



RESEARCH REPORT

The United Services Military Apprenticeship Program (USMAP)

Implementation Study and Feasibility of an Impact Study

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Executive Summary

The United Services Military Apprenticeship Program (USMAP) accounted for nearly one in four Registered Apprenticeships in the United States as of 2013. The 2008–13 growth in USMAP from 51,000 to nearly 88,000 apprenticeships offsets part of the sharp decline in civilian apprenticeships over the same period. Currently, about one in four enlisted Sailors and one in fourteen Marines participates in USMAP. One of the program's major accomplishments is that it has registered about 180 occupations with the Office of Apprenticeship in the US Department of Labor (DOL) that are related to civilian fields.

The scale and growth of USMAP encouraged the US DOL to conduct a study of the program's operations and the feasibility of an impact evaluation. This report presents the findings of the study as conducted by L&M Policy Research and the Urban Institute. In undertaking the analysis, the L&M-Urban team interviewed key staff members involved with USMAP operations. In addition, the team conducted 11 focus groups at two Navy and two Marine Corps bases with USMAP apprentices, USMAP completers, and USMAP supervisors.

On the basis of the interviews and focus groups, the team reached several conclusions about the operations of USMAP in the standard training of the Navy and Marine Corps. In general, service members in the military undergo intensive classroom training before gaining experience and working in their military occupation. However, veterans and employers both state that veterans often have difficulty translating skills and experience gained in the military to civilian employers (Harrell and Berglass 2012). One goal of USMAP is to provide certifications verifying the skills that service members learned from the training and experience gained in their military occupation. Service members can earn apprenticeship certificates through USMAP in occupations with civilian counterparts by relying largely on their regular classroom training and work-based learning. These formal certificates offer the potential for service members to gain employment and higher-paying employment by allowing service members to communicate and certify the skills and experience they gained in the military.

The interviews and focus groups indicated that USMAP primarily translates the skills and experience service members routinely attain in the military to skills in civilian employment. At most, apprenticeships add modest amounts of training beyond the classroom and workplace training that service members are receiving without USMAP. All service members attend classes to prepare for their occupational assignments and all are coached as they transition to working in the field. To complete their apprenticeships, service members often can simply document the mix of work experiences on

various tasks that are part of their normal assignment. In some cases, they add hours of specialized work experience beyond their normal assignment. Judging from what was said in the focus groups, the amount of added work experiences is modest.

A second conclusion is that completing an apprenticeship apparently brings little gain to participants while they remain in the Navy or Marine Corps. Earning an apprenticeship certificate can offer a slight advantage for promotions, but neither the Navy nor Marine Corps appears to view USMAP completers as substantially more qualified than others assigned to the same specialty who did not participate in USMAP.

Third, apprentices and supervisors have only a limited understanding of the purposes of USMAP. They are provided with very limited or no orientation to the program. Often, potential apprentices are told that USMAP can be beneficial and that the only cost is writing down the hours devoted to various tasks they are performing in any event. Little or no information is provided on exactly how USMAP certifications are relevant to civilian employers. Supervisors generally expressed a lack of orientation as well. However, a few supervisors reported extensive efforts to ensure high credibility for apprenticeships by rigorously checking that apprentices demonstrate skills in each task area specified by Work Process Schedules.

Fourth, perhaps because of a lack of resources, USMAP has been unable to communicate extensively with private employers to show how they can benefit from hiring apprenticeships completers in specific fields. The limited communication with private employers weakens USMAP's ability to adapt work processes to meet demand in the civilian sectors. The absence of close civilian employer links is especially striking, given that the main value added of USMAP is to document skills in occupational specialties that are used widely in the public and private civilian sectors. One incentive for civilian employers to establish apprenticeships in fields related to USMAP occupations is the GI Bill benefits available to veterans. USMAP could encourage USMAP participants (including noncompleters) to use their GI Bill benefits to complete these civilian apprenticeships.

Fifth, completion rates are low, perhaps because of the combined effects of weak initial communication, limited private employer links, and administrative barriers. USMAP recorded an average of 66,000 apprentices in fiscal year (FY) 2010 and FY 2011 but an average of only 7,000 completers in FY 2012 and FY 2013.

Whereas the program faces challenges, USMAP has enormous potential for helping veterans make the transition to civilian sectors. A modest investment in improving outreach and links with civilian employers could generate significant gains for USMAP participants. USMAP can lessen the problems

veterans face when entering the civilian labor market by translating skills and experience gained in the military. Currently, the administrative resources devoted to USMAP are minimal, especially relative to the scale of the program and to the dollars spent on GI Bill benefits. With additional funding to provide outreach both within and outside the military could improve the program substantially.

Turning to options for an impact evaluation of USMAP, the L&M-Urban team suggests first determining the timing of the evaluation and then considering three broad strategies for determining whether employment and earnings gains in the civilian sector result from participation in or completion of apprenticeships in USMAP. The timing relates to the readiness of USMAP for a major evaluation. In particular, the question is whether USMAP has sufficiently reached out to employers or groups of employers to be able to expect plausible effects. Given the limited links with employers currently, USMAP may need to delay an evaluation to test potential outreach, placement, and skill upgrading strategies.

When the timing for a general evaluation is deemed appropriate, L&M-Urban suggests using one or more of three strategies. The first is a “randomized-encouragement” approach involving differential marketing to service members at either the individual or command level. A second strategy involves finding instrumental variables that predict participation or completion in USMAP but do not exert any direct effect on civilian earnings. The primary challenge with both these options is ensuring that the encouragement is effective or that the instrument is correlated with participation or completion. A third approach is to conduct a résumé-audit study: evaluators would send résumés to employers or post résumés to a jobs website for hypothetical Sailors and Marines that are identical except for the presence or absence of a USMAP certification. Such a strategy can determine whether completing USMAP increases the likelihood of being contacted by employers. Whereas this methodology is inexpensive, it will not be able to answer questions about how USMAP affects actual employment and earnings. To conduct the first two options, employment and earnings data must be collected on participants when they are in the military and when they are in postmilitary employment. Potential sources for such information include the Department of the Navy administrative data, unemployment insurance data, and a survey fielded to collect these data.

United Services Military Apprenticeship Program (USMAP)

Introduction

Between 2011 and 2016, more than 1 million veterans will leave the military and enter civilian life. Assuring that these veterans integrate into the workforce successfully is a high priority for political leaders, the general public, and the military. According to a 2012 survey of veterans, 70 percent report that finding a job is the greatest challenge in transitioning. Young veterans are especially vulnerable to unemployment; according to the US Bureau of Labor Statistics, veterans ages 18 to 24 had a 30.2 percent unemployment rate compared to a 16.1 percent unemployment rate for civilians in the same age range.

While many skilled and experienced veterans are looking for work, employers report widespread shortages of skilled workers. One possible explanation is that the skills of veterans are not well matched to the needs of employers. But another possibility is that veterans have difficulty communicating to employers how their military experience meets civilian job requirements. As a result, veterans may have to spend years training to earn a civilian certificate for an occupation in which they have performed successfully for years in the military. In a study of employer perspectives on hiring veterans, companies cited “veterans’ difficulty in translating their military experience to the civilian workplace” as a particular challenge to hiring veterans (Harrell and Berglass 2012).

Military apprenticeships can potentially bridge the gap between military experience and civilian job requirements by allowing military personnel to gain valued credentials while in the military that are recognized by civilian employers. The United Services Military Apprenticeship Program (USMAP), operated by the Department of the Navy, provides active duty Coast Guard, Marine Corps, and Navy service members with the opportunity to undertake and complete apprenticeships that meet the requirements of civilian Registered Apprenticeships. As in other Registered Apprenticeship programs, completers earn a nationally recognized Certificate of Completion from the US Department of Labor (DOL). USMAP offers three potential benefits: (1) a vehicle for service members to increase their skills beyond the military job requirements, thereby raising their productivity while in the military; (2) a way of documenting and communicating their skills, competencies, and experience to civilian employers; and

(3) a tool for the military to recruit Sailors and Marines interested in gaining a valued occupational certification.

Notwithstanding these potential benefits of USMAP, relatively little is known about the program. The first goal of this report is to describe how the program has evolved, how it operates, and how the relevant stakeholders (including military personnel and program participants) perceive the strengths and weaknesses of the program. The second goal is to describe strategies for evaluating the impact of USMAP in general and of selected interventions in USMAP on military and civilian outcomes. The report also examines the availability of existing data and the ability to collect and compile additional data for evaluations.

Methodology

To conduct this study, the DOL contracted with the L&M Policy Research (L&M)-Urban Institute (Urban) team to examine the operations of the USMAP program and assess the feasibility of conducting a more formal evaluation. The L&M-Urban team interviewed several USMAP officials and conducted separate focus groups with USMAP participants, USMAP completers, and USMAP supervisors. The team visited the administrative headquarters of USMAP in Pensacola, Florida, and interviewed key staff members of the Navy and Marine Corps. The focus groups took place at the Navy bases in Norfolk, Virginia, and San Diego, California, and Marine Corps bases at Camp Pendleton, California, and Camp Lejeune, North Carolina. Eleven focus groups were conducted with a total of 76 participants. These locations were chosen because they would represent Marines and Sailors on the East and West Coasts and because they had the largest number of USMAP participants. Marine and Navy participants were selected because they make up 98 percent of USMAP participants. For more details on the interviews, focus groups, and approval process to conduct them, see appendix A.

This report begins with an overview of the apprenticeship approach. It then describes how USMAP operates. The next sections recount the perspectives of service members about the program. This report concludes with an assessment of approaches for evaluating the effects of USMAP.

