An Evaluation of the Marine Corps IDT Travel Reimbursement Program

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Photo credit line: As they lay out a map of base, LCpl Farrington and Sgt Frederick Race locate coordinates for a land navigation practical application. Despite meeting only once-a-month, Reservist with the 4th Civil Affairs Group, Washington DC, were still expected to maintain proficiency in Marine Corps common skills. Photo By: Cpl Tatum Vayavananda

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Executive summary

For the Selected Marine Corps Reserve (SMCR), unit staffing—having the right Marine, in the right billet, at the right time—is important for force readiness. The Marine Corps, however, has not always been able to meet its SMCR manning goals because it is constrained by geography and by its billet identification code (BIC) assignment policy. Specifically, Marine Corps reserve management policy stipulates that reservists must live within 100 miles of their drilling units unless they obtain distance waivers, and the BIC assignment policy stipulates that SMCR Marines must have the primary military occupational specialties (PMOSs) and paygrades required by the BICs to which their units assign them. These conditions reduce units' recruitable populations and can contribute to manpower shortages.

The only way for the Marine Corps to staff hard-to-fill billets without weakening its BIC assignment policy is to increase the recruitable pool by relaxing geographic restrictions. The problem is that, if the costs to travel to and from their drilling units exceed or significantly cut into their drill pay, Marines may be less willing to affiliate—effectively limiting SMCR recruiting efforts and making it harder to fill billets.

In 2009, the Marine Corps implemented the inactive duty training (IDT) travel reimbursement program in accordance with United States Code and the Joint Federal Travel Regulations, which stipulate that, to be eligible for IDT travel reimbursement, a reservist must fill a critical reserve billet and travel 150 or more miles, one-way, to drill with his or her unit. Another stipulation is that a reservist can be reimbursed for no more than $300 per round-trip.

The IDT travel reimbursement program has the potential to expand units' recruiting areas and to promote SMCR participation by relaxing geographic recruiting restrictions and alleviating out-of-pocket travel costs that some Marines bear. The IDT travel reimbursement

program, however, is one of several manpower tools available to the Marine Corps. Therefore, the Deputy Commandant, Manpower and Reserve Affairs (DC, M&RA) asked CNA to examine IDT travel reimbursement utilization and to compare the costs and benefits of the IDT travel reimbursement program with those of other SMCR manpower management tools and incentive programs.

In this study, we analyze IDT travel reimbursements, Marine Corps manpower data, and drill attendance records to determine (a) which eligible SMCR Marines are most likely to participate in the IDT travel reimbursement program and (b) the effect of the IDT travel reimbursement program on SMCR manpower levels and drill attendance.

When the IDT travel reimbursement program began, the Marine Corps extended eligibility to first sergeants, sergeants major, company-grade officers, and majors, but it has since expanded eligibility to all gunnery sergeants, master sergeants, master gunnery sergeants, and warrant officers. As a result of these expansions, program participation and costs grew from 247 Marines and almost $260,000 in FY 2010 to 609 Marines and almost $714,000 in FY 2013.

We find that many program-eligible SMCR Marines were not reimbursed. This may be because Marines chose not to submit their expenses for reimbursement or because they were unaware of the program or their eligibility. We estimate that roughly half of program-eligible enlisted Marines and commissioned officers have been reimbursed for IDT travel expenses, and that those reimbursed received less than the maximum reimbursement per year. The data also indicate that program-eligible Marines who travel longer distances are more likely to participate than eligible Marines who live closer to the 150-mile cutoff. Most important, we find that the IDT travel reimbursement program is associated with an estimated 10-percentage-point increase in manpower levels and a 24-percentage-point increase in regular drill attendance.

Considering the facts that some Marines' drill income goes toward paying for travel to and from IDT and that this decreases drill participation, the Marine Corps may want to look for ways to increase program participation. We estimate that a 10-percent increase in enlisted

and commissioned officer participation—which equates to roughly 70 personnel—would cost the Marine Corps an additional $217,905. To increase program participation, the Marine Corps should consider ways to increase program awareness. Increasing unit leaders' knowledge of the program and its benefits may prompt them to encourage their program-eligible Marines to submit their expenses. Career planners and recruiters also could spread information about the IDT travel reimbursement program.

Of course, if the process of submitting IDT travel expenses is difficult or burdensome, efforts to increase participation may not be effective. We recommend that the Marine Corps look into why some eligible Marines are not submitting their travel expenses for reimbursement. We also find that junior officers are less likely than senior officers to have been reimbursed. One explanation for this finding may be that junior officers are less familiar with the expense reporting system. If this is the case, one solution may be for senior Marines to educate junior Marines in the submission process, perhaps even walking them through the process, after they join SMCR units.

Our findings that IDT travel reimbursement is associated with higher manpower levels and drill attendance indicate that the program is an effective manpower tool. This implies that the Marine Corps may want to consider program expansions that address other prevailing SMCR manpower issues. By analyzing billet vacancy durations, we identified the following potential expansion scenarios that the Marine Corps may want to consider:

- Expand eligibility to Marines who fill specified hard-to-fill billets (those that have been vacant for 24 months or more).
- Expand eligibility to E6 and/or E5 Marines.
- Expand eligibility to Marines in hard-to-fill occupational fields (occfields).
- Increase the maximum reimbursement to $500.

Table 1 summarizes our cost estimates for each of these expansion scenarios using September 2013 manpower levels and billet structure.

Table 1. Estimated one-year expansion costs, by scenario[a]

Expansion scenario	Preferred estimate[b]	Upper bound[c]
Hard-to-fill billets	$309,210	$3,092,100
Staff sergeants (E6s)	$339,153	$2,525,925
Sergeants (E5s)	$800,389	$5,709,187
All paygrades in hard-to-fill occfields[d]	$605,505	$4,533,139
Increase the maximum reimbursement to $500	$1,056,317	$8,749,617

a. Source: Estimates are based on SMCR manpower levels and billet structure in the September 2013 Reserve Manning Analysis Tool (RESMAT) snapshot file. We assumed that newly eligible Marines will be reimbursed an estimated $0.73 per mile (based on our analysis of the relationship between distance traveled and reimbursement levels for participating Marines) and that Marines filling vacant billets receive the maximum reimbursement.
b. These estimates assume less than 100-percent participation among newly eligible Marines and less than 100-percent staffing of newly eligible vacant billets.
c. These estimates assume 100-percent participation among newly eligible Marines and 100-percent staffing.
d. Estimates are for extending eligibility to occfields 13XX, 18XX, 65XX, and 73XX.

Overall, the IDT travel reimbursement program helps the Marine Corps to staff hard-to-fill billets and to alleviate out-of-pocket expenses for some SMCR Marines. In addition, the program is relatively cheap and improves the efficiency of other manpower tools, such as affiliation bonuses and non-prior-service recruiting. For these reasons, we recommend that the Marine Corps continue to use the IDT travel reimbursement program and, budgets permitting, consider expanding the program to address current and future SMCR unit staffing issues.

Introduction

> The mission of the [reserve component] of the Marine Corps Total Force is to augment and reinforce the active component (AC) with trained units and qualified individuals in a time of war or national emergency, and at such other times as national security may require. [1]

To be a force in readiness, the Selected Marine Corps Reserve (SMCR) needs to have the right Marines in the right billets at the right time. The Marine Corps, however, has not been able to meet its SMCR manning requirements. Historically, the SMCR billets most difficult to fill are noncommissioned officer (NCO), staff NCO (SNCO), company-grade officer, and major billets—critical leadership positions that affect unit readiness [2, 3].

In recent years, the Marine Corps has changed its SMCR manpower management policies for better visibility of where manpower shortages and surpluses exist. In FY 2011, the Marine Corps began assigning SMCR Marines billet identification codes (BICs), which uniquely identify each SMCR billet requirement.[1] SMCR Marines must be assigned to a unique BIC that is commensurate with their primary military occupational specialty (PMOS) and paygrade [4].[2] BIC assignments enable the Marine Corps to better place the right Marine in the right billet, thus promoting force readiness.

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1. Before BIC assignment, SMCR manpower management focused on meeting the overall SMCR authorized structure; Reserve Affairs would produce needs reports showing manpower shortages by primary military occupational specialty and paygrade.

2. A Marine may be assigned to a BIC within one paygrade, up or down, of his or her own. For example, a sergeant billet (E5) may be filled by either a corporal (E4) or a staff sergeant (E6). Exceptions to this include colonels, sergeants major, and first sergeants, who may be assigned only to "BICs requiring the grade of O-6 or to an approved 8999 billet" [4].

In addition, Marine Corps reserve management policies require that Marines be within reasonable commuting distances—100 miles or 3 hours' driving time—of their inactive duty training (IDT) drilling units [1]. In some cases, SMCR unit commanders may approve distance waivers for Marines who live beyond a reasonable commuting distance, but most Marines are unlikely to be willing to pay travel costs that exceed their IDT drill pay—limiting SMCR recruiting efforts and making it harder to fill billets.[3]

To ease the burden of travel costs, the Marine Corps is authorized to reimburse IDT travel costs for certain Marines who travel 150 or more miles, one-way, to their drilling units; this distance is stipulated by law and is greater than the Marine Corps recruiting policy of 100 miles. This program, therefore, has the potential to (1) expand the pool of potential recruits by expanding the units' recruiting areas and (2) promote SMCR participation of current SMCR members. The IDT travel reimbursement program, however, is one of several SMCR manpower management tools. Therefore, the Deputy Commandant, Manpower and Reserve Affairs (DC, M&RA) asked CNA to examine IDT travel reimbursement utilization and to compare the costs and benefits of the IDT travel reimbursement program with those of other SMCR manpower programs.

Background on the IDT travel reimbursement program

The IDT travel reimbursement program was first authorized by Congress in the National Defense Authorization Act (NDAA) for FY 2008. This NDAA (and subsequent NDAAs) authorized the military services to reimburse IDT travel expenses for servicemembers who live beyond a reasonable commuting distance and who meet at least one of the following requirements:

- Are qualified in a critically short skill
- Are assigned to a unit or paygrade with a critical manpower shortage

3. See appendix A for a summary of the SMCR laydown.

- Are assigned to a unit or billet that is being disestablished or relocated as a result of base closure, realignment, or another force structure reallocation [5–9]

In April 2009, the Marine Corps began offering IDT travel reimbursements to SMCR Marines [10–14]. Marines eligible for IDT travel reimbursement include, with a few exceptions, those who are (1) BIC PMOS-paygrade matches and (2) fill the following paygrades or positions: O1 through O4 at the battalion/squadron level or below, E7 through E9, all warrant officers, and all battalion/squadron commanders (regardless of rank) [14]. Per the NDAA, Marines who have had to move to units beyond a reasonable commuting distance as a result of the Marine Corps' implementation of Force Structure Review Group (FSRG) changes also are eligible [13, 14].

In FY 2013, the Marine Corps' IDT travel reimbursement program had over 600 participants with total costs of almost $714,000—over two times the number of participants in FY 2010 (250 Marines) but less than half of FY 2013 planned expenditures ($1.6 million). This study will look at the growth of the SMCR IDT travel reimbursement program and its effect on SMCR manpower levels and drill participation to determine whether and how the Marine Corps can expand the program to more Marines.

