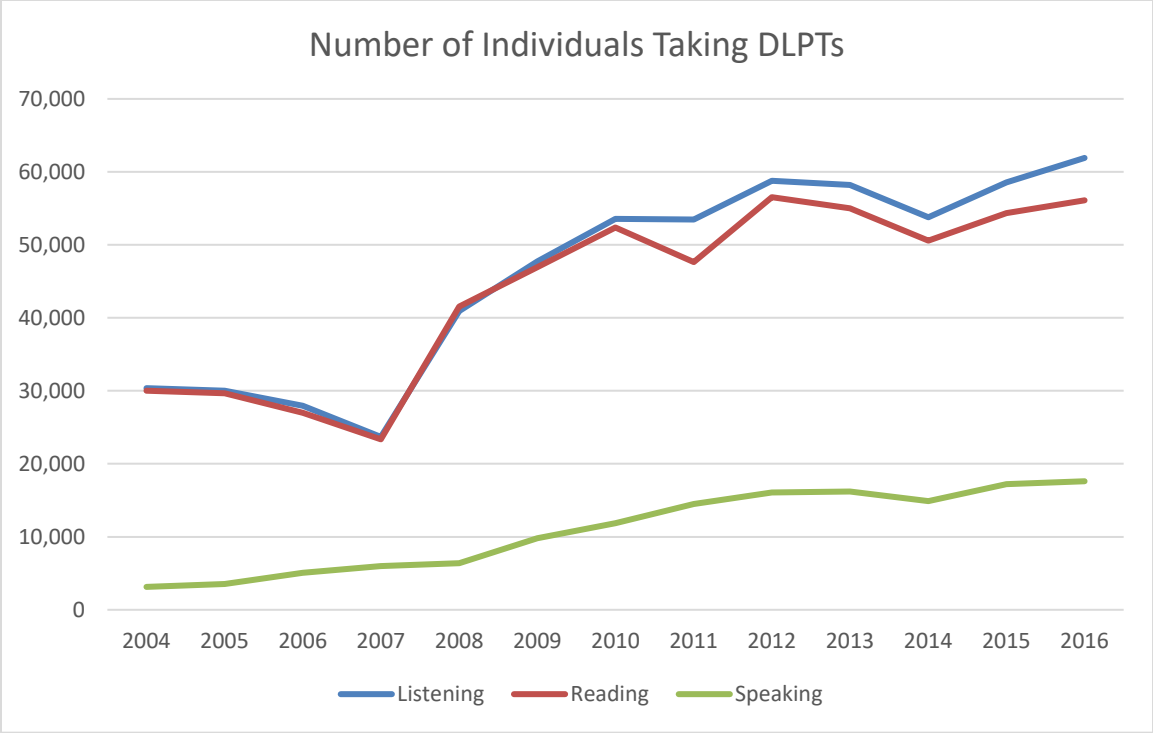
In addition to being unable to map training history data to formal course offerings, we have reason to believe that the training history files themselves are incomplete. We find that the number of course registrations submitted by each service varies greatly.

As an example, looking at the Marine Corps course offerings data, we identify 400 courses taken by 1,100 individuals in the entire DMDC training history file. Matched courses included "Math for Marines," grammar courses, and military training. However, we still find that Marine Corps data do not include course disciplines, and Marine Corps data include language courses but course IDs that do not match the DMDC training history file.

Overall, we find that DMDC training history data are difficult to analyze. The course descriptions are not complete enough to interpret training histories of individuals. In addition, the training histories themselves may be incomplete. We believe that the services may have significant additional data on courses taken. If the services were to provide these additional data, we could assess how language and cultural courses are correlated with test scores.

E. Validating DLPT Data with Pay Data

In our initial assessment of the DLPT data, we looked at how many individuals took tests over time.



Source: IDA-created chart, June 2019.

Figure 6. Number of Individuals Who Have Taken DLPTs

Next, we define a small set of proficiency bins with associated pay to make comparisons across tests simple. We focus on Category A languages and estimate associated FLPBs based on DoD Instruction (DoDI) 1340.27,[2] the policy document describing military foreign language skill bonuses.