Apprenticeship

Apprenticeship training is a highly developed system for raising the skills and productivity of workers in a wide range of occupations. Apprentices are employees who have formal agreements with employers to carry out a recognized program of work-based and classroom learning and to earn a wage with built-in increases over the apprenticeship period. Apprenticeships prepare workers to master occupational skills and achieve career success through productive work for their employers, training primarily through supervised, work-based learning and academic instruction that is related to the occupation. The programs generally last from two to four years. Apprenticeships help workers master such work-related skills as communicating, problem solving, allocating resources, and dealing with supervisors and a diverse set of coworkers. The course work is generally equivalent to at least one year of community college. Completing apprenticeship training yields a recognized and valued credential attesting to mastery of skill required in the relevant occupation.

Apprenticeship training is attractive in limiting the gaps between what is learned at school and how to apply these and other skills at the workplace. An extensive body of research documents the high economic returns to workers in the United States resulting from employer-led training (Bishop 1997). Transmitting skills to the workplace works well with supervisory support, with interactive training, with coaching, with opportunities to perform what was learned in training, and by keeping the training relevant to jobs (Pelligrino and Hilton 2012; Lave and Wenger 1991). These characteristics are common in apprenticeships. Employer-based training such as apprenticeships often bears fruit in higher levels of innovation (Bauernschuster, Falck, and Heblich 2009), net gains to firms that train during and soon after the training, and externalities such as benefits for other employers and for the public when workers are well trained to avoid the consequences of natural or other disasters. Generally, apprenticeships are far less costly to the government than school-based programs. Moreover, the government generally gains by funding little of the training while reaping tax benefits from the increased earnings of workers.

In the United States, the Office of Apprenticeship (OA) within DOL oversees Registered Apprenticeship. OA registers new apprentice occupations as well as apprenticeship programs within existing fields, markets Registered Apprenticeship, keeps track of individual apprentices in most states, and provides recognized certifications of completion in apprentice occupations. OA also works closely with regional OA offices and the State Apprenticeship Agencies operating in 26 states. By regulation, all states are required to recognize journeyman certificates earned in other states.

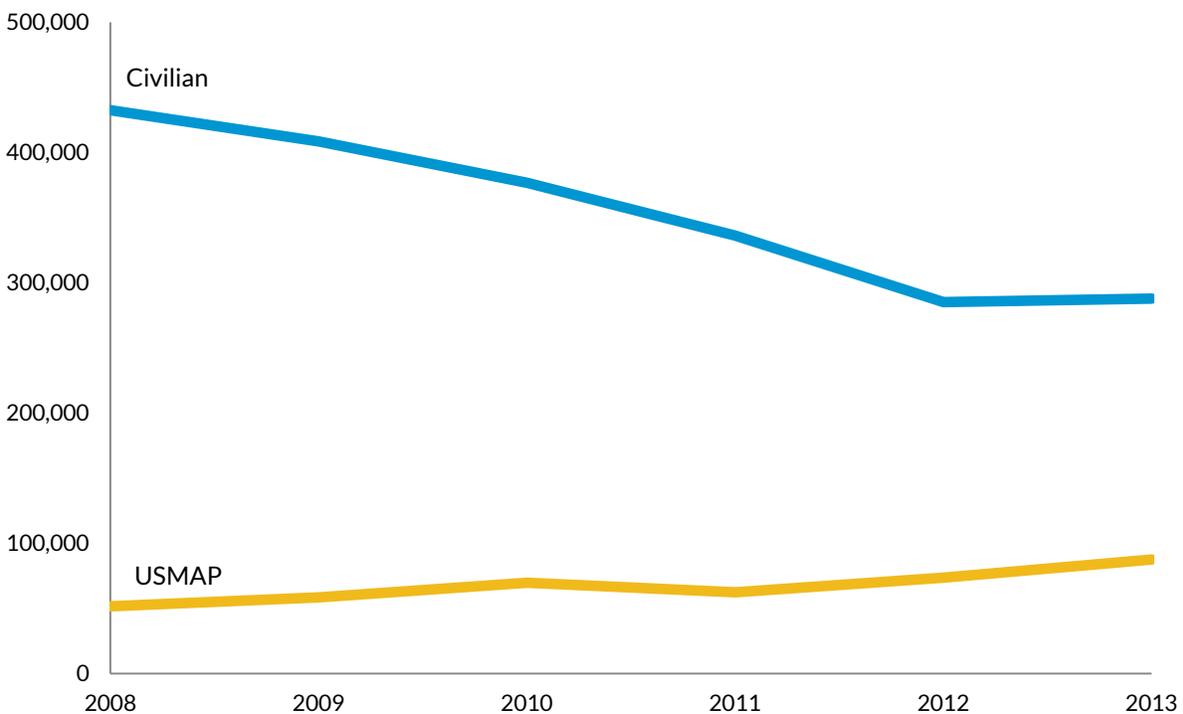
In some countries, notably Austria, Germany, and Switzerland, more than half of the workforce participates in apprenticeships covering a wide range of occupations. In turn, robust apprenticeship systems encourage firms to upgrade the quality of manufacturing, commercial, and managerial jobs.

In the United States, a much smaller share of the workforce participates in apprenticeships, and the number of civilian apprenticeships has been falling, partly because of the employment decline in the construction sector. Between 2008 and 2013, the number of active civilian apprentices fell 33 percent. In contrast, the number of USMAP apprentices rose 70 percent in the past five years (figure 1). Military apprentices now account for nearly one-quarter of all registered apprentices in the United States.

FIGURE 1

USMAP Apprentices Account for a Growing Number of Apprentices in the United States

Number of registered apprentices by apprenticeship type, 2008-13



Source: US Department of Labor, Employment and Training Administration, Data and Statistics on Registered Apprenticeships (http://www.doleta.gov/oa/data_statistics.cfm).

The United Services Military Apprenticeship Program

Standard military training uses elements of the apprenticeship model. Unlike most civilian employers, the military expects to provide sufficient occupational training to allow their service members to perform their jobs effectively because many enlist straight from high school. In the military, service members are assigned an occupational specialty when they enlist in the military.¹ As is the case for apprenticeship, service members are expected to master the skill requirements and task competencies in each occupational specialty through on-the-job training and related classroom courses. Unlike most apprenticeship programs, the standard military training is sequential, with classroom activities taking place first followed by work-based learning and experience.² The military can confidently expect to recoup its substantial investments in training because all or nearly all enlistees are required to serve for at least three years. Although some attrition occurs during boot camp before occupational training begins, the vast majority of trainees remain in the military for at least three years.

Many military occupational specialties have counterparts in the civilian sector, ranging from information technology and cybersecurity to chef and emergency medical technician. Because standard military training uses elements of apprenticeship, including occupation-focused combinations of work-based learning and classroom instruction, it is not surprising that the military has implemented several apprenticeship programs over the years with varying success. Those apprenticeship programs attempt to translate the training and experience received in the military occupation into a civilian apprenticeship in that field (e.g., from information systems technician in the military to electronics mechanic in the civilian world). Both the Army and the Navy have had apprenticeship programs since the 1970s. The Army Apprenticeship Program began in 1975 but was discontinued in 1999. The Navy also started an apprenticeship program in 1975. In the early 2000s, the Navy program was expanded to include the Marine Corps and Coast Guard and renamed USMAP, which is available to members of any of the sea services.³

As with all Registered Apprenticeship programs, USMAP describes specific academic courses and task competencies that must be completed for each occupation. USMAP submits the proposed combination of work-based and classroom learning for approval to the OA at DOL for each occupational program. Once approved, USMAP can sign up apprentices and allow them to earn certificates provided by the DOL. As is the case with many civilian apprenticeships, USMAP does not use a formal test to make sure that the apprentice learned all the relevant skills required for completing the program. The Navy does have its own program, Personnel Qualification Standards (PQS), for ensuring that service members have the relevant knowledge and skills to complete a task. The PQS

program certifies that personnel can perform certain duties; service members must be qualified before they perform those duties. The PQS can be either knowledge based or task based (a service member has to physically demonstrate they can complete a task).

Unlike most civilian apprenticeships, USMAP mostly verifies skills that would have been developed even in the absence of an apprenticeship standard. For civilian apprentices, nearly all the training is new. Another difference is that civilian employers cannot be sure the apprentice will stay with the firm for the three to four years that are guaranteed to the military. Because civilian apprenticeships cover a limited range of occupations, some USMAP fields have no civilian apprenticeship counterpart, even in such occupations as legal secretary and graphic designer that have significant numbers of civilian jobs. Yet another difference is that the military does not expect that most apprentices will stay for many years after completion; the military recognizes that most apprentices will return to the civilian sector. Finally, unlike civilian apprentices, service members cannot choose the trade in which they apprentice. They are assigned an occupation based on scores on an aptitude test called the Armed Services Vocational Aptitude Battery (ASVAB) and on the needs of the military. They can only complete apprenticeships that align with the occupation to which they are assigned by the military.

Classroom and Work-Based Training

The first component of an apprenticeship is classroom-based learning. After enlisting and completing boot camp, service members are assigned military occupations. Then, service members receive classroom-based training in their specific occupation, and that training can last from three months to two years. In most cases, the courses completed during this time cover all the coursework required for the apprenticeship. In rare instances, service members are required to secure additional instruction or training to fulfill the prerequisites. USMAP follows the recommendations of the DOL and the Office of Apprenticeship Training, Employer and Labor Services/Bureau of Apprenticeship and Training of at least 144 hours of classroom-related instruction for every 2,000 hours of work-based learning. Service members cannot join USMAP until they have completed the schooling required for their military occupation. The program has access to each service member's military transcript and checks to ensure that he or she has completed the required coursework before registering the service member for the program.