Study issues and approach

In this study, we examine how the Marine Corps implements the IDT travel reimbursement program and which SMCR Marines participated, given that they were eligible for the program. We also analyze whether the IDT travel reimbursement program has had a positive effect on SMCR manpower levels and drill attendance. Since we find that the IDT travel reimbursement program does improve manning levels and drill attendance, we investigate other manpower issues that the IDT travel reimbursement program may help address. In addition, we compare the costs and benefits of the IDT travel reimbursement program with those of other manpower tools and incentives, such as affiliation bonuses, the SMCR PMOS retraining program, and non-prior-service (NPS) recruiting, to determine how the Marine Corp can best use these programs collectively.

For our analysis, we used a combination of qualitative and quantitative techniques. We examined official documents, such as NDAAs and Marine Corps Administrative Messages (MARADMINs), and spoke with Marine Corps subject matter experts (SMEs) for insights into how the Marine Corps uses the IDT travel reimbursement program and its other manpower tools to fill SMCR billets.[4]

Our empirical analysis examined data from several datasets. The Marine Forces Reserve (MARFORRES) finance office provided us with individual-level IDT travel reimbursement data. We merged these data to Marine Corps personnel data from end-of-month snapshot files from the Marine Corps Total Force System (MCTFS) and end-of-month unit manning data from the Reserve Manning Analysis Tool (RESMAT).[5] Together, the MCTFS and RESMAT datasets contain demographic and service information, including BIC assignment, for each Marine. The combined dataset allows us to examine IDT travel reimbursement participation, to estimate how many Marines were eligible for IDT travel reimbursement, and to compare the characteristics of eligible Marines who were reimbursed with those who were eligible but who were not reimbursed.

The RESMAT includes data on filled and open SMCR billets. This allows us to determine whether the IDT travel reimbursement program had a positive effect on SMCR manpower levels. In addition, the Reserve Plans and Policy branch of Reserve Affairs (RA) provided individual-level IDT drill attendance data which, combined with the personnel data, allow us to assess whether Marines who were reimbursed for IDT travel expenses attended more drills than Marines who were eligible for reimbursement but were not reimbursed.

4. Specifically, we spoke with personnel from Headquarters Marine Corps, Reserve Affairs (HQMC, RA), Marine Corps Recruiting Command (MCRC), and G-1, Marine Forces Reserve.

5. CNA developed and maintains the RESMAT using Reserve Affairs' monthly BIC reports to produce a tool that assesses the BIC alignment at SMCR units.

Organization of this report

This report begins with a historical look at the Marine Corps' IDT travel reimbursement program. The second section analyzes program participation and effectiveness. The third section describes and estimates the costs of potential expansions to the IDT travel reimbursement program. After that, we compare the costs and benefits of the IDT travel program with other Marine Corps manpower management tools. The final section offers recommendations regarding the Marine Corps' continued use of the IDT travel reimbursement program.

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The SMCR IDT travel reimbursement program

In this section, we provide greater detail on the SMCR IDT travel reimbursement program. We discuss program changes and the challenges that the program has faced, as well as how the program helps the Marine Corps manage the SMCR.

Program implementation

Since FY 2008, Congress has authorized the reimbursement of travel expenses up to $300 per round-trip for reservists who travel beyond a reasonable commuting distance and who fill critical billets [5]. The Joint Federal Travel Regulations (JFTR) define a reasonable commuting distance as less than 150 miles, one-way, between a reservist's home and his or her IDT facility; they also detail which expenses are authorized for reimbursement [15]. Thus, the Marine Corps has flexibility only in which billets it defines as critical, and therefore eligible, for IDT travel reimbursement.

Between 2009 and 2013, the Marine Corps changed its guidance (by means of MARADMIN) regarding the IDT travel reimbursement program. With each MARADMIN, the Marine Corps has added the following:

- Eligibility conditions
- More detail regarding authorized reimbursements
- Clarifying guidance regarding program coordination and implementation

Table 2 summarizes the evolution of the IDT travel reimbursement program to date.

Table 2. Evolution of the Marine Corps' IDT travel reimbursement program[a]

Program characteristics	2009 Original description	2012 changes	2013 changes[b]
Eligibility	• Travel 150 or more miles • Marines assigned to eligible billets with rank: - Major (O4) - Captain (O3) - First lieutenant (O2) - Second lieutenant (O1) - Sergeant major (E9) - First sergeant (E8)	• Eligibility requires BIC match • Eligibility extended to: - Warrant officers (WO1-CWO5) - Master gunnery sergeants (E9) - Master sergeants (E8) - Majors assigned DIFOP[c] - Battalion/squadron commanders • Ineligible: - Majors, master gunnery sergeants, and master sergeants in BICs below their paygrades - Officers assigned to units above the battalion or squadron level • Waivers are available on an individual basis, approved by RA	• Eligibility extended to gunnery sergeants (E7) in BICs requiring their paygrade or higher
Authorized reimbursement	• Up to 11 round-trips • Actual cost of transportation, lodging, and meals up to the per diem amount	• Aviators authorized reimbursement for up to 22 round-trips • Additional clarification about lodging and transportation expenses	• POC transportation costs reimbursed by mileage[d] • Additional clarification about lodging expenses
Coordinating instructions	• Units submit names to MARFORRES for validation • MARFORRES provides further instructions to Marines	• Marines must request that their units' administrators submit information to MARFORRES • RA will conduct an annual review of the program	• Commanders are not authorized to deny IDT travel reimbursement requests • Program is not applicable to the IMA[e] program

a. Source: IDT travel reimbursement MARADMINs [10–14].
b. No changes were made to the IDT travel reimbursement program in the Dec. 2013 MARADMIN [14].
c. DIFOP stands for duty involving flying-operational.
d. POC stands for personally owned conveyance.
e. IMA stands for Individual Mobilization Augmentee. IMAs are Selected Reserve Marines assigned to the AC to support mobilization requirements [1].

Eligibility

Eligibility for SMCR IDT travel reimbursement is determined by two factors: travel distance and billet assignment. As previously mentioned, SMCR Marines in selected billets who travel 150 or more miles, one-way, to attend IDT drills are eligible for travel reimbursement.

Requirements

As shown in table 2, program eligibility has expanded since 2009. Between 2009 and 2011, Marines eligible for IDT travel reimbursement filled billets in the following ranks and paygrades [10]:

- Major (O4)
- Captain (O3)
- Second and first lieutenant (O1 and O2, respectively)
- Sergeant major (E9)
- First sergeant (E8)

In 2012, the Marine Corps added the requirement that SMCR Marines had to be a BIC PMOS-paygrade match and extended eligibility to the following groups [11, 12]:

- All majors assigned duty involving flying-operational (DIFOP) regardless of billet grade
- All warrant and chief warrant officers (WO1 through CWO5)
- Master gunnery sergeants (E9s) and master sergeants (E8s) assigned to BICs requiring their respective paygrades or higher
- Battalion and squadron commanders, regardless of rank

Also in 2012, the Marine Corps restricted eligibility for certain populations. Lieutenants, captains, and majors are now only eligible if they are assigned to units at the battalion or squadron level [11, 13, 14]. Majors assigned to O3 billets also are restricted from receiving IDT travel reimbursements [11, 13, 14].

In 2013, one last group was extended eligibility: gunnery sergeants (E7s) who fill billets requiring Marines with paygrades of E7 or higher [13]. The MARADMIN extending the program through December 2014 did not make any additional eligibility changes [14].

The changes to the eligibility conditions coincide with the Marine Corps' BIC assignment policy. As the Marine Corps has improved the matching of SMCR BICs and Marines (see [2]), it has been able to more accurately identify manpower shortfalls and improve its SMCR manpower management—informing RA discussions on the scale of the IDT travel reimbursement program.

Waivers

In 2012, the Marine Corps began considering waivers for IDT travel reimbursement for Marines who do not meet the program eligibility conditions listed in the MARADMIN but who occupy a billet in a high-demand/low-density occupational field or one that "has been historically difficult to fill (greater than 24 months vacancy)" [13, 14]. Marines submit waiver requests—endorsed by their chain of command (including Commander, MARFORRES)—to RA, which approves or denies the requests [13, 14]. The waivers are granted on a fiscal year basis, but waiver extensions may be granted if deemed necessary by RA.[6]

The Marine Corps most recently issued IDT travel reimbursement waivers in response to FY 2012 and FY 2013 FSRG changes. These changes resulted in the reassignment of thousands of Marines because some units and billets were disestablished or relocated. The Marines filling destabilized or relocated billets were provided with a list of options that would enable them to remain in the SMCR.[7] Some Marines were given the option to be reassigned to units that were 150 or more miles from their residences. In cases where these Marines

6. RA provided a list of 29 Marines who received waivers in FY 2012–2013, but we found that only 11 of them had been reimbursed for IDT travel expenses.

7. Personnel Transition Teams, made up of personnel from RA and MARFORRES, visited units affected by an FSRG change and provided the affected Marines with one-on-one career counseling.

would be filling critical billets, but otherwise did not rate travel reimbursement, RA approved waivers for them [13, 14].[8]

Authorized reimbursements

For SMCR Marines who travel 150 or more miles and satisfy the eligibility conditions summarized in table 2, the Marine Corps will reimburse up to $300 per round-trip for IDT travel expenses. The 150-mile restriction is stipulated in the JFTR [15], while the $300 maximum is stipulated in United States Code (U.S.C.), Title 37, Section 478a [16]. The Marine Corps does not have the authority to increase or decrease the maximum reimbursement.

The Marine Corps limits IDT travel reimbursement to a maximum of 22 round-trips in a fiscal year for aviators and to 11 round-trips for other SMCR Marines. The Marine Corps requires SMCR Marines to attend 48 IDT drills per year, which typically equates to 1 weekend per month (4 drills per weekend), with no more than 9 unexcused absences in the preceding 12 months [1]. The higher maximum round-trips for aviators was implemented in April 2012 to allow aviators to expense the additional drill periods that are needed to meet their flight-hour requirements [11–14].

The $300 maximum covers transportation, lodging, and meal expenses that SMCR Marines incur while traveling to and from their IDT training facilities. The MARADMINs specify which expenses may be reimbursed in accordance with the JFTR. Changes to the Marine Corps' published guidance on authorized IDT travel reimbursements reflect changes to the JFTR or the need for clarification as program eligibility expanded and more Marines participated.

8. RA was most concerned about losing valued staff sergeants (E6s)—who are not currently eligible for IDT travel reimbursement—during the FSRG implementation; therefore, it approved IDT travel reimbursement waivers for staff sergeants who accepted billets at units beyond a reasonable commuting distance from their homes.

Expensable transportation costs

Marines can travel to IDT using either personal or commercial transportation. If Marines use commercial transportation to get to IDT, the Marine Corps reimburses them for the actual cost of travel up to the $300 maximum. This includes airline and train tickets and parking fees; rental vehicles are not authorized per the JFTR [15].