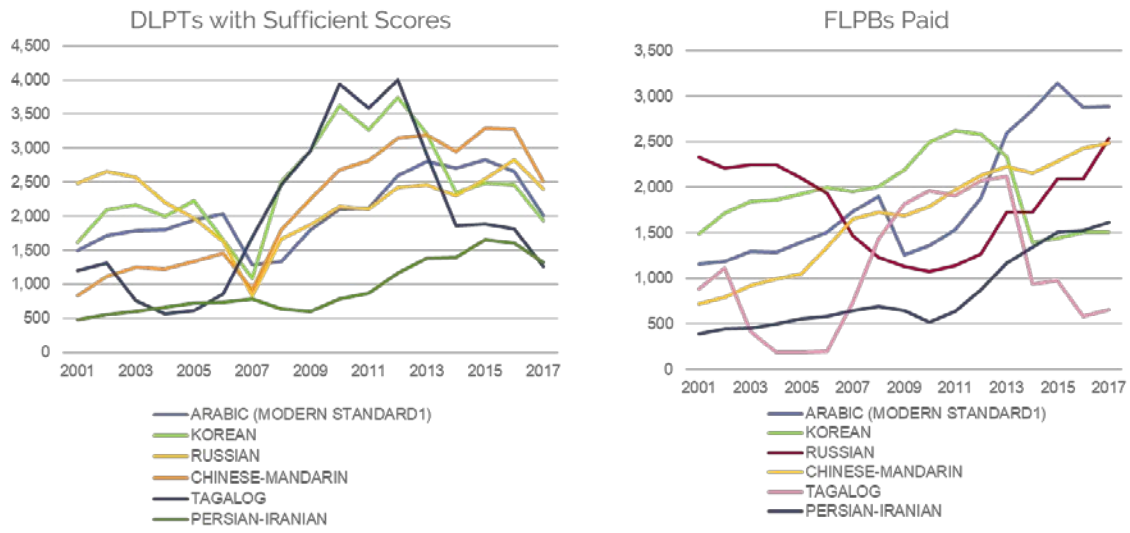
[2] Department of Defense, "Military Foreign Language Skill Proficiency Bonuses," DoD Instruction 1340.27 (Washington, DC: Under Secretary of Defense for Personnel and Readiness, May 21, 2013. https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/ DoDi/134027p.pdf.

	IDA proficiency bins	Combination of two highest L R S scores	Category A monthly FLPB
Considered sufficient for FLPB pay	Z	missing two scores	assuming $0
	X	one score is 0, 0+, 1 or 1+	generally $0, max $150
	F	2 2	$150-200
	E	2+ 2	$200–250
	D	2+ 2+ or 2 3	$250–300
	C	2+ 3	$300–350
	B	3 3	$350–400
	A	one score is 3+ or 4	$400–500

Source: IDA created chart June 2019.

Figure 7. Proficiency Bins

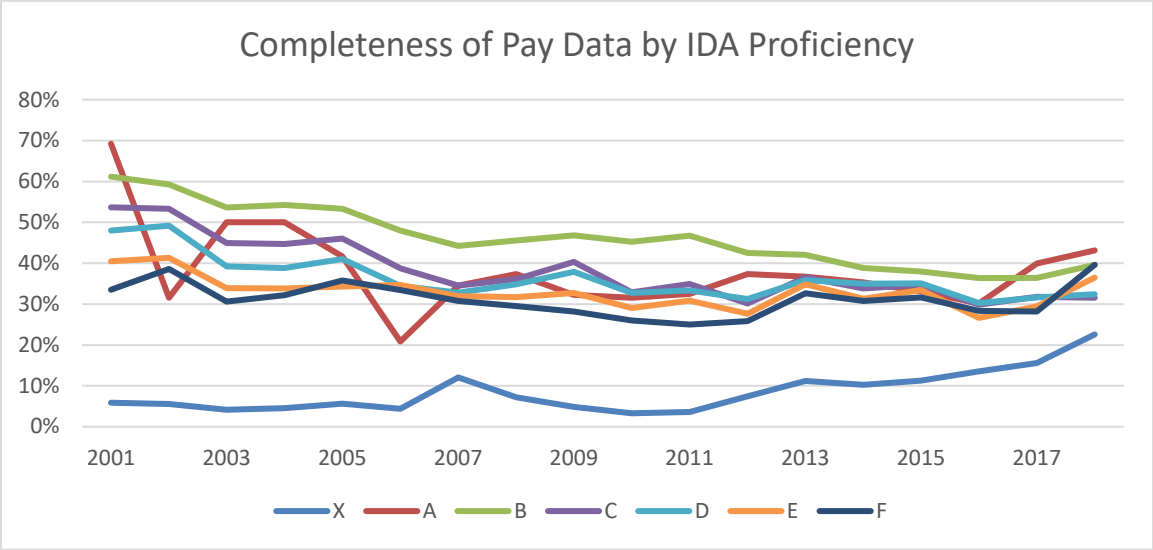
Next, we examined the number of individuals that took the DLPT and received scores sufficient for FLPB pay, and compared these to the number of individuals actually receiving pay. Because pay standards differ based on the language, we performed this analysis by language, looking at some of the most commonly tested languages. We find that the number of individuals with sufficient proficiency (as reflected in DLPT scores) does not match the number of individuals receiving FLPB.