Once service members have completed their coursework, they are assigned a duty station where they can begin the USMAP. Service members must sign up for an authorized trade for their rating. The program is voluntary; service members must take the initiative to register for the program, either online

or by mail. Once registered, service members must log the hours they work in specific skill areas relevant to their apprenticeship trade defined by their Work Process Schedule (WPS). The program was developed so that service members would be able to complete the hours for each skill area during their regular duties. The hours can be logged online or can be mailed using paper forms. Every week, the participants must print their logged hours and have a supervisor verify those hours with a signature. Every month, participants must print their monthly summary sheet and have a division officer or department head verify it with a signature. Twice a year, they must print their semiannual summary sheet and have a commanding office verify it with a signature. This semiannual summary must be submitted to the USMAP main office.

The following are two examples of ratings with a potential apprenticeship trade they can sign up for through USMAP. Example 1 is a Utilitiesman (UT). UTs, who work with plumbing as well as water treatment and distribution systems, can potentially sign up for six different apprenticeships (listed below) all of which relate to their military occupation. Example 1 lists the required coursework hours and WPS if they sign up for a plumbing apprenticeship. In order to complete an apprenticeship in plumbing they would need more than 8,000 hours of work experience (table 1). They should not be required to complete any instruction beyond the instruction they received to become a UT. Example 2 is a Yeoman (YN). YNs, who perform secretarial, administrative and clerical work, can sign up for four different apprenticeships (listed below) which relate to their military occupation. A YN who signs up for an apprenticeship as a computer operator must complete at least 2,000 hours of work experience in the skill areas outlined in table 2. They are not expected to take any additional instruction beyond what they received to become a YN. All service members can only log hours that they have worked, but they should be able to complete the hours in each of the skill areas outlined through their normal duties.

EXAMPLE 1

Utilitiesman

A Utilitiesman (UT) in the Navy “works with plumbing, heating, steam, compressed air, fuel storage, and distribution systems. The work also includes water treatment and distribution systems, air conditioning and refrigeration equipment, and sewage collecting and disposal facilities at Navy shore installations around the world.”

UTs can sign up only for authorized apprenticeships in trades related to their military occupation. Those apprenticeship trades include the following: (1) plumber, (2) pipe fitter (construction), (3) pipe coverer and insulator, (4) power-plant operator (utilities), (5) water treatment plant operator (waterworks), and (6) refrigeration mechanic or refrigeration mechanic (any industry). They cannot sign up for an apprenticeship outside this list, such as a dental assistant.

A UT who signs up for an apprenticeship as a plumber will have to fulfill the requirements outlined in the WPS. UTs are not required to take any additional classroom instruction. They must complete at least 8,000 hours of work as plumbers. Specifically they need to log the number of hours in the skill areas listed in table 1. Apprentices can only log hours that they have worked, but most can complete the hours in each skill area through their normal duties.

TABLE 1

Work Process Schedule for Plumber Apprenticeship

Skill area	Hours
Care and use of tools and material	750
Preparation of tools, equipment, and materials for plumbing and heating	650
Drain piping and fittings	950
Venting	800
Pipe cutting, reaming, threading, and flanging	950
Installation and maintenance of steam and hot water heating systems	900
Hot and cold water systems for domestic purposes	800
Single fixture installations	1,200
Water heater installation	800
Gas system appliances	200
Total	8,000

Sources: Description of Utilitiesman (<https://www.navycs.com/navy-jobs/utilitiesman.html>), Work Process Schedule (USMAP Self-Service System, <https://usmap.cnet.navy.mil>).

EXAMPLE 2

Yeoman

Yeomen (YNs) in the Navy “perform secretarial, administrative, and clerical work. They operate modern office equipment such as word processing computers and copying machines, greet and direct visitors, answer telephone calls, and sort incoming mail. They type; organize files; and write business and social letters, forms, notices, directives, and reports.”

YNs can sign up only for authorized apprenticeships in trades related to their military occupation. Specifically, they can sign up only for the following: (1) legal secretary, (2) legal secretary (clerical), (3) computer operator, or (4) office manager and administrative services. YNs cannot sign up for an apprenticeship outside this list, such as a plumber.

A YN who signs up for an apprenticeship as a computer operator will have to fulfill the requirements outlined in the WPS. YNs are not required to take any additional classroom instruction. They must complete at least 2,000 hours of work as a computer operator. Specifically they need to log the number of hours in the skill areas listed in table 2. Apprentices can only log hours that they have worked, but most can complete the hours in each skill area through their normal duties.

TABLE 2

Work Process Schedule for Computer Operator Apprenticeship

Skill area	Hours
Computer operation	600
Communication	400
Analyzing data or information	350
Use Internet and intranet or networking	250
Peripheral equipment	100
Media assistance	100
Error monitoring	100
Maintenance and instructions	100
Total	2,000

Sources: Description of Yeoman (<https://www.navycs.com/navy-jobs/yeoman.html>), Work Processes Schedule (USMAP Self-Service System, <https://usmap.cnet.navy.mil>).

Supervision and Coaching

For all service members, the Navy and Marine Corps employ a model of intensive supervision and coaching. All enlisted service members must report to a supervisor who ensures that they complete the necessary tasks for their jobs and complete them at a satisfactory level. When service members first arrive at a command, they are instructed on how to do their jobs at that command through either formal or informal on-the-job training during which the supervisor or a colleague shows the service member how to complete the task. The supervisor's job is to correct the service member if he or she is performing a task incorrectly or inefficiently. In addition to direct supervision, the Navy has the PQS program, which as discussed previously, ensures that Sailors have the knowledge and skills to perform duties.

USMAP participants apparently receive no special supervision or coaching related to the program. (Similarly, in civilian sectors, the OA generally does not monitor the supervisors of apprentices). In USMAP, the only requirement of the supervisor is to verify the apprentice's hours weekly. It is the responsibility of USMAP participants to obtain the signatures of their supervisors.

Accommodations for Transfers and Deployments

The USMAP attempts to accommodate the transfers and deployments that are common in the military. Service members are frequently transferred from their current duties to deploy overseas or to another military installation in the United States. In some instances, apprentices are not able to gain appropriate work experience because their duties in their military occupation change (e.g., a UT working on a plumbing apprenticeship is now responsible for water treatment and cannot gain hours in all of the relevant skill areas as a plumber) or because they are assigned to a job outside of their rating (e.g., a UT may be assigned the job of an administrative or clerical worker). If the apprentices cannot fulfill their apprenticeship obligation at the new installation or on deployment, they can request to cancel or suspend the apprenticeship by sending the USMAP administrator an explanation of why their work experience was terminated. Their original recorded work experience will be retained, and they can request to be reinstated to their original apprenticeship trade if and when they transfer back into that occupation.

Service members often work far more than the standard 40-hour week. On deployments, they may be working more than 12 hours a day, 7 days a week. While on shore duty, service members are not permitted to log more than 8 hours of work per day, but on deployment they may log up to 12 hours per

day. Because many service members do not learn about the apprenticeship program until late in their enlistment, USMAP offers up to 1,000 hours of credit for each full year of applicable military work experience before registration, but not more than 50 percent of the term of the apprenticeship.

Another waiver can take place when service members are released from active duty before the end of their enlistment through no fault of their own. Such releases may occur as a result of downsizing forces or injury. These apprentices can request a waiver of a limited number of work experience hours, but not more than the required hours of related instruction required for registration.

Completing the USMAP Apprenticeship Program

USMAP apprenticeships end with either completion or cancellation. When service members have completed the hours required in all of the skill areas, they receive a Certificate of Completion of Apprenticeship from the DOL. The apprenticeship can be canceled for a number of reasons. The apprentice can request a cancellation. The commanding officer can request a cancellation if the apprentice receives an unsatisfactory rating in a professional competence. The apprenticeship will be canceled when the service member is discharged or released to inactive duty. The apprenticeship can also be automatically canceled if the service member fails to submit a semiannual report within 18 months of registering for the program or if there is no evidence of work experience in the apprenticeship trade for more than one year. At the start of fiscal year (FY) 2013, there were 72,422 active USMAP apprenticeships; however, by the end of FY 2013, only 11 percent had been completed and 41 percent had been canceled. If requested by the apprentice when exiting the military, noncompleters may receive a letter documenting the components of the apprenticeship completed by the service member.

Managing and Administering the Program

MANAGEMENT STRUCTURE

The USMAP program is managed and operated from a central office in Pensacola, Florida, under the Navy's Voluntary Education programs. The USMAP office employs only five civilian workers who handle all registrations, process all semiannual reports, provide customer assistance through e-mail or phone, conduct quality assurance checks, market the program, and print Certificates of Completion and forward them to apprentices through their commands. The central office serves administrative

functions for apprentices from all three branches that participate in USMAP. The Marine Corps and the Coast Guard contract the Department of the Navy to handle these functions. The only official USMAP employees are those employed in this office.