If a Marine uses a personally owned conveyance (POC) (e.g., his or her own car or motorcycle), he or she is reimbursed $0.24 per mile for the official distance (determined by the Defense Table of Distances (DTOD)[9]) between his or her residence and IDT unit [15].[10] Other costs necessary to travel by POC (i.e., tolls and parking fees) also are reimbursable. This means that a Marine who travels by POC 150 miles one-way will be reimbursed at least $72 for the round-trip (150 miles x 2 trips x $0.24).

Expensable lodging and meal costs

As part of the $300 maximum reimbursement, Marines can be reimbursed for the actual cost of lodging and meals up to the per diem rate for the IDT location. Lodging the night before a scheduled drill is not reimbursable because it is the responsibility of the SMCR unit [10–14].

Program coordination and implementation

The Marine Corps uses the IDT travel reimbursement program as a force-shaping tool. Since the Marine Corps cannot issue permanent-change-of-station moves to reservists, the IDT travel reimbursement program enables the Marine Corps to more easily transfer Marines to units and positions where they are most needed, promoting force readiness and providing Marines with the best professional development, promotion, and career progression opportunities. For exam-

9. We do not have access to the DTOD and therefore are unable to add Marines' official travel distances to our analysis. We discuss this issue further in the next section.

10. For reference, the JFTR stipulates a reimbursement rate of $0.565 per mile for non-IDT travel by POC [15].

ple, the IDT travel reimbursement program can promote continued SMCR service by increasing reserve opportunities for Marines who promote out of their respective billets and/or units.

IDT travel reimbursement funds come from the Reserve Personnel Marine Corps appropriation. More specifically, the funds are executed under annual training travel since the IDT travel reimbursement program does not have its own budget line. Historically, there has not been a ceiling on IDT travel reimbursement spending; however, in FY 2013, planned program execution was $1.6 million. According to RA, the Marine Corps is working to get IDT travel reimbursement into the FY 2015 budget as its own line item to increase visibility and protect program funding from budget cuts.

The process of reimbursing Marines for IDT travel begins with MARFORRES, which is responsible for compiling a list of program-eligible Marines. This list is sent to the units, which are to use it to inform Marines of their eligibility.[11] Marines submit their travel expenses online through the Defense Travel System (DTS).

How well this process works depends on how well Marines, unit commanders and administrators, MARFORRES, and RA coordinate. If commanders and/or administrators do not sign off on Marines' travel vouchers, this process slows or stops completely. If RA does not approve waivers in a timely manner, this also prevents Marines from being reimbursed. In addition, the timely distribution of reimbursement funds to SMCR Marines depends on how quickly the MARFORRES budget office processes the IDT travel claims.[12]

Summary

The Marine Corps is authorized to reimburse SMCR Marines in critical billets who travel 150 miles or more to attend IDT drills up to $300

11. This process is different from the one described in the MARADMIN (see table 2).

12. In the next year or so, responsibility for IDT travel reimbursements will shift from the MARFORRES finance office to several regional disbursement offices. The Marine Corps may want to assess how this will change the way it manages the IDT travel reimbursement program.

per round-trip for transportation, lodging, and meal costs incurred during travel to IDT. Since the program's inception in 2009, the Marine Corps has expanded IDT travel reimbursement to more Marines, and today IDT travel reimbursement is available to majors, company-grade officers, warrant officers, and SNCOs (E7–E9).

The Marine Corps uses the IDT travel reimbursement program as a tool to shape the SMCR population. For example, the program allows the Marine Corps to alleviate Marines' out-of-pocket expenses associated with interunit transfers that are necessary for force readiness and that benefit Marines' career development and promotion opportunities.

In the next section, we examine the number of Marines who have participated in the IDT travel reimbursement program and how much they have been reimbursed.

IDT travel reimbursement program utilization and effectiveness

This section presents our empirical analysis of the IDT travel reimbursement program. We merged individual-level reimbursement data from the MARFORRES finance office with MCTFS personnel data and RESMAT unit manning data. These data allow us to examine changes in the size of the program and compare the characteristics of Marines who participated in the program with those who were eligible but chose not to participate. In addition, we estimate how the program has affected SMCR manpower levels and IDT drill attendance.

Overall program utilization

The IDT travel reimbursement program was announced in April 2009; by the end of FY 2009, 95 Marines had participated in the program and been reimbursed more than $44,000 (see table 3). The program has grown substantially since then. In FY 2013, it was over twice its FY 2010 size in terms of numbers of participants, total reimbursements, and travel claim submissions. Participation rose from 247 Marines in FY 2010 to over 600 in FY 2013, and total reimbursements increased from about $260,000 to almost $714,000, but still below the FY 2013 plan of $1.6 million.

Table 3. IDT travel reimbursement program participation[a]

FY	No. of participants	Amt. reimbursed	No. of claims
2009	95	$44,856	221
2010	247	$259,527	1,115
2011	288	$349,346	1,440
2012	397	$403,666	1,693
2013	609	$713,871	3,053
2009–2013	900[b]	$1,771,266	7,521

a. Source: FY09–FY13 IDT travel reimbursements. FY09 claims are from Apr. to Sep.
b. Some Marines participated in multiple years.

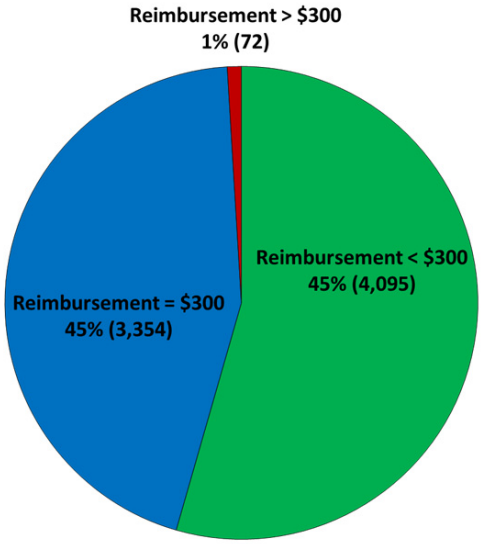
IDT travel reimbursement program participation expanded for several reasons. First, as we discussed in the previous section, the Marine Corps expanded eligibility to more ranks. Second, as the Marine Corps has gotten better at correctly assigning Marines to valid BICs, the number of Marines who meet the eligibility conditions also has increased [2]. Third, the number of eligible Marines increased with the Marine Corps' implementation of FSRG changes in FY 2012 and FY 2013 because many Marines were reassigned to units 150 or more miles from their residences. Fourth, participation naturally rises as more Marines become aware of the program and it becomes a standard component of the Corps' manpower management process.

Although the IDT travel reimbursement program has grown over the past five years, the program has underexecuted the maximum reimbursement level, given the number of Marines who participated each year. In other words, the total reimbursement amounts listed in table 3 are below what we would expect if each Marine received the maximum reimbursement allowed.

For example, assume that all 609 Marines (including 114 aviators) who participated in FY 2013 submitted $300 in travel expenses for the maximum number of round-trips for which they were eligible: aviators are reimbursed a total of $6,600 ($300 x 22 round-trips); other Marines are reimbursed a total of $3,300 ($300 x 11 round-trips). Maximum total reimbursements for FY 2013 participants would be $2,385,900 (495 x $3,300 + 114 aviators x $6,600)—over three times the amount executed in FY 2013. This confirms that there are Marines who do not rate the maximum reimbursement and/or who participated but were not reimbursed for the maximum number of round-trips.

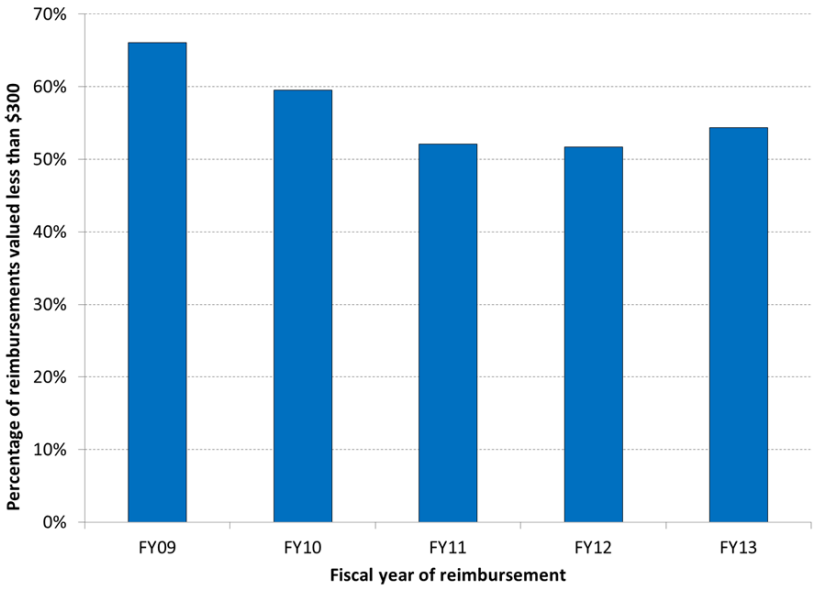
A closer look at the data reveals further evidence that Marines are not claiming the $300 maximum reimbursement. Figure 1 shows the distribution of reimbursements by whether the reimbursement was less than, equal to, or more than $300 over the program's life. We find that over half (54.4 percent) of IDT travel reimbursements were for less than $300—both overall and in each fiscal year (see figure 2).

Figure 1. Distribution of IDT travel claim values, FY09–FY13[a]



a. Source: FY09–FY13 IDT travel reimbursements. FY09 claims are from Apr. to Sep.

Figure 2. Percentage of IDT travel reimbursements under $300, by fiscal year[a]



a. Source: FY09–FY13 IDT travel reimbursements. FY09 claims are from Apr. to Sep.

Between FY 2009 and FY 2013, the average reimbursement was for $236 (the smallest reimbursement was $0.05 and the largest was $2,942). Lower-than-expected reimbursements may be the result of errors made by Marines while submitting their expenses or by Marines choosing to take commercial modes of transportation that may be cheaper than driving themselves. Higher-than-expected reimbursements—those greater than $300—may be due to Marines submitting expenses for multiple round-trips at one time.[13] Because we cannot link reimbursements to drills attended, we cannot say for certain that any one reimbursement is for one and only one round-trip; however, given that the majority of the reimbursements are for $300 or less, we believe that most reimbursements are probably for only one round-trip.