Source: IDA-created chart, June 2019.

Figure 8. Data for the Six Most Commonly Tested Languages

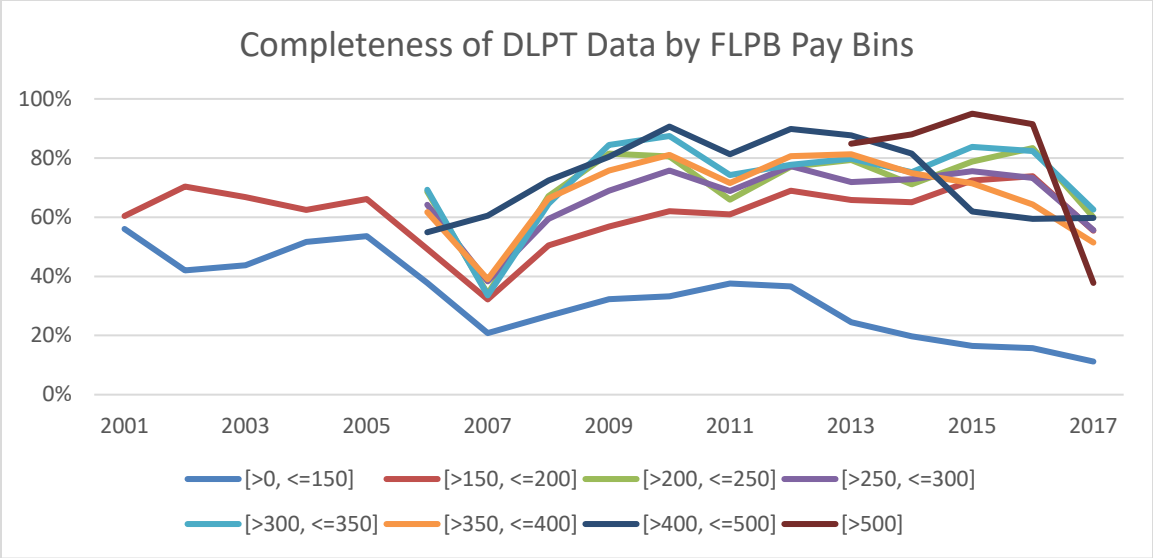
In addition, when we merge the DLPT data with the pay data so that we can evaluate pay for individuals based on their scores, we find more inconsistencies. Several individuals who have sufficient proficiency (as reflected in DLPT scores) are not shown as receiving FLPB in the pay files. It is not surprising that there is little pay data for individuals in IDA proficiency bin X, but we would expect closer to 100% of individuals in IDA proficiency bins A–F to be receiving pay.



Source: IDA-created chart, June 2019.

Figure 9. Completeness of DLPT Data

Similarly, several individuals who are receiving FLPB are not shown in the DLPT data. DLPT data are more complete, but we are still missing information on individuals that are earning small FLPBs.



Source: IDA created chart June 2019.

Figure 10. Completeness of DLPT Data by Pay Bins

There are a few scenarios that may explain some of the data mismatch, but these likely cannot account for all of the discrepancies:

- Individuals may have reached the maximum amount of their FLPB, and are therefore not being paid for each language.
- Individuals may not be paid because language skills are not necessary for their billets.
- Individuals may be testing at the end of the year and begin receiving pay the following year.
- Individuals who are abroad in certain positions may have waivers granting them exemptions from taking the test every year.

Lastly, we look at individuals for which we have pay and DLPT data, and attempt to understand if they are being paid according to our estimates. The following table shows the counts of tests taken and the associated pay. This means that a single individual may appear multiple times. The data are for Category A languages in 2016. Expected pay is in black-bordered cells. Missing, incomplete, or invalid entries are marked Z and highlighted in gray. Darker green highlights where valid FLPBs tend to fall for each IDA proficiency.