Commanding officers of USMAP apprentices can appoint USMAP coordinators. This appointment is often Collateral Duty, a job that service members have to perform in addition to their regular duties. Coordinators are responsible for implementing the USMAP at their command. Their tasks include the following:

- Assisting apprentices and prospective apprentices who desire to participate in USMAP
- Ensuring semiannual progress reviews are conducted
- Giving apprentices opportunities to work in each of the skill areas in their WPSs
- Canceling apprenticeships when applicable
- Suspending apprenticeships when applicable
- Providing appropriate recognition for apprentices receiving Certificates of Completion
- Ensuring the logs are verified weekly by the work center supervisor and monthly by the division officer or department head

The USMAP coordinator for a participant's installation, along with his or her contact information, is identified when the participant logs into USMAP. Appointing a USMAP coordinator is up to the command, and not all installations have a USMAP coordinator. Of the more than 12,000 commands in the Navy and the Marine Corps, only 329 currently have USMAP coordinators.

The USMAP office works closely with the learning centers (LCs). For each major group of military occupations, there is an LC that determines and develops the necessary training for those occupations. The LCs are responsible for conducting annual reviews of each WPS to ensure that they do not need major revisions. They are also responsible for developing new apprenticeship occupations. The LCs determine if there is a demand for the apprenticeship trade and if USMAP will approve the trades as genuine apprenticeship trades within the active duty service. The LCs work with the USMAP office and DOL to create new apprentice occupations. If the occupational category is already a Registered Apprenticeship, the DOL trade information will be collected by the USMAP registrar and sent to the requesting LC to help create the WPS. If the occupation is not registered and a new apprenticeship must be approved, then the LC will have to develop a working group to create the new WPS. The working

group will need at least five civilian industry sponsors for the WPS. Then, the working group will submit the new WPS package to the DOL for approval through the USMAP office.

Finally, the DOL's OA oversees the USMAP in a limited way. As in the case of civilian apprenticeships, OA is responsible for determining that USMAP fulfills its obligations to assure apprentices meet occupational requirements. However, OA does not have the resources to audit the performance of the USMAP. Upon receiving the list of completed apprenticeships, OA provides USMAP with blank certificates to print the names of all apprenticeship completers. USMAP forwards the certificates to the completers.

Occupations

USMAP currently offers 180 apprenticeship trades to service members of various occupational specialties. The majority of USMAP occupations had already been a part of the Navy apprenticeship program that preceded USMAP. The crosswalks for these occupations were developed in the 1980s and 1990s. But additional occupations are added regularly. Recently registered apprentice occupations include criminal investigator and armory technician. A full list of USMAP apprenticeships by occupational cluster is available under the occupational standards section of the website of the American Institute for Innovative Apprenticeship (www.innovativeapprenticeship.org). Currently, most occupational areas involving enlisted service members in the Navy and Marine Corps have at least one authorized apprenticeship occupation. Most military occupations have multiple authorized apprenticeship trades, and several apprenticeship trades are available to multiple military occupations. One notable exception is the infantry, which has no authorized apprenticeship trades because it has no civilian counterpart. Although the Navy does not have an infantry specialty, infantry makes up 18 percent of the Marine Corps.

About one in four enlisted Sailors participates in USMAP. Of the 267,000 enlisted Sailors, more than 25 percent were taking part in apprenticeships. Participation rates are much lower in the Marine Corps, at about 7 percent, partly because of the large share of Marines in the infantry, a specialty that is not an apprentice occupation.

Although 180 apprenticeship trades are listed, participation in the apprenticeship program is concentrated within a small number of trades. More than 65 percent of all USMAP apprentices are registered in 20 occupations (table 3). At the other extreme, 54 apprenticeship trades offered through USMAP have no service members currently registered.

TABLE 3

Top 20 USMAP Occupations*By number of apprentices, share of USMAP apprentices, and number of hours required*

Occupation name	Number of registered apprentices	Share of registered USMAP apprentices	Number of hours required
Computer operator	11,329	13%	2,000
Office manager/administrative services	3,844	4%	4,000
Maintenance mechanic (any industry)	3,685	4%	8,000
Manager, retail store	3,410	4%	6,000
Power plant mechanic (aircraft engine mechanic)	2,614	3%	3,000
Nurse assistant (medical service)	2,568	3%	2,000
Internetworking technician	2,517	3%	5,000
Counselor (professional and kindred)	2,475	3%	4,000
Electronics mechanic (any industry)	2,471	3%	8,000
Airframe mechanic	2,362	3%	3,100
Electrician, aircraft (aircraft mfg., airtrans.)	2,351	3%	8,000
Electronics technician (professional and kindred)	2,216	3%	8,000
Electronics mechanic	2,066	2%	8,000
Security specialist	2,029	2%	4,000
Ordnance artificer (government service)	1,976	2%	4,000
Medical secretary (medical service)	1,967	2%	2,000
Police officer I (government service)	1,931	2%	4,000
Aviation ordnanceman (aircraft armament mechanic)	1,831	2%	8,000
Electrician	1,563	2%	8,000
Emergency medical technician	1,559	2%	6,000

Source: USMAP DOL Quarterly Report October 2013, USMAP Self-Service System website (usmap.cnet.navy.mil).

Transitioning Out of the Military

The Transition Process

Program administrators and service members indicated that the transition process is essentially the same for service members who participate in USMAP and for those who do not. All service members who are separating from the military are required to complete a Transition Assistance Program (TAP)—now known as Transition GPS—that is designed to help them successfully transition to the civilian workforce, start a business, or pursue training or higher education. The TAP was completely revamped in 2012, replacing the former 20-year-old program with the new Transition GPS. All exiting service members must complete a comprehensive five- to seven-day series of courses instead of the two to four hours previously required. Transition GPS emphasizes career readiness and transition preparation during the entire length of military service compared with the previous model, which addresses these issues only at the point of separation. The new curriculum consists of the following components:

- **Pre-separation assessment and individual counseling:** During this session, service members receive individual counseling to discuss career goals and the transition process as well as an assessment of their goals and the resources available to meet those goals. In addition, service members begin to complete an Individual Transition Plan that documents their goals, actions, and progress related to employment, higher education, technical training, or entrepreneurship.
- **Five-day core curriculum:** The core curriculum is mandatory for all separating service members. It includes a financial planning seminar, a workshop on veteran’s benefits and services conducted by the US Department of Veteran Affairs, and an employment workshop conducted by DOL. Service members create résumés, complete application packets for training or education, establish a 12-month postmilitary budget for achieving their goals, and develop a Military Occupational Specialty (MOS) crosswalk, that translates their military skills, training, and experience into civilian credentials and occupations.
- **Two-day optional career specific curriculum:** A tailored two-day optional curriculum is available to service members interested in three tracks: (1) an educational track for those pursuing degrees in higher education, (2) a technical skills and training track for those seeking job-ready skills and credentials through training programs, and (3) an entrepreneur track for those looking to start their own businesses.

- **CAPSTONE event:** The CAPSTONE event is required by service members to verify that they completed the Transition GPS program and achieved Career Readiness Standards. Those who do not meet these criteria are referred to additional training opportunities. Once service members complete the CAPSTONE, they are handed off to government agencies and other organizations that can continue to support them as veterans.

All service members complete the same courses and workshops and fulfill the same Career Readiness Standards (e.g., a transition plan, budget, résumé, etc.). It is not clear whether USMAP plays any role in the formal transition system's approach to helping service members enter civilian careers. Although USMAP is sometimes discussed during workshops or counseling sessions, Transition GPS appears to provide no formal guidance for how to convey the value of the apprenticeship to civilian employers. For example, some service members translate the DOL certificate incorrectly on their résumé—that is, saying it is a certificate from USMAP—which is not recognized by civilian employers. In addition, many service members do not know or learn how to describe the apprenticeship and sell their qualifications and experience in USMAP to an employer.

Employment Opportunities

The focus groups and interviews indicated that USMAP interacts very little with employers. Apparently, few employers are aware of USMAP and few offer opportunities that connect service members with civilian jobs. Employers are invited to attend workshops and promote job opportunities through Transition GPS and various job fairs. In addition, USMAP advertises on its website and through word of mouth to employers that commonly hire veterans. However, no formal relationships exist to match service members to specific civilian jobs. Although some employers have asked for a list of veterans with certain skills, the military does not provide this information because of confidentiality rules. The L&M-Urban research team interviewed two veterans' organizations that work with employers to connect service members to specific civilian jobs or apprenticeships (e.g., Veterans in Piping, Helmets to Hardhats). Yet even these programs were generally unfamiliar with USMAP and did not consider USMAP participants differently than they considered other service members.

The USMAP staff lacks the capacity to determine the value of a USMAP apprenticeship in the civilian sector or to track whether service members enter apprentice occupations or related occupations after leaving the military. Program staff members report hearing only anecdotally that some employers value USMAP and the documentation of skills. However, staff members' impressions are that even industries that use the Registered Apprenticeship system and are heavily unionized

attach little value to USMAP apprenticeships. Usually, veterans must move through the training process regardless of their apprenticeship status. One possibility is that for some USMAP occupations, civilian employers are unfamiliar with apprenticeships in general.

USMAP administrators report difficulty getting state apprenticeship offices to recognize the apprenticeship certificate. Apparently, some states recognize military apprenticeship completers as earning a USMAP certificate, rather than a DOL certificate. Other states do not automatically recognize the DOL certificate meeting their requirements. The program staff members have reached out to state apprenticeship offices but have a difficult time making contact. Currently, only two states (North Carolina and Virginia) work with USMAP and provide a state civilian apprenticeship certificate to those who have completed the program. Those states operate apprenticeship offices that have stronger connections with regional and local employers and can better facilitate communication between employers and veterans.