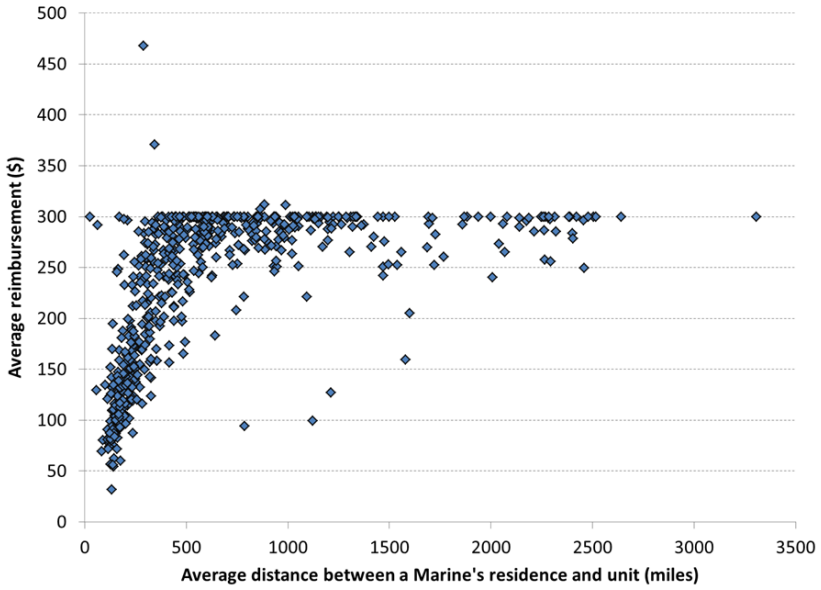
If we assume that a single reimbursement reflects one round-trip's worth of travel expenses, we expect that those who were reimbursed for less than $300 lived closer to their units than those who were reimbursed for $300 or more. Figure 3 shows the relationship between Marines' average reimbursement and IDT travel distances for Marines who were reimbursed in FY 2013. As we expected, there is a positive relationship between distance and the amount Marines were reimbursed. Those who traveled fewer miles were generally reimbursed for less than those who traveled more miles, but not all Marines who traveled the same distance received the same reimbursement. This variation in reimbursements is likely because of differences in lodging and meal per diem rates across locations and the fact that Marines can choose from different modes of transportation (i.e., POC, airplane, or train), which have different costs.

We also see in figure 3 that a number of Marines were reimbursed for the maximum $300. Overall, two-thirds of Marines who were reimbursed for IDT travel expenses between FY 2009 and FY 2010 had at

13. The MARFORRES finance office was unable to provide more information on why there are reimbursements for more than $300; however, RA mentioned that, because Marines need access to the Navy/Marine Corps Intranet (NMCI), some may bundle multiple round-trips into one expense report to limit the number of times they need to log into an NMCI computer.

least one reimbursement that equalled or exceeded $300. It is likely that some of these Marines, particularly those traveling longer distances, were not reimbursed for all of their travel expenses.

Figure 3. Average reimbursement and distance for Marines reimbursed in FY13[a]



a. Source: FY13 IDT travel reimbursements merged with MCTFS residence data and RESMAT unit data. The mileage is the shortest distance between a Marine's residence and his or her SMCR unit.

If Marines are not reimbursed for the total cost of traveling to and from IDT, they are paying these costs out of their drill income or their own pockets. To add context to the burden of travel costs, we display in table 4 travel costs as a percentage of the maximum four-drill weekend pay for travel costs of $150, $300, and $750.

For example, the maximum pay an E7 can receive for a four-drill weekend is $660. Therefore, if it costs E7s $150 to travel to and from IDT, 23 percent of their drill pay ($150/$660) goes toward their travel expenses; however, if they qualify for IDT travel reimbursement, their out-of-pocket expenses will be completely offset (zero percent of their drill pay would go toward travel expenses). If, instead, it costs $300 to travel to IDT, 45 percent of E7s' drill pay will

go toward travel expenses, which again can be completely offset through reimbursement. If travel costs are $750, however, this is greater than E7s' drill pay, and they will end up paying out of their own pockets to affiliate even if they qualify for reimbursement; reimbursing them for $300 means that 68 percent of their drill pay goes toward their travel expenses, leaving them with net earnings of only $211 per drill weekend.

Table 4. Drill pay and travel costs as a percentage of maximum drill pay, by paygrade and travel costs[a]

	Four-drill weekend pay[b]		Travel costs as a percentage of the maximum drill pay					
			Costs = $150		Costs = $300		Costs = $750	
Paygrade	Minimum	Maximum	Without reimb.[c]	With reimb.	Without reimb.	With reimb.	Without reimb.	With reimb.
E7	$367	$660	23%	0%	45%	0%	114%	68%
E8	$528	$753	20%	0%	40%	0%	100%	60%
E9	$645	$1,001	15%	0%	30%	0%	75%	45%
WO1	$379	$654	23%	0%	46%	0%	115%	69%
CWO2	$431	$720	21%	0%	42%	0%	104%	63%
CWO3	$487	$855	18%	0%	35%	0%	88%	53%
CWO4	$534	$994	15%	0%	30%	0%	75%	45%
CWO5	$949	$1,242	12%	0%	24%	0%	60%	36%
O1	$387	$487	31%	0%	62%	0%	154%	92%
O2	$446	$618	24%	0%	49%	0%	121%	73%
O3	$517	$840	18%	0%	36%	0%	89%	54%
O4	$681	$1,157	13%	0%	26%	0%	65%	39%

a. Source: Jan. 2014 drill pay data are from http://www.dfas.mil/militarymembers/payentitlements/militarypaytables.html (downloaded Feb. 19, 2014).
b. Drill pay is rounded to the nearest dollar. Drill pay is determined by paygrade and years of service. The more years of service and/or the higher the paygrade, the more a Marine earns.
c. We abbreviate "reimbursement" as "reimb."

The examples in table 4 illustrate that, for some Marines, the percentage of drill pay going toward IDT travel expenses can be large. Furthermore, Marines in the lower paygrades—those who are paid the least—bear the greatest burden. Even higher ranking Marines, how-

ever, may dedicate large portions of their drill pay to IDT travel expenses. For example, for CWO5s and O4s earning the maximum drill pay and rating IDT travel reimbursement, if travel costs are $750, 36 and 39 percent of their drill pay goes toward travel expenses, respectively.

The Marine Corps is aware that there are Marines who are using their drill pay and/or paying out of pocket to affiliate with SMCR units despite IDT travel reimbursement and has taken steps to remedy this problem. It recently submitted a request to the Office of the Secretary of Defense to change the U.S.C. and the JFTR to raise the maximum reimbursement to $500 per round-trip [17]. Because of the 2012 and 2013 government fiscal environment, however, the request was rejected.

Pay and travel distance are two factors that may influence whether a Marine who is eligible for IDT travel reimbursement will submit his or her travel expenses. That is, we might expect Marines who experience the heaviest travel burdens to be the most likely to submit their expenses for reimbursement. For example, given the same travel costs, junior Marines may be more likely than senior Marines to submit their expenses because they earn less drill pay and, therefore, have to dedicate a larger percentage of their drill pay to travel expenses. In addition, Marines who travel longer distance to attend drill may be more likely to submit their expenses for reimbursement than Marines earning the same drill pay but traveling fewer miles because they have higher travel costs and need to dedicate a larger percentage of their income to cover them.

We investigate these theories by looking at how reimbursements are different for enlisted Marines, warrant officers, and commissioned officers. For each of these populations, we show in table 5 the number of reimbursed Marines, average distance traveled, number of reimbursements, and total reimbursements for Marines who were reimbursed in FY 2013.

Given IDT travel reimbursement program eligibility conditions, we expect to see commissioned officers represent a larger percentage (58 percent) of the Marines reimbursed than warrant officers (9 percent) or enlisted Marines (30 percent). This is because (a) warrant

officers make up a small percentage of SMCR Marines and (b) the bottom, and largest portion, of the commissioned officer pyramid is eligible for IDT travel reimbursement compared with the top, and smallest portion, of the enlisted paygrade pyramid.

Table 5. Number of Marines, average distance, number of reimbursements, and total reimbursements per Marine in FY13[a]

Outcome	Enlisted Marines	Warrant officers	Commissioned officers
Number of Marines	182	56	354
Distance (miles)	577	592	712
No. of reimbursements	5.3	5.9	4.9
Amount reimbursed	$1,164	$1,446	$1,163

a. Source: FY13 IDT travel claims merged with MCTFS end-of-month snapshots for FY13. We were unable to match IDT travel reimbursements to MCTFS data for 17 of the 609 Marines who were reimbursed in FY 2013.

The reimbursement and distance data indicate that commissioned officers who were reimbursed traveled farther than reimbursed enlisted Marines and warrant officers. However, despite this distance trend, which we expect to indicate higher utilization, we find that commissioned officers were reimbursed fewer times than enlisted Marines and warrant officers, and that commissioned officers had lower total reimbursements than warrant officers. Because we cannot specify for which drills Marines were reimbursed, we cannot infer that fewer reimbursements on average indicate that commissioned officers attend fewer regular IDT drills—only that they submitted fewer expense reports.

There are several possible explanations for the differences we observe in table 5, such as years of experience or family background. Our next step is to model the decision to participate in the IDT travel reimbursement program in order to identify factors that influence the decision to submit travel expenses for reimbursement.

Factors that influence the decision to participate

To determine which Marines are most likely to participate in the IDT travel reimbursement program, we need to compare Marines who were reimbursed with those who were eligible for reimbursement but did not submit travel expenses. For simplicity, we will refer to Marines who were reimbursed as participants and those who were not as nonparticipants.

Data

We know who participated in the IDT travel reimbursement program from the reimbursement data. To identify eligible nonparticipants, we use manning and unit billet data from MCTFS and the RESMAT to find SMCR Marines who satisfy the IDT travel reimbursement program eligibility conditions. Because the RESMAT has gathered personally identifiable information since May 2012, our analysis is limited to Marines who were in the SMCR between May 2012 and September 2013—the months for which we can merge the two datasets.

Along with a Marine's demographic and service characteristics, these data tell us which BIC a Marine filled, whether he or she was a PMOS-paygrade match for that BIC, and the location of his or her residence and unit. We use ArcGIS software to determine the latitude and longitude of each Marine's residence and unit, which we use to determine the number of miles between the Marine and his or her unit. This distance represents the shortest course between residences and units and, therefore, is less than or equal to the driving distance. As a result, we are underestimating traveling distance and are, therefore, likely underestimating the eligible population.

We define eligibility using the eligibility conditions stated in the IDT travel reimbursement program MARADMINs [10–14], except that we use our distance measure instead of travel distance.[14] Once we identify which SMCR Marines were eligible for IDT travel reimbursement each month, our next step is to determine whether the Marine was a

14. Because of limited resources, we are not able to obtain driving distances, such as those from DTOD, for all SMCR Marines in our dataset.

program participant. Since we cannot link IDT travel reimbursements directly to drills, we define participants as Marines who were reimbursed before or during the month of observation.

For our analysis, we use only the last month Marines were eligible for IDT travel reimbursement and track the number of months of eligibility observed between May 2012 and September 2013. Our sample includes 1,187 Marines. Table 6 shows our sample by rank and participation status.