We find that FLPB tends to be commensurate with IDA proficiency bins but there is some variation. Individuals may be paid less depending on how their military service compensates them for the specific language in their specific occupation. There is a large number of missing, incomplete, or invalid entries. Populating these would allow us to make stronger statements about the validity of the DLPT data.

IDA proficiencies	Observed Pay							
	(0, 150]	(150, 200]	(200, 250]	(250, 300]	(300, 350]	(350, 400]	(400, 500]	Z
A	1	1	12	112	8	232	110	1,016
B	26	73	738	1,166	74	2,965	172	6,881
C	37	478	683	129	1,866	62	3	4,163
D	247	846	45	2,211	27	22	3	4,002
E	250	596	1,874	52	15	13	4	3,328
F	492	1,392	18	20	6	12	0	2,635
X	1,959	74	33	17	5	8	0	12,738
Z	2,977	134	209	274	103	211	10	9,130

Source: IDA created chart June 2019.

Figure 11. Observed Payment of FLPB

In the next chapter, we provide conclusions based on these assessments of DMDC data holdings and provide recommendations associated with improving the fidelity of future proficiency-level determination with the inclusion of additional service data elements.

3. Conclusions and Recommendations

A. Sufficient DoD Policy and Guidance Exist Regarding the Recording of Service Member Data and the Extraction of These Data to DMDC and Other Enterprise-Wide Data Systems

Our assessment of DMDC enterprise DoD data associated with foreign language proficiency, regional expertise, and cultural knowledge was informed by existing policy issuances, which described the types of service member experiences, such as training, education, and deployments, that should be recorded and subsequently provided by the services to DMDC. DoD Directive 5160.41E, "Defense Language, Regional Expertise, and Culture (LREC) Program," stipulates that the secretaries of the military departments will ensure that all foreign language, regional, and cultural education and training of personnel is tracked and documented in service personnel and training systems and made available.[3]

The associated DoDI 5160.70, "Management of the Defense Language, Regional Expertise, and Culture (LREC) Program," also charges the Assistant Secretary of Defense for Readiness with providing guidance to the DoD components for making data available to support language and regional proficiency readiness and risk assessments.[4] Other related DoD issuances describe the need for foreign language and regional and cultural training and education. For example, DoDI 3300.07, "Defense Intelligence Foreign Language and Regional and Culture Capabilities," describes how these capabilities are required to execute intelligence missions, that appropriate resources need to be made available, and that career path development and training activities include these competencies.[5]

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[3] Department of Defense, "Defense Language, Regional Expertise, and Culture (LREC) Program," DoD Directive 5160.41E (Washington, DC: Under Secretary of Defense for Personnel and Readiness, August 21, 2015, Incorporating Change 1, February 9, 2016), https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/ DoDd/516041Ep.pdf?ver=2019-04-08-104448-723.

[4] Department of Defense, "Management of the Defense Language, Regional Expertise, and Culture (LREC) Program," DoD Instruction 5160.70 (Washington, DC: Under Secretary of Defense for Personnel and Readiness, December 30, 2016), https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/ DoDi/516070_ DoDi_2016.pdf.

[5] Department of Defense, "Defense Intelligence Foreign Language and Regional and Culture Capabilities," DoD Instruction 3300.07 (Washington, DC: Under Secretary of Defense for Intelligence, February 14, 2017, Incorporating Change 1, March 7, 2018), https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/ DoDi/330007p.pdf?ver=2019-03-06-093819-483.

DoDI 3000.11, "Management of DoD Irregular Warfare and Security Force Assistance Capabilities," stipulates that it is DoD policy for the military departments to track personnel who have "successfully completed irregular warfare or security force assistance training or education," and that this training and education, including language, regional expertise, and culture, would be documented in records.[6] Our assessment was that much of this training and education were not visible in DMDC enterprise-wide data, and certainly not in the data holdings that were provided to us for examination.