Given limited resources, USMAP administrators said they would benefit from support connecting program participants with civilian jobs. One suggestion is to have DOL create and host a website where employers could search for candidates and where employers and veterans could communicate with each other. In addition, the program staff members stressed the value of having the states involved in the apprenticeship program. USMAP and veterans would benefit if more states established apprenticeship offices and if those offices would work with USMAP to issue state apprenticeship certificates.

Service Member Perspectives

The L&M-Urban team conducted six focus groups with service members who are currently participating in USMAP and who have completed the program and four focus groups with supervisors who are overseeing participants in the program.

The service members who participated in the discussion groups represented varying levels of experience with the program. Although participants exhibited a range within each military branch, overall, participants from the Navy appeared to be more familiar with USMAP and more likely to reenroll in USMAP after completing an apprenticeship than their Marine Corps counterparts. For example, more than three-quarters of the participants from the Navy reenrolled in USMAP after they completed their first apprenticeship, and several stated they had completed apprenticeships in multiple trades. However, less than one-third of the participants from the Marine Corps said they were working on their second apprenticeship. Further, nearly two-thirds of the Navy service members who supervised USMAP participants were also enrolled in or had completed USMAP, whereas more than half of the Marine Corps supervisors in the discussion groups had no personal experience with the program.

Discussion group participants also expressed a range of involvement with the program. For example, some service members in both military branches were very proactive USMAP participants and described instances of initiating conversations with their superiors about the program and even seeking opportunities outside their typical duties to gain experience in certain areas required by the apprenticeship. Others tended to actively participate in the program (i.e., document their hours and obtain required approvals) when prompted by their superiors but did not initiate the activities on their own. These service members often indicated their participation in the program waned when they (or their supervisors) were transferred to a different command. Still other service members said they signed up for USMAP because they were instructed to by a superior, but they never actually participated in the program (i.e., documented any hours). A couple of participants shared that they were not even aware they were enrolled in USMAP until they were contacted about participating in the discussion group.

Value of the Program

When asked to describe USMAP in their own words, discussion group participants defined the program as a way to document the activities they perform daily and to demonstrate their experience to civilian

employers when separating from the military. Several shared that they had been told their participation in the program and the certificate earned upon completing an apprenticeship would serve as “proof of skills” on their résumé and could result in a higher starting wage. However, since everyone was still active duty personnel and most did not know anyone who had completed the program and subsequently left the military, many questioned the effect it would have on their job search.

Service members also discussed more immediate and tangible benefits from participating in USMAP, including the following:

- **Military advancement:** Although service members acknowledged that their participation in USMAP did not have as great an effect on annual evaluations as participation in other programs, it demonstrated initiative to superiors and could help their advancement. For example, if two service members with identical evaluations were up for the same promotion, the one participating in USMAP would likely be promoted. Further, a couple of service members shared that their participation in the program enabled them to be placed in roles or positions rarely held by someone in their ranks.
- **Mastery of trade and development of additional skills:** When discussing the apprenticeship requirements, most service members said these required skills could be met through their regular duties and did not require any additional effort; their day-to-day experience was the same as their peers who were not participating in USMAP. However, some service members shared that because they had to document hours in a range of areas, they were exposed to a greater variety of tasks than their peers, resulting in a more well-rounded experience and skill set.
- **Intrinsic benefits:** Some service members who completed an apprenticeship or were supervising USMAP enrollees cited increased pride and respect from peers as additional benefits gained from participating in the program. USMAP offers individuals multiple opportunities to feel a sense of accomplishment—for example, upon completing the program, being promoted, or being placed in a role or position typically held by more senior personnel.

Program Challenges

Drawing on the comments of focus group members, the research team identified several challenges to administering USMAP as well as opportunities to improve the program.

- **Varying levels of familiarity with USMAP throughout the military:** Participants and supervisors conveyed some familiarity with the benefits, requirements, and processes of USMAP but reported a lack of awareness and understanding of the program across all ranks of the military. Several participants noted that their supervisors had not completed the program themselves and were generally unable to answer questions or provide guidance for completing the apprenticeship. This problem was more prominent in the Marine Corps, where some participants said they had difficulty finding anyone in their command who was familiar with USMAP. Accordingly, supervisors reported that they received little, if any, training about how to oversee someone in the program and generally needed to seek this information on their own (usually through the website). Most do not feel confident in their understanding of the program and in what their role should be as supervisors for USMAP, and a few supervisors initially refused to sign off on hours because they had no knowledge of the program.
- **Intermittent outreach and promotion of the program to potential participants:** Focus group participants reported hearing about the program at a variety of points from a variety of sources. Some said they learned about USMAP in their command or unit from one of their superiors, who in many cases required that they sign up. Others noted that they heard about the program from their peers, for example, by talking with others who had participated or observing them log their hours. One participant heard about USMAP while deployed and working alongside a military contractor who had completed the program. Additionally, a few participants learned about the program by reaching out to a career counselor. Based on these discussions, it appears that an established protocol or timeline does not exist for informing potential participants about USMAP. As a result, some service members never learn about the program or hear about it until their enlistment is ending when it is too late to participate. Moreover, many service members who do learn about USMAP have an inaccurate understanding of the program.
- **Limited understanding of the context and value of apprenticeship:** Service members had limited recognition of the meaning and value of apprenticeship. When asked to describe USMAP, most participants defined the program narrowly as a way of documenting hours to verify their experience in the military. Only a few described the apprenticeship in broader terms as a structured and reliable way to develop and verify mastery of the skills required to perform at a high level in an occupation. One reason is that participating service members are not provided with an overview of the purposes of the program or with how it can be beneficial. A second reason is that USMAP is generally not thought of as offering additional skills development

beyond standard military training. The program is marketed as an easy way to verify the experience service members are gaining. This approach appears to offer an effective hook for enrollment, but it has potential drawbacks, particularly in undermining the value of certificates as demonstrating mastery of an occupation. A third reason is that service members, like most people in the United States, are unfamiliar with apprenticeships in general and the Registered Apprenticeship system in particular.

- **Inconsistent interpretation and enforcement of the apprenticeship requirements:** The level of understanding of the apprenticeship requirements and how strictly they should be enforced varies widely among USMAP participants and supervisors. For example, many participants reported barriers to completing the required tasks because they were not aligned with their regular job assignment. They handled these issues in a variety of ways. Some participants said they sought opportunities outside of their daily job responsibilities to fulfill those requirements. Others noted they waited to see if those tasks eventually arose in their jobs. Still others said that they might loosen the definition of the tasks to fit a job.

Similarly, supervisors noted inconsistencies in the support that they provided to supervisees and in how closely they monitored and enforced the tasks performed. Their level of involvement runs the gamut from those who work side by side with their supervisees, thereby making sure they document supervisees' hours and help supervisees seek opportunities to fulfill the program requirements, to those who might be unfamiliar with the program and have little direct oversight of participants. A number of supervisors reported difficulty in deciding whether to trust participants reporting when they were not able to observe the work. Many supervisors rely on the honor system and take the word of their supervisees or other ranking service members. A few supervisors said they conducted verbal quizzes to find out whether someone completed the work. Overall, considerable uncertainty exists about how strictly supervisors should enforce the apprenticeship requirements.

- **Barriers to completing USMAP:** USMAP participants reported a number of barriers to completing the apprenticeship program. The most significant barriers were being transferred outside their rating or MOS and being deployed outside the country. Transfers out of the rating are relatively common for service members. However, when the service member has been in an apprenticeship linked to the rating, the transfers reduce the service member's ability to complete the original apprenticeship. Service members feel stuck because they cannot document hours toward their apprenticeship because they no longer are performing those job functions. In addition, many participants, particularly those in the Navy, said it could be difficult

to maintain hours while they repeatedly transitioned from deployment to onshore duty because they were not often performing the same job. If service members do not complete the apprenticeship while deployed, logging in the remaining hours can take a long time for some tasks. While deployed, service members often encounter difficulty connecting to the Internet. Although there is a grace period for reporting hours, some service members do not maintain or keep paper logs and subsequently don't track their hours.

Other potential barriers to completing the program reported during the focus groups include a lack of follow-up or reinforcement and competing priorities that arise after service members initially sign up. As mentioned earlier, many service members are instructed to enroll in USMAP by their commanding officer or other superior; however, once they are transferred to a new command, they may stop logging hours if they are not being pushed by their new commanding officer. Moreover, some service members will enroll in the program early on but quickly forget because they are focusing on other priorities, such as PQS.

Another barrier relates to completing and maintaining the logs. Some service members think that they must retain paper copies of logs and sign-offs from supervisors. In some cases, apprentices or their supervisors have lost the paper logs and must reconstruct them or undertake the hours a second time. Clear instructions to apprentices and supervisors and improved approaches to recording and maintaining logs are straightforward changes that could help apprentices complete their programs.

- **Little awareness of how apprenticeships through USMAP relate to civilian occupations:** Few of the apprentices or supervisors show an awareness of how completing their program will smooth their entry into a rewarding occupation. A few in the construction trades recognize the role a Registered Apprenticeship certification can play in finding a good job. Given the lack of information on the long-term benefits of apprenticeship and given the limited penetration of apprenticeship in many civilian sectors, it is not surprising that many USMAP participants drop out without completing the program.
- **No outreach to employers:** USMAP lacks the resources to reach out to civilian employers to improve the match between the content of military training and civilian requirements, to help apprenticeship completers target their job search, and to increase the rate at which military apprenticeship completers can seamlessly enter careers in related occupations. Currently, apprentices are on their own to seek employers and to make those employers aware of the skills learned in a USMAP apprenticeship.