Table 6. Eligible population and participation rate, by rank[a]

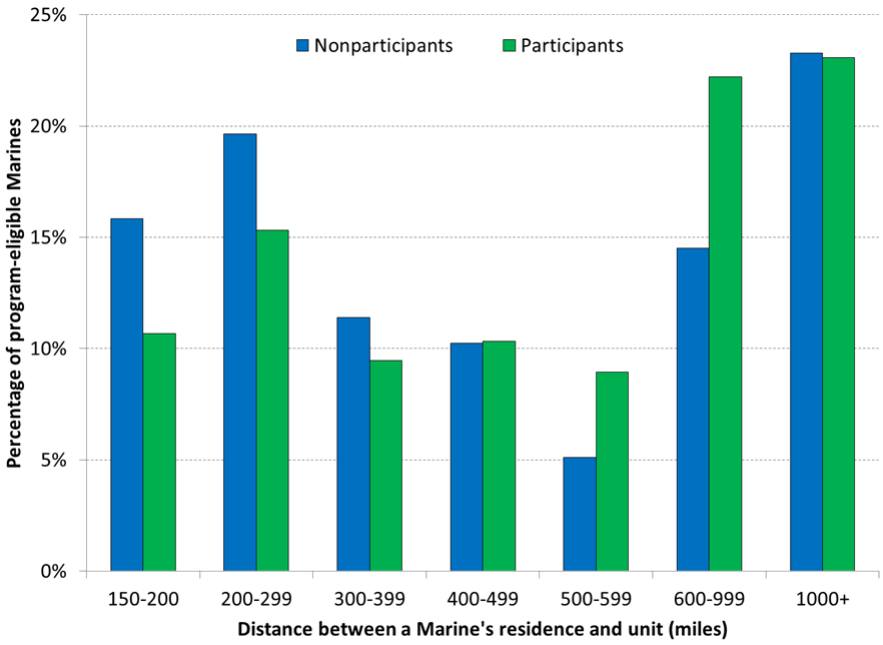
Rank	Nonparticipants	Participants	Total eligible Marines	Participation rate
Enlisted Marines	120	167	287	58%
Warrant officers	23	61	84	73%
Commissioned officers	463	353	816	43%
All ranks	606	581	1,187	49%

a. Source: MCTFS and RESMAT end-of-month snapshot files for May 2012–Sep. 2013 merged with IDT reimbursement data. Eligible Marines are identified based on BIC eligibility and our distance measure.

For these eligible Marines, we observe a 49-percent participation rate. Warrant officers have the highest participation rate (73 percent), followed by enlisted Marines (58 percent) and commissioned officers (43 percent). When we examine the distribution of participants and nonparticipants by distance traveled, we see that participants are more likely than nonparticipants to travel longer distances (see figure 4). Overall, 54 percent of participants and 43 percent of nonparticipants traveled 500 or more miles to attend IDT.

Of interest, we find that an equal percentage of participants and nonparticipants (23 percent) travel 1,000 miles or more to attend IDT drills. This is evidence that there are other Marine characteristics that may influence the decision to participate.

Figure 4. Distribution of program-eligible Marines by distance traveled and participation status[a]



a. Source: MCTFS and RESMAT end-of-month snapshot files for May 2012–Sep. 2013 merged with IDT reimbursement data. Eligible Marines are identified based on BIC eligibility and our distance measure.

Model

We have shown a correlation between participation and a Marine's seniority and distance to his or her unit, but other factors may also affect participation. Some Marines might be more likely than others to live in the suburbs where there are fewer SMCR units, requiring them to travel farther to attend IDT and thereby increasing participation. It also may be that a Marine's decision to participate depends on whether other Marines in his or her unit are participating.

These examples show that some of the factors that may affect the participation decision may be correlated. Therefore, we want to estimate a model that controls for these correlations. We model the decision to affiliate as a logistic function of the following observable Marine and unit characteristics:

- *Marine demographic characteristics:* gender, race/ethnicity, educational background, marital status, number of dependents, U.S. division of residence (e.g., New England or Pacific divisions[15]), and the distance between residence and SMCR unit
- *Marine service characteristics:* paygrade, occupation, number of satisfactory years, prior AC service, receipt of other monetary incentives (e.g., enlistment or reenlistment bonuses), and the number of months a Marine was eligible for the program
- *Unit characteristics:* number of E7–E9, warrant officer, and O1–O4 billets and the percentage of the Marine's unit peers who participated in the IDT travel reimbursement program[16]

Findings

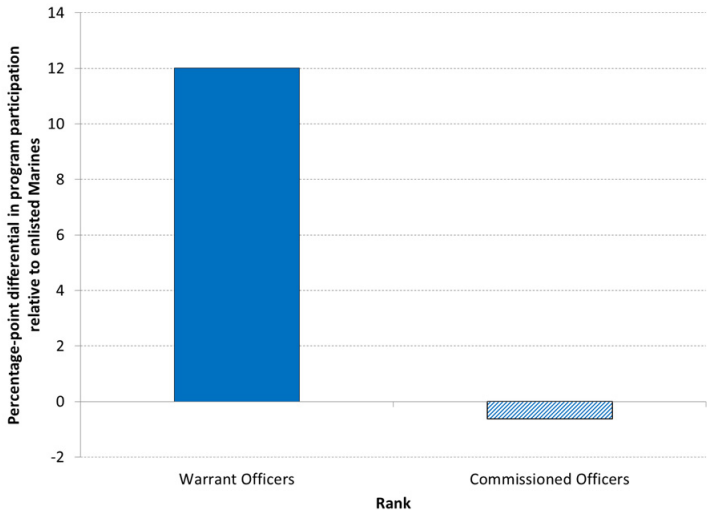
Our discussion focuses on the results of estimating our model for the entire sample of program-eligible Marines. We also estimated the model separately for enlisted Marines and commissioned officers and, when differences exist, we discuss how these results differ from our main findings.[17]

Our estimates indicate that warrant officers are 12 percentage points more likely to participate in the IDT travel reimbursement program than program-eligible enlisted Marines and commissioned officers (see figure 5). This accounts for the following:

- 80 percent of the raw difference in participation rates between enlisted Marines and warrant officers (15 percentage points (73 percent minus 58 percent))
- 40 percent of the difference between commissioned officer and warrant officer participation rates (30 percentage points (73 percent minus 43 percent))

15. See appendix B for definition of census regions and divisions.
16. Appendix C provides summary statistics.
17. Appendix D provides the results of estimating these three models. We do not estimate the model for warrant officers because of the small sample size.

Figure 5. Estimated effect of being a warrant or commissioned officer on IDT travel reimbursement program participation (relative to enlisted Marines)[a]

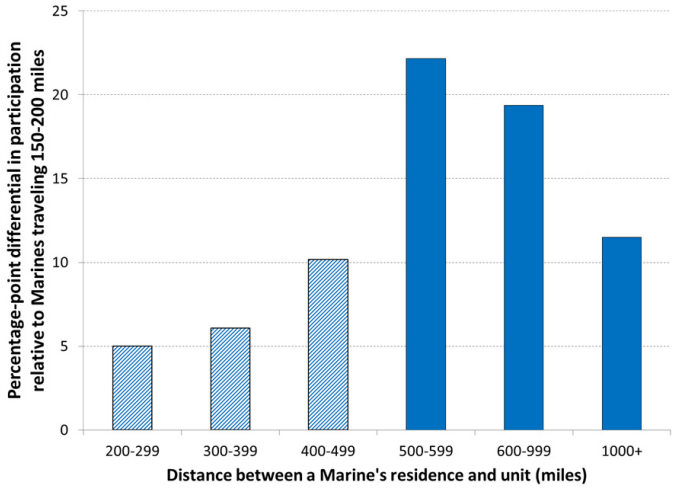


a. Source: MCTFS and RESMAT end-of-month snapshot files for May 2012–Sep. 2013 merged with IDT reimbursement data. Solid bars indicate that the program participation rate of warrant or commissioned officers is statistically different (at the 5-percent significance level) from the participation rate of enlisted Marines.

We also find that participation is positively correlated with distance (see figure 6). Our empirical model indicates that those who live 500 miles or more from their units are 11 to 22 percentage points more likely to participate than those who travel 150 to 199 miles. It is likely faster and/or cheaper to travel by commercial modes of transportation when traveling longer distances. If true, this would suggest that our estimates imply that Marines who travel by commercial modes of transportation are more likely to submit their expenses for reimbursement than those who drive.

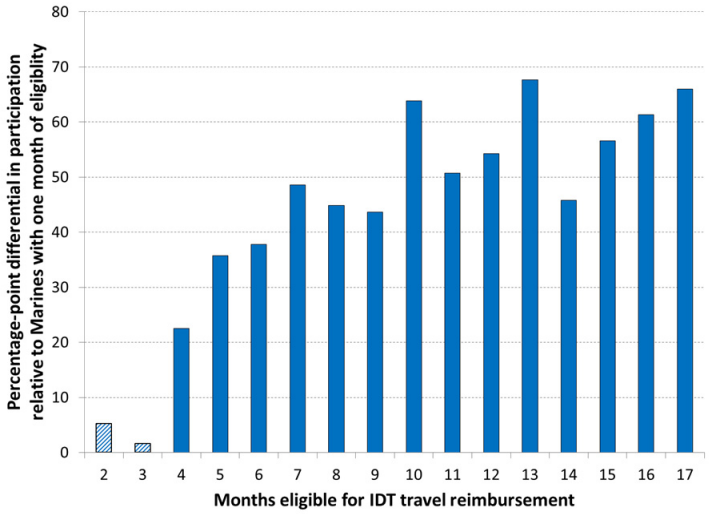
Also included in our model are controls for the number of months a Marine was eligible for IDT travel reimbursement. We expect that participation increases with months of eligibility; that is, the more months a Marine is eligible, the more time he or she has to learn about the program and complete the reimbursement process. Our estimates indicate that participation is significantly higher for Marines with four or more months of eligibility than for Marines with only one month of eligibility (figure 7).

Figure 6. Estimated effect of distance on IDT travel reimbursement program participation (relative to traveling 150 to 199 miles)[a]



a. Source: MCTFS and RESMAT end-of-month snapshot files for May 2012–Sep. 2013 merged with IDT reimbursement data. Solid bars indicate that the program participation rate of Marines in a particular distance category is statistically different (at the 5-percent significance level) from that of Marines traveling 150–199 miles.

Figure 7. Estimated effect of months of eligibility on IDT travel reimbursement program participation (relative to 1 month of eligibility)[a]



a. Source: MCTFS and RESMAT end-of-month snapshot files for May 2012–Sep. 2013 merged with IDT reimbursement data. Solid bars indicate that the program participation rate of Marines with a specified number of months of eligibility is statistically different (at the 5-percent significance level) from that of Marines with one month of eligibility.

We also find that participation rates significantly increase between four and seven months of eligibility. This finding suggests that it takes about four to seven months for Marines to become aware of their program eligibility and/or complete the reimbursement process.

Knowing someone who participates in the IDT travel reimbursement program increases the odds of an eligible Marine participating himself or herself. Our model suggests that, for commissioned officers, a 10-percent increase in the participation rate among other program-eligible Marines at their units statistically increases officer participation by 0.5 percentage point. This makes sense if we believe that Marines at the same unit inform each other of Marine Corps programs, such as IDT travel reimbursement. Because peer participation is measured at the unit level, this metric also may represent unit-level effects on program participation. For example, some units may have high participation levels because their leadership encourages participation by making program information more accessible.

We do not, however, find similar peer effects for enlisted Marines. One reason why peers may not have a large influence on IDT travel reimbursement participation is that they are generally more senior than other SMCR members in their unit. Junior Marines, such as company-grade officers, may be more influenced by their peers than more senior Marines, such as SNCOs. In addition, it is possible that, if the senior enlisted Marines are not participating in the program, those falling under their leadership will not participate either.