DoDI 1336.05, "Automated Extract of Active Duty Military Personnel Records," and DoDI 7730.54, "Reserve Component Common Personnel Data System," describe DoD policy regarding the requirement for a DoD centralized database and official source of service member information. With a data-quality goal of 100 percent, each military service is responsible for the accuracy and completeness of each data transfer to DMDC.[7] Domain values for data are dictated in DoD Manual 1336.05, "Defense Manpower Data Center Domain Values for Military Personnel Data Extracts." Unfortunately, when IDA conducted the assessment of DMDC data holdings described in the previous chapter, adherence to this particular DoD manual and other DoD issuances were lacking in areas specifically associated with the domain needs for this project. [8] These findings are corroborated by The National Academies of Sciences, Engineering, and Medicine report on "Strengthening Data Science Methods for DoD Personnel and Readiness Missions," which highlighted that data available on DoD personnel may not be appropriate for DoD analytic tasks, and that analyses are often disjointed, one-off activities undertaken to respond to immediate questions, but may lack a plan for future use of data or analytics.[9]

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6 Department of Defense, "Management of DoD Irregular Warfare and Security Force Assistance Capabilities," DoD Instruction 3000.11 (Washington, DC: Under Secretary of Defense for Personnel and Readiness, May 3, 2016), https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/ DoDi/300011p.pdf.

7 Department of Defense, "Automated Extract of Active Duty Military Personnel Records," DoD Instruction 1336.05 (Washington, DC: Under Secretary of Defense for Personnel and Readiness, July 28, 2009, Incorporating Change 2, March 31, 2015), https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/ DoDi/133605p.pdf?ver=2019-07-01-094652-327.

8 Department of Defense, *Defense Manpower Data Center Domain Values for Military Personnel Data Extracts*, DoD Manual 1336.05 (Washington, DC: Under Secretary of Defense for Personnel and Readiness, July 28, 2009, Incorporating Change 1, February 26, 2013), https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/ DoDm/133605_manual.pdf.

9 National Academies of Sciences, Engineering, and Medicine, *Strengthening Data Science Methods for Department of Defense Personnel and Readiness Missions*, (Washington, D.C.: The National Academies Press, 2017).

B. Recommendations

1. Improve the Quality and Completeness of the DMDC Data

DoD should consider processes to improve the enterprise-wide data at DMDC. DoD policies and guidance are in place; however, there are gaps in in the quality and completeness of data associated with compliance issues. Senior DoD leadership would have to make this a priority, with metrics associated with periodic assessments of data quality and completeness. Improvements would take time to observe and would require constant monitoring, stricter governance, and more oversight.

2. Consider Importing Directly from the Military Services All Data Related to Foreign Language Proficiency, Regional Expertise, and Cultural Knowledge

Since the service data is much more robust than the DoD-wide enterprise data, DoD could consider importing personnel; pay; training; civilian and professional military education; and deployment information directly from the services. With the inclusion of these data, DoD could improve the fidelity of future proficiency-level determination so that authoritative data from the services auto-populates as many fields as possible.

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Appendix B.
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Appendix C.
Abbreviations

CTA	Contingency Tracking System
DLNSEO	Defense Language National Security Education Office
DLPT	Defense Language Proficiency Test
DMDC	Defense Manpower Data Center
DoD	Department of Defense
DoDI	Department of Defense Instruction
FFRDC	Federally Funded Research and Development Center
FLPB	Foreign Language Proficiency Bonus
ID	Identification
IDA	Institute for Defense Analyses
JPME	Joint Professional Military Education
LREC	Language, Regional Expertise, and Culture
PDE	Person-Event Data Environment
PII	Personally Identifiable Information
PME	Professional Military Education
SPA	Special Project Attachment
SSN	Social Security Number

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13. SUPPLEMENTARY NOTES

14. ABSTRACT

The Defense Language National Security Education Office (DLNSEO) asked IDA to develop a methodology to inventory core, regional/technical, and leadership/influence competency domains. This would be accomplished through an examination of relevant demographic, academic, military, professional education, and personal experience data, maintained at the enterprise-level by the Defense Manpower Data Center (DMDC) via military Service extract. By assessing the completeness and quality of these data elements, IDA determined that gaps exist in the data holdings, even though appropriate DOD policy and guidance exist regarding what data are supposed to be extracted from each military service to DMDC. Oftentimes, these data exist and are documented by each military service, but not provided to DOD enterprise-wide holdings. Recommendations are to improve the quality and completeness of the DMDC data, at to consider importing directly from the military services all data related to foreign language proficiency, regional expertise, and cultural knowledge.

15. SUBJECT TERMS

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