Opportunities for Improvement

An increased investment in outreach and promotion of the program would likely improve the program significantly. The biggest obstacles the program faces are a lack of awareness and understanding on the part of the service members, supervisors, and employers. Currently the program has few resources, most of which are dedicated to running the program. Only one staff member is designated to conduct marketing, and only a fraction of his time is dedicated to marketing because he is also a USMAP registrar. In addition, the budget only allows him to travel to bases two times a year to talk with service members, supervisors, and commanders. Increasing the resources dedicated to marketing the program as well as obtaining buy-in from Navy, Marine Corps and Coast Guard leadership would likely yield considerable benefits.

All eligible service members should be informed about the opportunity to participate in the program. Generally, service members lack awareness of the program. There is, however, a limited window in which a service member can take action to participate in the program. Service members cannot sign up for USMAP until they have exited school, but they also cannot sign up if they do not have enough time left in their enlistment to complete the apprenticeship. Providing an orientation to service members about the program as they leave school and reach their first duty station would allow them to sign up for the program immediately upon learning about it. Implementing this step would require the buy-in and education of the leadership in the Navy, Marines Corps, and Coast Guard. When learning about USMAP, service members should be taught about apprenticeships in general and about the benefits of completing an apprenticeship. Many service members in the focus groups did not know what an apprenticeship was, how USMAP related to civilian apprenticeships, or the link between USMAP and civilian careers. Finally, outreach needs to include information on the requirements and goals of USMAP to effectively participate in the program.

In addition to ensuring that service members know about the program, USMAP should also be incorporated into the transition protocol. Transition GPS and USMAP administrators can work more closely to inform transition counselors and, subsequently, service members about USMAP; to describe what it means to hold the DOL certificate (i.e., journeyman certificate issued from DOL is equivalent to that of a civilian apprenticeship); and to explain how service members can better present their apprenticeship experience in a résumé, interview, or application.

Another critical step is improving the connections between USMAP and employers. One possibility is for USMAP to obtain consent and contact information from service members who have completed the program. USMAP could then serve as an intermediary between employers and service members

providing the contact information for service members who have completed relevant apprenticeships to employers. Currently, officials report that confidentiality rules limit their ability to link former apprentices with employers.

Opportunities for Demonstration Projects

Ideas for improving USMAP could be undertaken within one or more demonstration projects. Each demonstration component could be implemented under controlled conditions and in the context of an evaluation. Engaging employers in building and documenting skills and in transition to civilian careers is of central importance.

One pilot project could focus on working with state or regional trade groups that hire in fields with significant numbers of military apprenticeships. Under this demonstration, federal USMAP officials could convene meetings with associations, such as Associated and Building Contractors, building and construction trade councils, and the National Restaurant Association. The first step could be for private sector organizations to examine the USMAP approach to developing skills, including the work processes, classroom training, and methods, for verifying the mastery of skills in a production environment. The second step would be to encourage firms to interview and hire USMAP completers, partly by providing a matching service along with information on the benefits to firms from hiring veterans with journeymen qualifications. The evaluators would examine the employer engagement process and undertake a difference-in-differences analysis by comparing the pilot areas with other areas not directly involved in the types of activities undertaken in the pilot.

Another possible demonstration involves developing social media outreach followed by direct marketing to three industries that hire in occupations certified under USMAP. The messaging could highlight the skills learned and documented in USMAP in specific occupations. Certain geographic areas could be targeted that provide links to USMAP representatives in the same area. USMAP would finance a direct sales team to provide individual consulting to companies who show some interest in the campaign. The sales team would be made up of business-friendly sales people who know how to tailor the requirements of the firm to USMAP-certified occupations. Again, evaluators could use a difference-in-differences strategy to determine whether the components in the demonstration led to additional hiring of USMAP completers.

Both projects would attempt to bypass restrictions on releasing the names of apprenticeship completers by asking completers for permission to release their names to a matching system. Random

assignment could be introduced by assigning completers to a treatment group that has permission to release names or to a control group for whom privacy restrictions still apply. The evaluators could examine the relative success of the workers listed on a public site as apprenticeship completers compared to the control group of completers whose names were not on the public site.

Feasibility of an Impact Evaluation

An evaluation of the impact of USMAP could estimate the effect of the program on several outcomes both inside the military and outside the military. Here we lay out the key research questions for such an evaluation.

- Outcomes Inside the Military
 - » Are USMAP completers/participants more productive within the military?
 - » Are USMAP completers more likely to be promoted within the military?
 - » Are USMAP participants more likely to reenlist?
 - » Does USMAP increase the probability of a potential recruit enlisting in the military?

- Outcomes Outside the Military
 - » Are USMAP completers more likely to become employed upon leaving the military?
 - » Do USMAP completers have higher wages?
 - » Are USMAP completers more likely to get promoted?

One key finding from this study is that USMAP's primary activity is to provide civilian credentialing to service members for the training and experience they receive in the military. Although in some cases, service members may receive additional training or skills by participating in USMAP, the added training component is not universal. USMAP translates the training and experience commonly received in the military to the civilian world. The limited number of interviews and focus groups for this study suggests that additional training embedded in USMAP is limited and that the connections between USMAP and employers are weak. If this picture reflects the program as a whole, the effects of USMAP on the postmilitary outcomes of participants are likely to be modest at best.

In addition, our interviews and focus groups suggest USMAP is unlikely to have substantial effects on productivity and promotion in the military. Again, USMAP participants gain only a modest amount of additional training directly linked to an apprenticeship occupation. As a result, service members who participate in USMAP and service members who do not participate are likely to differ little in skill level, extent of training, or level of experience. One modest difference might be that, by writing and maintaining logs of their work experience, apprentices demonstrate a higher level of responsibility and organization than nonapprentices from the same rating. The L&M-Urban team found no evidence that the military expected more productive work from those who completed an apprenticeship. On the basis of these observations, the USMAP program is unlikely to raise productivity in the military or even result

in promotions for apprenticeship completers. Apparently, completing an apprenticeship is given little value in evaluations.

Not surprisingly, L&M-Urban's discussions with administrators and service members indicate that USMAP has little if any effect on recruitment or retention. Whereas tuition assistance serves as an excellent recruitment tool, several aspects of USMAP make it unlikely to be an effective recruiting tool. The first aspect is that many recruits are unfamiliar with apprenticeships generally. The second is that a recruiter cannot promise that recruits will be able to obtain an apprenticeship in the occupation of their choice. Service members can only sign up for apprenticeships in occupations related to their military occupation, which they do not choose. Although, the substantial work experience (2,000–8,000 hours) required to complete an apprenticeship might encourage service members to reenlist so they can complete their apprenticeship, many do not understand the benefits or see them as substantial enough to influence the decision to reenlist. When asked whether they would reenlist to complete an apprenticeship, every service member interviewed for this report said no. In the current form, the program does not seem likely to influence reenlistment or recruitment; however, if the service members saw that completing the program resulted in higher wages when they left the military, it could influence reenlistment or recruitment.

Outside the military, USMAP has strong potential for increasing a service member's employment prospects and wages. Although USMAP does not necessarily raise the skill level of service members, it certainly translates the skills and experience they have gained in the military to a civilian employer. Service members undergo extensive classroom and work-based training in the military, but often have difficulty translating this training for civilian employers. USMAP provides a Certificate of Completion from the DOL that indicates a mastery of skills specific to the occupation. USMAP can benefit completers who leave the military and civilian employers by improving the match between worker skills and employer needs. Even if participation in USMAP offers only a credible way of documenting skills, it could increase the likelihood of being hired by civilian employers, of being hired for a related occupation, and of being hired at higher wages.

One concern is USMAP's limited connection to employers. The program's signaling impacts will be sensitive to the extent employers recognize the apprenticeship certification as a valued experience that documents skills relevant to the civilian economy. As a result, the DOL may wish to delay the timing of the impact evaluation until USMAP mounts serious outreach. A related possibility is to create an employer outreach demonstration project linked to the effect of USMAP. A demonstration might involve randomly marketing to some employers but not others. Given that the construction industry is

most familiar with apprenticeships, the demonstration might involve comparisons with construction employers and employers in another industry.

Currently, USMAP serves mainly to translate skills earned rather than to develop skills. USMAP could do more to emphasize taking up skills and building occupational mastery in ways that go beyond the military assignment. The focus groups revealed substantial variation in how individual programs were administered. In some cases, service members participating in the program did not learn any additional skills. In other cases, service members said that they felt more well rounded in their field and that the program had forced them to learn aspects of their job that they would not have learned otherwise. Given the variation in experiences that we heard during the focus groups, examining the program as stimulating the take up of skills that go beyond military training and experience would likely require program changes that ensure most apprenticeships involve added human capital. In this case, the focus would be on the standard question in training programs, specifically, did USMAP enhance the skills and productivity of participants? However, in this report, our discussion is on the feasibility of evaluating the program as translating skills from a military to a civilian framework.

Key Factors for Evaluation

An impact evaluation of USMAP would not be straightforward; many key factors come into play for any evaluation of USMAP.

- Many of the most popular USMAP apprenticeships are not in occupations that traditionally recognize apprenticeship as a certification. For instance, computer operator is the top trade in which USMAP participants register. This apprenticeship essentially amounts to being able to operate a computer at an administrative assistant's level. Although civilian apprenticeships for computer operators exist, they are uncommon, and employers looking for these skills may not know about apprenticeships or recognize their value. Moreover, the civilian Registered Apprenticeship for computer operator involves more advanced skills than the USMAP computer operator. For other USMAP occupations, especially in construction, employers use apprenticeships extensively. With the current limited awareness of USMAP by employers, workers may be able to use the DOL Registered Apprenticeship certification to get a higher-paying job than their service member counterpart who has the same military occupation but who did not participate in USMAP. Thus, earnings gains are most likely for those USMAP occupations in which civilian employers commonly use apprenticeships.