Several other factors appear to influence only enlisted Marines or commissioned officers. For example, our estimates indicate that participation is positively influenced by the number of satisfactory years of service a commissioned officer has accumulated. Coupled with the relationship between participation and months of eligibility, this positive relationship suggests that it takes time for Marines to become familiar with the program and the reimbursement process. It may be that more senior Marines are more familiar with DTS than junior Marines and are, therefore, more likely to submit their travel expenses. This also may explain why we observed fewer reimbursements for commissioned officers compared with enlisted Marines.

Our estimates also indicate that program-eligible commissioned officers in aviation occfields are 22.5 percentage points more likely to participate than those in other occupations. This is probably driven by the aviator population, as aviators attend additional drills in order to keep their flying qualifications current.

Theoretically, Marines are more likely to participate in the IDT travel reimbursement program if they put a high value on the time and monetary costs associated with traveling to and from IDT. This may explain why our estimates indicate that married commissioned officers are 16 percentage points more likely to participate than their single counterparts and that enlisted Marines with more dependents are more likely to participate than those with fewer dependents. These Marines may put a higher value on the cost of traveling to IDT because it leaves less time with their spouses and children.

There also are geographic trends in IDT travel reimbursement program participation. Our estimates suggest that commissioned officers who live in the South Atlantic and Mountain divisions are more likely to participate than officers in other areas of the country. For enlisted Marines, the geographic trends indicate that participation is statistically lower for those who live in the Middle Atlantic, East North Central, or Mountain divisions.

Geographic differences in program participation may reflect differential wage trends. For example, workers in the South usually earn less than those in other parts of the country [18]. Geographic difference also could reflect differences in the supply of and demand for SMCR Marines. For example, in places where there are multiple units at the same location, the recruitable population may not be large enough to meet demand, forcing units to recruit from outside their local areas. In addition, if units are more spread out in certain areas, such as in the Mountain division, Marines in these areas may have to travel farther than in areas where units are closer together, increasing travel costs and participation.

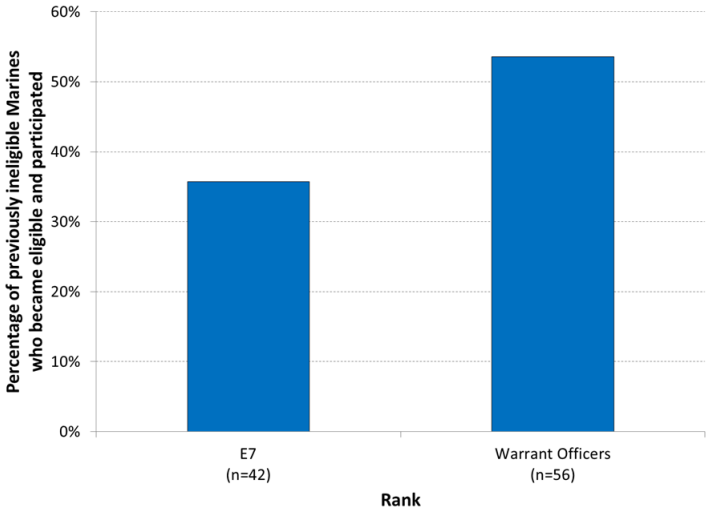
Program take rates

As previously discussed, the IDT travel program has been expanded to more populations (e.g., warrant officers in 2012 and gunnery ser-

geants in 2013). If the Marine Corps wants to consider expanding the program to additional populations, it will want to know how previous populations responded when they went from being ineligible to eligible for the program. For example, the Marine Corps will want to know what percentage of E7s who were BIC PMOS-paygrade matches, lived 150 miles or more from their units, and initially were not eligible for IDT travel reimbursement chose to participate when they became eligible for the program in 2013.

Figure 8 shows the program take rates for E7s and warrant officers who lived 150 or more miles from their IDT units and were BIC matches before and after the Marine Corps changed IDT travel reimbursement eligibility. Because of small sample size, our analysis is restricted to summary statistics.

Figure 8. IDT travel reimbursement take rates, by rank[a]



a. Source: MCTFS and RESMAT end-of-month snapshot files for May 2012–Sep. 2013 merged with IDT reimbursement data. Analysis was restricted to Marines who were in the SMCR and traveled 150 or more miles to IDT before their billets were eligible and were still in the SMCR after their billets were extended eligibility.

We find that 36 percent of E7s who became eligible participated in the IDT travel program as E7s. Similar analysis shows that 54 percent of warrant officers participated in the program after their billets were eligible. These statistics suggest that at least one-third of otherwise eli-

gible SMCR Marines decided to participate once their billets were program eligible. The Marine Corps could use this statistic to estimate how many SMCR Marines may participate in the IDT travel reimbursement program if it were to expand eligibility to other SMCR populations.

Program effectiveness

Having analyzed which Marines participate in the IDT travel reimbursement program, we now analyze the program's effectiveness. Recall that the IDT travel reimbursement program is supposed to fill SMCR billets with qualified Marines and to promote SMCR participation. Therefore, we estimate the effect of IDT travel reimbursement on (1) the fill rate of open billets with Marines who are PMOS-paygrade matches and (2) drill attendance.

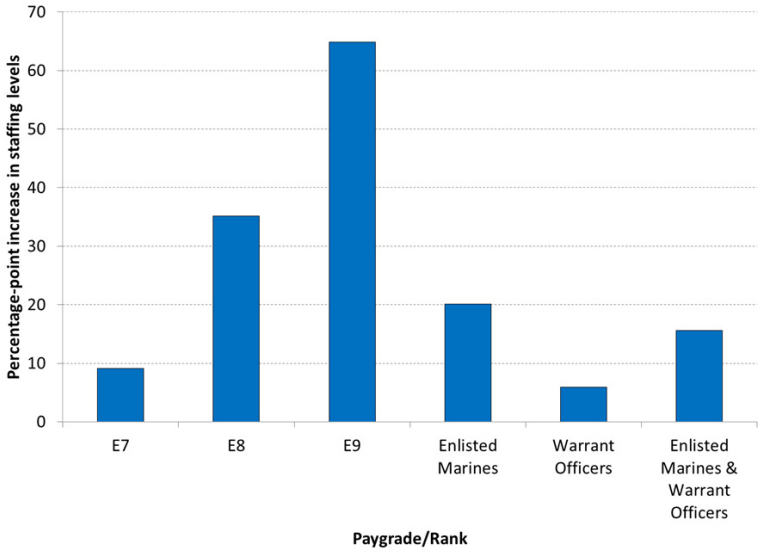
Because we focus on the period of May 2012 to September 2013, we can analyze only the effect of extending IDT travel reimbursement to Marines filling gunnery sergeant, master sergeant, master gunnery sergeant, and warrant officer billets. After controlling for time trends, we find that, when eligible for IDT travel reimbursement, manpower levels increase by 20 percentage points for enlisted billets and by 6 percentage points for warrant officer billets (see figure 9).[18]

Among enlisted billets, the effect of the IDT travel reimbursement program on manpower levels was the lowest for E7 billets (9 percentage points) and increased with rank (35 percentage points for E8 and 65 percentage points for E9). Our estimates suggest that the IDT travel reimbursement improves overall SMCR manpower levels.

Ideally, by easing the financial burden of traveling to and from IDT, the IDT travel reimbursement program will have increased the number of drills that its SMCR Marines attend. To get a sense of the number of drills attended, we show in figure 10 the average number of IDT drills attended by Marines who were in the SMCR in FY 2013.

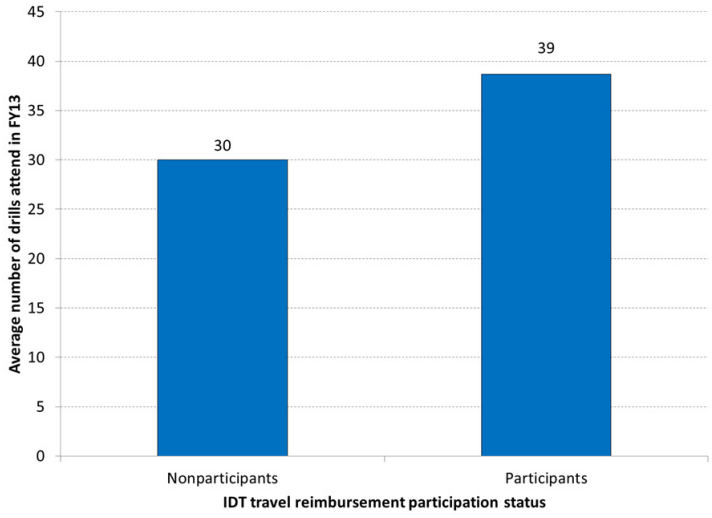
18. Specifically, the monthly fixed effects capture factors that affect SMCR affiliation but are changing at the national and SMCR-wide levels, such as changes in the national unemployment rate, the Marine Corps' recruiting missions, and adherence to the billet assignment policy.

Figure 9. Effect of IDT travel reimbursement on SMCR manpower, by paygrade and rank[a]



a. Source: RESMAT end-of-month snapshot files for Apr. 2011–Sep. 2013.

Figure 10. Average IDT drills attended in FY13, by participation status[a]



a. Source: MCTFS and RESMAT end-of-month snapshot files for FY13 merged with IDT travel reimbursements data and drill attendance records. The population includes Marines in the SMCR and eligible for IDT travel reimbursement all 12 months of FY13.

On average, compared with nonparticipants, participants attended about 9 more IDT drills (the equivalent of 2.25 drill weekends) than nonparticipants; participants attend 1.3 drills for every drill attended by a nonparticipant. To learn how much of this difference can be explained by IDT travel reimbursement participation, we modeled drill attendance as a function of program participation, the same demographic and service characteristics from our participation model, and time and unit fixed effects because there might be correlation between unobservable unit characteristics (e.g., unit leadership quality) and drill attendance.[19] When we estimate this model, we find that, for every drill attended by nonparticipants, participants attend 1.24 drills on average. Therefore, program participation accounts for 96 percent of the raw difference in IDT drill attendance, while other factors explain only 4 percent.

One shortcoming of our analysis is that we are not able to determine how many Marines who were reimbursed for IDT travel were eligible to fill an open BIC at a unit closer to home. This could be a concern if the Marine Corps wants to limit IDT travel reimbursement expenditures and/or prevent more Marines than it needs from traveling 150 miles or more to attend IDT.[20] As this program continues to grow, the Marine Corps may want to consider screening for this possibility. This could prevent unnecessary IDT travel reimbursement program costs as a result of more SMCR Marines than necessary traveling 150 or more miles to attend IDT. However, if the Marine Corps considers a policy in which it transfers program-eligible SMCR Marines to units closer to their homes, it will need to think about how this could affect unit readiness. Transferring SMCR Marines, particularly those in leadership positions, from one unit to another might have a negative effect on unit readiness since it takes time for Marines to adjust to new units.

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19. We used Poisson regression techniques because drill attendance is a count variable. We found similar results when we used a negative binomial regression model.

20. This assumes that the Marine Corps' manpower management policy of recruiting within a 100-mile radius of units is more efficient and effective than recruiting from outside the 100-mile radius.

Summary

The data reveal that the IDT travel reimbursement program served 609 Marines and executed around $714,000 of the allotted $1.6 million in FY 2013. For the most part, the data suggest little abuse of the program because most reimbursements were for $300 or less. In addition, we find that those who do participate in the program usually do not meet the maximum allowance in terms of either the amount per reimbursement or the number of reimbursements.

Overall, we find that only half of Marines eligible for IDT travel reimbursement received reimbursement checks. We also find that participation increases the farther a Marine travels to attend IDT drills.

Since the program began, the Marine Corps has expanded eligibility from first sergeants, sergeants major, company-grade officers, and majors to gunnery sergeants, master sergeants, master gunnery sergeants, and all warrant officers. When the program was expanded to gunnery sergeants, we found that roughly one-third of those who became eligible for the program participated and that gunnery sergeant manpower levels increased by about 10 percentage points.

Our investigations into the effect of the IDT travel reimbursement program on SMCR manpower and drill attendance indicate that the program is performing as desired; it helps the Marine Corps to staff SMCR units and encourage SMCR Marines to attend IDT drills, promoting unit readiness. Given these findings, in the next section, we explore how the Marine Corps might expand the IDT travel reimbursement to address other prevailing manning issues.

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Expanding IDT travel reimbursement

Evidence confirms that the IDT travel reimbursement program is an effective and flexible way to fill SMCR billets and encourage IDT participation. To date, the program addresses the difficulties that the Marine Corps has had in filling SNCO and junior officer billets; however, as times change and the Marine Corps continues to introduce new programs, such as the Reserve Officer Commissioning Program (ROCP) and the Direct Affiliation Program, new manning issues will continue to arise.[21]

The IDT travel reimbursement program is both a flexible and effective manpower tool because the Marine Corps has discretion in classifying critical billets, allowing it to target any prevailing manpower issues. The program also alleviates some of the burden imposed on traveling Marines by decreasing their out-of-pocket expenses, which in turn increases IDT drill participation. In this section, we discuss ways in which the Marine Corps might expand the IDT travel reimbursement program so that both the Corps and individual Marines can realize the program's full benefits. We then estimate the costs of these expansion scenarios.

Increasing IDT travel participation

As noted earlier, the IDT travel program has been executing below expectation—the Marine Corps executed approximately $714,000 of its $1.6 million goal for FY 2013. In addition, our analysis indicates that a number of Marines who travel long distances are not participating. If the Marine Corps is concerned that there are Marines paying to affiliate with SMCR units, it may want to consider ways to improve

21. ROCP is a program by which the Marine Corps assesses NPS recruits for the SMCR. The Direct Affiliation Program enables AC Marines to affiliate with an SMCR unit before transitioning from the AC.

participation rates among those who are already eligible for IDT travel reimbursement. Also, since we find that IDT travel reimbursement participation increases drill attendance, this should incentivize unit leaders to encourage program participation. This would require the Marine Corps to find ways to educate SMCR Marines about the IDT travel reimbursement program. Getting the information to Marines is the first step in increasing participation. If unit leaders and inspectors and instructors (I&Is) are well informed about the benefits of the program, they might be more inclined to encourage their Marines to participate. Also, the Marine Corps can leverage career planners and recruiters as advocates for the program.[22]

We can use current participation rates and manning data to estimate the cost of increased IDT travel reimbursement program participation. We find that the participation rates for eligible commissioned officers and enlisted Marines were 43 percent and 58 percent, respectively, compared with 73 percent for eligible warrant officers. If the Marine Corps wants to increase commissioned officer and enlisted participation by 10 percent to more closely mirror the warrant officer participation rate, this would amount to increasing participation by 54 commissioned officers and 19 enlisted Marines (using September 2013 manpower levels). We estimate the cost of increasing commissioned officer and enlisted participation rates by 10 percent at $170,266 and $47,639 respectively, which increases total costs by roughly $217,905 (31 percent).[23] Adding this amount to the actual

22. When we spoke with MCRC, we learned that recruiters are not going to talk about IDT travel reimbursement unless they can guarantee that the Marine will be eligible for the program. Since units do BIC assignments, recruiters will only be an effective advertising tool if they know that the recruit will be assigned the BIC that he or she was recruited to fill.

23. These cost predictions were generated using the current relationship between distance traveled and reimbursement amount. Then, we randomly drew the appropriate number of Marines to increase the September participation rates by 10 percent and estimated the cost of reimbursing these Marines for travel given their current distances from their drilling units and the current distance-reimbursement relationship. We repeated this process 1,000 times to minimize the effects of outliers. We averaged the 1,000 cost outputs to produce the final costs.

amount reimbursed in 2013—$714,000—still would not exhaust the FY 2015 planned budget of $1 million. Therefore, we consider other ways to expand the program that would address manpower shortfalls across SMCR units and would help execute the budgeted $1 million.

Expansion scenarios that target hard-to-fill billets

In this subsection, we consider expansion scenarios for IDT travel reimbursement that target filling hard-to-fill billets since this is the main purpose of the program. Then, we estimate the costs associated with the proposed expansions. We define a hard-to-fill billet as one that has been vacant for 24 or more months.[24]

Identifying expansion scenarios

Using RESMAT data from September 2013, we identified 883 hard-to-fill billets.[25] The first scenario we propose is to expand the program to these specific billets. The advantage of this scenario is that the Marine Corps does not need to open the program up to whole groups of Marines; however, the list of hard-to-fill billets will change over time, so the Marine Corps will need to monitor and track billet vacancies and adjust the program MARADMINs accordingly each year.

To design the subsequent expansion scenarios, we want to determine which billet characteristics are associated with billets being hard to fill. To do so, we estimate the relationship between a billet's vacancy duration and its characteristics (paygrade, major subordinate command (MSC), occupational field (occfield), and geographic region). Table 7 summarizes the characteristics that were positively and significantly related to a billet's vacancy duration.

24. This is the definition in the IDT travel reimbursement program MARADMINs [11–14].

25. We track vacancy duration for September 2013 billets using the RESMAT end-of-month snapshot files from April 2011 through September 2013.

Table 7. Characteristics of hard-to-fill billets[a]

Billet characteristic	Commissioned officer billets	Enlisted billets
Paygrade	None	E5, E6, E7, E8, E9
MSC	4th Marine Division	4th Marine Division 4th Marine Air Wing
Occfield	65XX	13XX, 18XX, 73XX
Region	East North Central New England West North Central	Middle Atlantic Mountain

a. Source: Results based on data from the Apr. 2011–Sep. 2013 RESMAT end-of-month snapshot files. For robustness, we estimate three models of the relationship of the billet characteristics and billet vacancy duration. The results included in the table are the consistent findings between the three models.

We find that paygrade is not a significant determinant of vacancy for commissioned officer billets, but it is for enlisted billets. Billets in paygrades E5 through E9 are more likely to be vacant than more junior SMCR enlisted billets. These paygrades could be harder to fill because many of these Marines are no longer obligors. The IDT travel reimbursement program already addresses E7s through E9s, so the Marine Corps might consider expanding the IDT travel reimbursement program to the E5 and E6 paygrades.

The billet's MSC and occfield also influence the length of time it remains vacant. We find that 4th Marine Division billets are more likely to be hard to fill than Force Headquarters Group and 4th Marine Logistics Group commissioned officer and enlisted billets. In addition, Marine Air Wing enlisted billets are more likely to be hard to fill than Force Headquarters Group and 4th Marine Logistics Group enlisted billets. Specific occfields associated with long vacancy duration include the 65XX (aviation ordnance) occfield for commissioned officer billets and the 13XX (engineer, construction, facilities, and equipment), 18XX (tank and assault amphibious vehicle), and 73XX (enlisted flight crew) occfields for enlisted billets. To address these occupational trends in vacancy durations, we suggest extending the program to all paygrades in hard-to-fill occfields. Our cost estimates focus on the hard-to-fill occfields identified above, but, if the Marine Corps takes this approach, we recommend that it continuously monitor and track hard-to-fill occfields so that the IDT travel

reimbursement program can be targeted to those that are facing manpower shortfalls at the time.

The final expansion scenario relates to our finding that vacancy duration depends on geography. We find that commissioned officer billets are more likely to be vacant if they are in the East North Central, New England, or West North Central census divisions. Enlisted billets are more likely to be vacant in the Middle Atlantic and Mountain census divisions. One strategy to increase manpower levels in locations where billets are hard to fill would be to expand the maximum reimbursement amount to encourage Marines to travel farther to fill these billets. Since the $300 maximum reimbursement is stipulated by law, the Marine Corps would need congressional approval to reimburse Marines for more than $300.

To summarize, we have identified five potential expansion scenarios based on our analysis of billet vacancy trends:

1. Extend eligibility to billets that have been vacant for 24 or more months.
2. Increase paygrade eligibility to E6s.
3. Increase paygrade eligibility to E5s.
4. Increase eligibility to include all billets in occfields 65XX, 13XX, 18XX, and 73XX.
5. Increase the maximum reimbursement rate to $500.[26]

Cost of expanding IDT travel reimbursement

Having identified potential expansion scenarios, our next step is to estimate how much these expansions would cost the Marine Corps in IDT travel reimbursements. We base our cost estimates on September 2013 manpower levels and SMCR billet structure, which we observe in the September 2013 RESMAT snapshot file.

26. The $500 amount is a maximum value that RA was already considering as an expansion scenario. We use this value to provide the predicted costs of that potential expansion.

Methodology

For each proposed expansion scenario, we first estimate maximum costs associated with 100-percent staffing (i.e., filling all vacant billets) and 100-percent participation using the following sequence of steps.

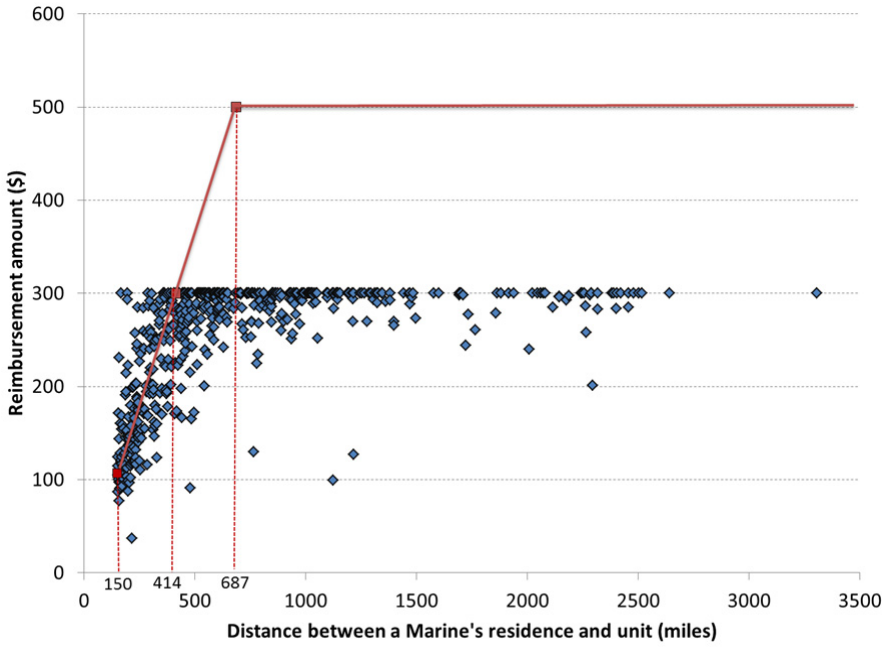
In the first step, we assess the cost of reimbursing the Marines currently filling newly eligible billets. To do this, we estimate the relationship between travel distance and reimbursement amount for all of the 2013 participants (see figure 11). We estimate that, on average, for each additional mile a Marine lives from his or her drilling unit, he or she requires a $0.73 round-trip reimbursement (represented by the red line in figure 11).[27] Then, we use the distance between newly eligible Marines' residences and units and the estimated reimbursement rate to obtain *estimates* of their reimbursement values (this step is not shown in the figure). We obtain estimated one-year total costs by multiplying Marines' estimated reimbursement by the maximum number of drills they are allotted (22 for aviators and 11 for other Marines).[28]

27. We assume that Marines living 400 miles or more away will most likely be flying to drill. We consulted flight price data from the Bureau of Transportation Statistics' Origin and Destination Survey to test whether the slope of the line should be different after this 400-mile mark. Using round-trip cost data, we found that the average flight price per mile for the third quarter of 2013 was $0.24. This is the same per-mile reimbursement rate as for driving Marines. Therefore, we have no evidence that the slope of our estimated line should be different after the 400-mile mark.