- Apprentices in USMAP, unlike their civilian counterparts, do not choose their trades. They can only enter apprenticeships that align with the military occupation to which they are assigned. Those who select USMAP are committed enough to their military occupation to undertake the documentation and related activities to complete the apprenticeship requirements. Some may want to use their military occupation as a fallback civilian career. In all likelihood, the benefits resulting from USMAP will depend in part on whether apprentices go on to work in a civilian field related to their apprenticeship certificate.
- Many of those who register for the program do not complete the program. Whereas USMAP does document the hours that apprentices complete, it is unclear whether employers will attach any value to that documentation.
- The Navy provides other certification and education programs to service members. Many service members receive tuition assistance through the Navy, which allows them to take courses while serving in the Navy or Marine Corps. In addition, Sailors are eligible to participate in Navy COOL (Credentialing Opportunities On-Line). Navy COOL issues vouchers to help pay for certain approved certification or licensing tests. Navy COOL and USMAP could serve a similar purpose in translating skills for service members, although the verification of skills requires passing a test in Navy COOL and documentation of coursework and hours in USMAP. It will be important to determine whether the comparison group is participating in Navy COOL when conducting an impact evaluation.
- One critical issue is the timing of the evaluation. Should it take place soon, or should it be delayed until USMAP improves its operations and dissemination of information to employers? Currently, USMAP lacks the resources to expand awareness to employers about why a USMAP apprenticeship certification represents a high level of occupational expertise. In this sense, USMAP may not be considered a fully mature intervention. However, USMAP has operated for many years and has produced tens of thousands of apprenticeship completers.

Methodologies

This section outlines three feasible methodologies for evaluating the effect of USMAP apprenticeships on the earnings of service members after leaving the military. The goal is to calculate what happened to USMAP participants and completers compared to what would have happened to them in the absence of USMAP.

BASELINE ANALYSIS

Before beginning any of these evaluation methodologies, we need to explore how the characteristics of USMAP participants and completers differ from other service members using administrative data from the military. Understanding how they differ in their demographic characteristics, military occupations, education levels, reenlistment, deployments, job performance within the military, promotions within the military, and so forth, will provide answers to key questions about the value of the apprenticeship in the military and which evaluation approach will best measure the effect of the program.

EXPERIMENTAL APPROACH

A randomized controlled trial (RCT) or experimental approach is the most rigorous form of evaluation. A traditional RCT, where individuals are randomized to receive treatment, is probably impractical in this context. The treatment is open to everyone and not in limited supply. It would be difficult to convince administrators to exclude service members randomly assigned to a control group. In addition, the treatment group might have low participation and completion rates because the program requires active participation. For these reasons, randomly assigning service members into USMAP would not make sense.

Still, an RCT could use a marketing strategy as part of a “randomized-encouragement” approach. Service members would be randomly assigned to receive or to not receive marketing related to the program. The difference in USMAP participation rates between experimental and control groups would be attributed to the marketing, not to unobserved personal factors. Estimated differences in postmilitary earnings between the experimental group (all those encouraged through marketing) and the control group (all those not encouraged) would thus be unbiased and unrelated to selection. This design has some disadvantages. First, marketing is not always effective; it was unclear from our focus groups if the marketing completed by the USMAP office was effective. Second, the likelihood of spillover is high; service members often hear about the program through their peers. Even with some spillover, however, the approach could yield useful results about the effect of marketing on USMAP and the effect of USMAP on earnings.

A related option is to undertake the randomized-encouragement approach at the command level. Marketing would be distributed to individuals, supervisors, and commanders. This marketing would reduce spillover because it is less likely to generate peer influence on participation. The Navy and Marine Corps have more than 12,000 commands. Whereas randomizing at the command level would reduce power, the large number of commands implies that acceptable standard errors could be

achieved. The problem is that the comparisons would incorporate differences in earnings associated with the command as well as differences associated with USMAP.

QUASI-EXPERIMENTAL APPROACH

Under this approach, the evaluator uses nonexperimental methods or natural experiments to avoid selection bias, the bias associated with the likelihood that unmeasured characteristics of the individual affect both entry into USMAP and earnings outcomes. The goal of this approach is to find determinants of participation unlinked to other, often unmeasured, characteristics of the service member. Such variables can serve as instrumental variables predicting participation, allowing one to derive impact estimates purged of the effects of unobserved factors predicting participation. In thinking about the determinants of participation, we note that USMAP participation rate is not high partly because of ignorance about the program. Many of the Sailors and Marines explained that in some commands, everyone is involved in USMAP, and that in others, no one has ever heard of it. Another way for service members to learn about the program is if the USMAP marketing person visited their command. The USMAP marketer visits only three to four bases a year to inform high-level commands and enlisted personnel about USMAP. These commands may be more likely to have high participation rates. Whereas marketing visits are a way to increase participation, we do not have the data to verify whether participation rates would be higher for these commands. The USMAP marketer chooses sites with the most Sailors and Marines to visit. This practice is probably correlated with the outcome. However, we could randomize where the USMAP coordinator visited to ensure against correlation with unobservable differences that may affect both participation and earnings.

Another potential instrumental variable is whether the command has a USMAP coordinator. Having one may indicate that the command has bought into the program, is marketing the program, and is encouraging participation. It is also unclear if having a USMAP coordinator is correlated with high participation. Although, we did hear that participation is required in some commands that buy in to the program. The presence of a USMAP coordinator may be correlated with the outcome, if this reflects the commander's acceptance and support for the program. If such commanders are more likely to force participation, then whereas participation rates may be high, completion rates may be low. During focus group sessions, we heard that some commanders would force service members to sign up for apprenticeships, but then the service members would not follow through.

Completion rates based on transfers is still another possibility for an instrumental variable. When service members are transferred or deployed, sometimes they end up working outside of their military occupation, which can affect their ability to complete an apprenticeship. Because the rates of transfer

and deployment vary by military occupation, accounting for military occupation in estimation is important. Not all deployments and transfers will interrupt service members in the completion of apprenticeships; but if we have their job descriptions in their new positions, then we would be able to determine if deployments and transfers decreased participation. Again, we would need to test whether frequent transfers or deployments were correlated with lower completion rates.

RÉSUMÉ STUDY

If the primary benefit of the program is to translate skills, then USMAP completers should be more likely to obtain a job and have a higher wage upon obtaining a position, but not more likely to advance than similar veterans without USMAP certificates. One low-cost option for testing this hypothesis would be to conduct a résumé study. Résumé studies have been used frequently in the economic discrimination field to test whether employers are less likely to interview or hire a person based on a characteristic, such as the applicant's name or date of high school graduation (Lahey 2008). Deming et al. (2014) use a résumé-audit study to evaluate the value employers place on postsecondary credentials. Under a résumé study, evaluators would send résumés to employers for identical Sailors and Marines with an exception: one applicant would have completed USMAP and the other would not have. The outcome we would test would be whether employers were more likely to interview USMAP completers than other veterans. The limitations of the study are that we might not be able to determine whether employers would be more likely to hire USMAP completers or offer a higher wage to veterans. The advantage of the study is that it could be relatively low cost. For this methodology and for all methodologies we would need to stratify by trade.

Data Availability

Several key data elements are necessary to complete this study, although they vary depending on the approach. Most of these analyses will require data on the following:

- Basic demographics
- Educational attainment
- Military occupation and rank
- Deployments, transfers, occupational duty, commands
- Participation in USMAP (including trades, date of completion or cancellation)

- Participation in other programs (tuition assistance, certification programs through the Navy)
- Civilian occupation, employment, and wages outside of the military

MILITARY DATA

The Department of the Navy holds a rich array of administrative data on service members in the Navy, Marine Corps, and Coast Guard. The dataset includes all individuals who have enlisted from 1984 on. The Navy maintains longitudinal administrative data that are updated monthly, such that one can look at the full military history of a service member. Because the Navy maintains Social Security numbers in each of its data systems, it may be possible to merge other administrative data sources.

The Department of the Navy keeps several key datasets of relevance to this project. The primary dataset includes demographics, educational attainment, IQ and aptitude test scores (ASVAB, the Armed Services Vocational Aptitude Battery), and relevant military career information (length of time in the military, rank, command, unit, military occupation, occupational duty). Participation in the USMAP is not included in the primary dataset and would have to be merged. Other relevant datasets that may be useful are promotion data and evaluation data. In the military, the wage rate is determined by promotions; therefore when evaluating wage increases in the military, promotion data are the best to use. The evaluation data provide information on the evaluations of each Sailor, which determine promotion.

UNEMPLOYMENT INSURANCE DATA

Civilian employment and wages are the outcomes that are our primary interest. Unemployment insurance wage data provide a data source for these two outcomes. This dataset could be merged with the Department of the Navy administrative data using Social Security numbers. The unemployment insurance data would provide us with the employment status and wages of veterans. Whereas some limitations to the data exist (e.g., self-employment is not included), such information would provide a rich source of data for our study.

SURVEY DATA

Finally, implementing a survey would provide invaluable data that cannot be collected through administrative data. The survey would collect key information on service members' motivations for entering the program, on the nature of the program, and on the role of USMAP in the transition out of the military. As stated previously, many service members do not want to find civilian employment in their military occupation field; understanding whether they intend to stay in that occupation will be key

in understanding their civilian employment outcomes. In addition, how they enter the program will be important to know; for example, did they see value in the program and choose to participate or were they forced to participate by a supervisor or commander. Next, the focus group highlighted the variety of experiences that service members had with the program. Whereas some described the program as increasing their range of skills, others described the program as simply logging hours. Understanding how service members experienced the program will also be key to interpreting the results. And last, understanding the role of the USMAP certificate in their civilian employment will be crucial.

Conclusion

The United Services Military Apprenticeship Program plays a major role in the US Registered Apprenticeship system. It accounted for nearly one in four Registered Apprenticeships in the United States as of 2013, and its growth offset part of the sharp decline in civilian apprenticeships over the same period. USMAP has successfully registered about 180 occupations with related civilian fields. The scale and growth of USMAP encouraged the United States Department of Labor to conduct a study of USMAP's operations and the feasibility of an impact evaluation of USMAP. This report presents the findings of the study, as conducted by L&M Policy Research and the Urban Institute.

On the basis of interviews and focus groups, the evaluation team drew several conclusions about the operations of USMAP. First, USMAP apprenticeships add, at most, modest amounts of training beyond the classroom and workplace training that service members receive without the program. All service members attend classes to prepare for their occupational assignment, and all are coached as they transition to working in the field. To complete their apprenticeship, service members often can simply document the mix of work experiences on various tasks that are part of their normal assignment. In some cases, they add hours of specialized work experience. Judging from the focus groups, the amount of added work experiences is quite modest. One caveat is that this conclusion is based on the opinions of focus group members and not on a detailed look at the skill development of a large sample of USMAP participants and their non-USMAP counterparts.

Second, completing an apprenticeship appears to bring little gain to participants while they remain in the Navy or Marine Corps. Although having an apprenticeship can offer a slight advantage for promotions, neither the Navy nor Marine Corps appears to view USMAP completers as substantially more qualified than others assigned to the same specialty who did not participate in USMAP.

Third, many apprentices and supervisors have only a limited understanding of the purposes of USMAP. They are provided with very limited or no orientation to the program. Often, potential apprentices are told that generally USMAP can be beneficial and the only cost is writing down the hours devoted to tasks they are already performing. Little or no information is provided on exactly how USMAP certifications are relevant to civilian employers. Supervisors generally expressed a lack of orientation as well. However, a few supervisors reported extensive efforts to insure high credibility for apprenticeships by rigorously checking that apprentices demonstrate skills in each task area specified by the work process schedules. We expect that this conclusion would certainly hold for a large sample of USMAP participants.

Fourth, while documenting skills in relation to a Registered Apprenticeship occupation can in itself help service members find jobs, USMAP has done little to communicate how private employers can benefit from hiring apprenticeship completers in specific fields or to adapt work processes to meet demands in the civilian sectors. The absence of close civilian employer links is especially striking, given that the main value added of USMAP is to document skills of occupational specialties that are used widely in the public and private civilian sectors. One incentive for civilian employers to establish apprenticeships in related field to USMAP occupations is the GI Bill benefits available to veterans. USMAP could encourage USMAP participants (including noncompleters) to use their GI Bill benefits to complete these civilian apprenticeships.

Fifth, certain administrative practices frustrate some apprentices. For example, some mentioned the need to keep paper records of logs signed by supervisors. Others pointed to difficulties recording hours while on deployments. Still others found it difficult to obtain approval to log sufficient hours on tasks outside their current assignment.

Sixth, completion rates are low, perhaps because of the combined impacts of weak initial communication, limited private employer links, and administrative barriers. USMAP recorded an average of 66,000 apprentices in FY 2010 and FY 2011 but an average of only 7,000 completers in FY 2012 and FY 2013.

The administrative resources devoted to USMAP are minimal, especially relative to the scale of the program and the dollars spent on GI Bill benefits. A modest investment in improving communication and links with civilian employers is likely to generate significant gains for USMAP participants. A promising strategy would involve building and evaluating demonstration projects to test the effects of various types of investments in USMAP.

Turning to options for an impact evaluation of USMAP, the L&M-Urban team suggests first determining the timing of the evaluation, then considering three broad strategies for determining whether employment and earnings gains in the civilian sector result from participation in or completion of apprenticeships in USMAP. The timing issue relates to the readiness of USMAP for a major evaluation. In particular, the question is whether sufficient outreach to employers or groups of employers has been undertaken to expect plausible impacts. Given the limited current links with employers, it may be appropriate to delay an evaluation.

When the timing for an evaluation is deemed appropriate, L&M-Urban suggest using one or more of three strategies. The first is a “randomized-encouragement” approach involving differential marketing

to service members, either individually or by command. A second strategy involves finding instrumental variables that predict participation or completion in USMAP but do not exert any direct effect on civilian earnings. The primary challenge with both these options is ensuring that the encouragement is effective or that the instrument is correlated with participation or completion. A third approach is to conduct a résumé-audit study: evaluators would send résumés to employers or post résumés to a jobs website for hypothetical Sailors and Marines that are identical except for the presence or absence of a USMAP certification. This approach would determine if completing USMAP increases the likelihood of being granted an interview. Whereas this methodology is inexpensive, it would not be able to answer questions about how USMAP affects actual employment and earnings. To conduct the first two options, data must be collected on participants while they are in the military and on their postmilitary employment and earnings. Potential sources include the Department of the Navy administrative data, unemployment insurance data, and a survey fielded to collect these data.

Appendix A. Interviews and Focus Groups

The research team conducted in-person interviews with the team overseeing USMAP from Pensacola, Florida, and phone interviews with the coordinator of the program from the Office of Apprenticeship, with officials at the Pentagon, and with groups helping place veterans in jobs (e.g., Helmets to Hardhats). To learn directly from apprentices and their supervisors, the L&M-Urban team also conducted 11 focus groups.

Approval Process

To conduct focus groups with service members, it was necessary for us to get approval from the Department of the Navy. In some cases, a research team must undergo review by an institutional review board (IRB); given the nature of our research, the research team needed only go through an administrative review. The administrative review consisted of reviewing the IRB approvals from the research team's institutions to ensure that they met the Navy's standards. If the IRB approval met the Navy's standards, then the Department of the Navy would accept the institutions' IRB approval in place of a Navy IRB review. Once the IRB report is submitted, the review can take up to two months.

Interviews

In undertaking the analysis, the L&M-Urban team interviewed key staff members involved with the USMAP program operations, administrators of USMAP, officials at organizations helping veterans find jobs, the individual coordinating the relationship between USMAP and the Office of Apprenticeship, and a researcher at the Navy War College.

Focus Groups

The research team conducted focus groups with Navy and Marine Corps service members at four military bases—Naval Station Norfolk, Virginia; Naval Base San Diego, California; Marine Corps Base Camp Pendleton, North Carolina; and Marine Corps Base Camp Lejeune, Jacksonville, North Carolina—to garner their perceptions of and experiences with USMAP. The team conducted 11 focus groups in the four locations—4 with service members who are currently participating in USMAP, 3 with service

members who have completed at least one USMAP apprenticeship, and 4 with supervisors who oversee USMAP participants (see table A.1).

TABLE A.1

Overview of Focus Groups

	Navy	Marine Corps
Location and date	Naval Station Norfolk: Oct. 29, 2014 Naval Base San Diego: Nov. 19, 2014	Camp Pendleton: Nov. 18, 2014 Camp Lejeune: Dec. 3, 2014
Number of focus group participants	Current participants: 13 Completed participants: 17 Supervisors: 10 Total: 40	Current participants: 15 Completed participants: 5 Supervisors: 16 Total: 36
Number of participants who have completed at least one apprenticeship	17	3
Completed one and enrolled in second	10	2
Completed two or more	7	0
Number of supervisors who have completed or are enrolled in at least one apprenticeship	5	6
Apprenticeship trades of participants	Armory technician 2 Aviation boatswain's mate 1 Cement mason 1 Computer operator 11 Counselor 1 Diesel mechanic 1 Electrician (aviation) 1 Food service manager 5 Firefighter 2 Legal secretary 2 Logistics specialist 1 Machinery mechanic 1 Ordnance artificer 2 Office manager/admin. 6 Paralegal 1 Pipe fitter (ship) 1 Plumber 1 Police officer 1 Retail manager 2 Security specialist 1 Surveyor assistant 1 Weather observer 1	Calibration laboratory tech. 1 Computer operator 4 Electronics mechanic 1 Electronics tester 1 Finance 2 Maintenance industry mechanic 1 Office manager/admin. 2 Operating engineer 1 Ordnance artificer 1 Protective service specialist 1 Radio operator 1 Surveyor assistant 1 Telephone mechanic 2

Note: Three participants attended two focus groups because they were both participants and supervisors and were counted twice. In addition, three participants at Camp Pendleton were in the Navy and were counted as Navy participants.

Notes

1. An occupational specialty is known as a Military Occupational Specialty (MOS) in the Army and Marine Corps and as a Rating in the Navy and the US Coast Guard.
2. Classroom training occurs at “A” School and “C” School in the Navy and at Advanced Individual Training in the Army.
3. The army still has a culinary apprenticeship program, and the National Guard has implemented an apprenticeship program (the Guard Apprenticeship Program Initiative), although it is no longer funded.

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Myra Tanamor is co-founder and principal of L&M Policy Research. Ms. Tanamor has spent more than 15 years working on health care financing and delivery issues and

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