    The estimated reimbursement of $0.73 per mile is larger than the $0.24 per-mile reimbursement rate stipulated in the JFTR. Our estimated reimbursement rate is larger than the actual reimbursement rate because our distance measure represents the shortest distance between a Marine's residence and his or her unit, which is less than or equal to actual traveling distance.

28. The data do not allow us to analyze or estimate the number of round-trips a Marine will be reimbursed.

Figure 11. Relationship between distance traveled and reimbursement values[a]



a. Source: MCTFS and RESMAT end-of-snapshot files for FY13 merged with IDT travel reimbursement data for FY13. The red line is a line of best fit for observations with distance less than 400 miles; we assume that most Marines who travel more than 400 miles are flying. Analysis of flight price data from the Bureau of Transportation Statistics' Origin and Destination Survey indicates that the average cost per mile flown is $0.24, the same rate at which Marines are reimbursed when using a POC.

Second, we estimate the cost of filling all newly eligible vacant billets with a Marine receiving the maximum reimbursement amount. The total expansion cost, then, is the sum of the cost of filling vacant billets and the cost of reimbursing newly eligible SMCR Marines. More specifically, this will be the absolute maximum expansion cost because it assumes 100-percent staffing and participation.

The assumption of full manning and participation, however, is not a realistic one given that (a) not all Marines who are eligible for IDT travel reimbursement are reimbursed, (b) those who are reimbursed are not always reimbursed for the maximum number of round-trips, (c) not all open billets are filled, and (d) even if the open billet is filled, it may not be filled by a Marine who rates the maximum reimbursement. Therefore, to predict costs that may more closely mirror

reality, we use our current knowledge of the IDT travel reimbursement program to alter the initial assumptions on program participation rates and filling of vacant billets.

For example, we know that when the program was introduced to E7 Marines in 2013, roughly one-third of Marines who served in previously unqualified E7 billets, but met all other program eligibility conditions, chose to participate in the program when they became eligible. In addition, of the open E7 billets that were newly qualified for IDT travel reimbursement, around 10 percent were filled. We use these statistics (33-percent participation of newly-eligible Marines and 10-percent vacancy fill rate) to calculate alternative cost estimates that might more closely predict the reality of program expansion. We still assume that those participating in the program will be reimbursed for the maximum allotted number of round-trips (22 for aviators and 11 for those serving in other occfields). We also assume that Marines filling the newly eligible billets will receive the maximum reimbursement amount because we have no way to predict these Marines' distances from their drilling units. Therefore, these alternative cost estimates are still larger than actual expansion costs.

To summarize, we estimated the expansion cost of each of the five expansion scenarios using the following three sets of assumptions to provide a range of potential costs incurred by the Marine Corps:

1. *100% continuation/100% participation/100% fill rate:* 100 percent of participants will continue to participate at their current reimbursement levels, 100 percent of newly eligible Marines who are currently serving will participate, and, if applicable, 100 percent of newly eligible billets will be filled by Marines who participate and receive the maximum reimbursement.
2. *100% continuation/100% participation/10% fill rate:* 100 percent of participants will continue to participate at their current reimbursement levels, 100 percent of newly eligible Marines who are currently serving will participate, and, if applicable, only 10 percent of newly eligible billets will be filled.
3. *100% continuation/33% participation/10% fill rate:* If applicable, 100 percent of participants will continue to participate at

their current reimbursement levels, 33 percent of newly eligible Marines who are currently serving will participate, and 10 percent of newly eligible billets will be filled by Marines who participate and receive the maximum reimbursement.

Under each set of assumptions, we estimate the one-year total cost of each program expansion. This is the additional cost the Marine Corps will incur under the expansion scenario. In addition, we calculate the average cost per billet filled under each scenario (total cost divided by the number of newly filled billets). Therefore, we will present up to three total cost estimates and three average cost estimates for each expansion scenario.[29] Table 8 summarizes these cost estimates.

Table 8. Expansion scenario cost estimates[a]

	Costs by expansion scenario				
Assumptions[b]	All hard-to-fill billets	E6	E5	Occfield	$500 maximum
Set 1:					
Total cost	$3,092,100	$2,525,925	$5,709,187	$4,533,139	$8,749,617
Average cost	$3,502	$3,868	$3,987	$3,855	$5,879
Set 2:					
Total cost	$309,210	$586,515	$1,456,147	$1,040,419	$1,056,317
Average cost	$3,502	$8,982	$10,169	$8,847	$7,099
Set 3:					
Total cost	N/A[c]	$339,153	$800,389	$605,505	N/A
Average cost		$5,194	$5,589	$5,149	

a. Source: RESMAT end-of-month snapshot file for Sep. 2013.
b. Assumption set 1: 100% continuation/100% participation/100% fill rate.
Assumption set 2: 100% continuation/100% participation/ 10% fill rate.
Assumption set 3: 100% continuation/33% participation/10% fill rate.
c. N/A stands for not applicable.

29. Assumption set 3 (100% continuation/33% participation/10% fill rate) does not apply to the "all hard-to-fill billets" and the "$500 maximum" expansion scenarios because there are either no Marines currently serving in the expanded billets (for the all-hard-to-fill case) or it is not logical to assume that 33 percent of the current nonparticipants will participate under the new expansion (in the $500 maximum case).

Cost of expansion to all hard-to-fill billets

Recall that this scenario expands IDT travel reimbursement to Marines filling billets that have been vacant 24 or more months, are PMOS-paygrade matches for their billets, and live 150 or more miles away from their unit. This scenario minimizes the average cost of expanding the travel reimbursement program because the Marine Corps does not have to begin reimbursing Marines who are already serving in SMCR units. In September 2013, there were 883 billets that we identified as hard to fill. If 100 percent of those billets were filled by Marines receiving the maximum IDT reimbursement, the total one-year cost to the Marine Corps would be $3,092,100. This accounts for reimbursing the 54 Marines filling aviation billets for 22 drills and the Marines filling the other 829 billets for 11 drills. The average yearly cost for this expansion per hard-to-fill billet would be $3,502. However, if only 10 percent of the hard-to-fill billets were manned, the cost to the Marine Corps of this expansion would drop to $309,210, but the average cost per additional filled billet would remain at $3,502.

Cost of expanding eligibility to E6s and/or E5s

Next, we estimate the cost of expanding the program to E6 and E5 billets because these are the paygrades that are the hardest to fill and are not currently eligible for IDT travel reimbursement. As shown in table 8, the total cost to expand the program to E6s, assuming 100-percent participation of currently serving Marines who are now eligible and 100-percent staffing of the 653 open E6 billets, would be $2,525,925, and the average annual cost per billet filled would be $3,868. When we relax the staffing assumption to assume that only 10 percent of the 653 open E6 billets are filled, the total estimated cost declines to $586,515 and the average cost increases to $8,982. When we relax the assumptions further to assume only a 33-percent participation rate for newly eligible E6s and a 10-percent fill rate for open E6 billets, the total cost reduces further to $339,153 and the average cost for filling one billet is estimated at $5,194.

Table 8 also indicates that the estimated cost is greater for expanding the program to E5s, simply because there are more E5 billets. Assuming 100-percent participation of newly eligible Marines and 100-per-

cent manning of the 1,432 vacant E5 billets, the total estimated cost is $5,709,187, with an average cost per filled billet of $3,987. When assuming only a 10-percent fill rate of open E5 billets, the total cost falls to $1,456,147 and the average cost per filled billet increases to $10,169. When we assume that only 33 percent of Marines who are currently serving will actually participate in the program, the total cost falls to $800,389, with an average cost of $5,589.

Cost of expanding eligibility to Marines serving in 65XX, 13XX, 18XX, and 73XX occfields

Table 8 indicates that the annual cost of offering IDT travel reimbursement eligibility to SMCR Marines in these hard-to-fill occfields would be $4,533,139—assuming 100-percent participation among newly eligible Marines and 100-percent manning of the 1,176 vacant billets that are not already eligible in these occfields—at an average cost per billet filled of $3,855. When we instead assume a 10-percent fill rate of the 1,176 currently unfilled billets, the total cost of the expansion falls to $1,040,419, but the average cost per billet rises to $8,847. Assuming only a 33-percent take rate and a 10-percent fill rate, total costs fall to $605,505, with an average cost per billet filled of $5,149, making this one of the most expensive in terms of average cost per filled billet.

Expansion to increase reimbursement amount to $500

The final expansion scenario we consider is increasing the maximum travel reimbursement amount from $300 to $500. Sixty-four percent of Marines who were reimbursed for IDT travel expenses in FY 2013 were reimbursed for $300 at least once, and many of them traveled great distances, potentially incurring significant pay cuts or paying out of pocket to travel to their drilling units. By increasing the maximum reimbursement amount to $500, the Marine Corps will be decreasing the out-of-pocket expenses for high-travel-cost Marines. This also may encourage those who are hesitant to affiliate with the SMCR because of high travel costs to join; they would be able to recover more of their expenses than they could have previously. This potential policy expansion also addresses many of the regional manpower issues where there are low-density areas of available billets.

As we observe in table 8, the total estimated cost for this expansion is $8,749,617, assuming that 100 percent of the 66 vacant aviator billets and 1,422 of the vacant nonaviator billets are filled by Marines receiving the maximum $500 reimbursement and that 100 percent of those who are currently receiving the maximum $300 reimbursement continue to participate. For these participating Marines, we estimate their new reimbursement amount given their distance from their drilling unit and the estimated $0.73 per mile reimbursement rate. Based on this estimated reimbursement rate and as shown in figure 11, those traveling between 417 and 693 miles are estimated to be reimbursed between $300 and $500, while those traveling more than 693 miles will receive the new maximum reimbursement amount of $500. The average cost for filling one billet under this scenario would be $5,879. This is a lower bound on the average cost to fill a billet because of the 100-percent staffing assumption, which spreads the total cost over more billets. When we relax this assumption to 10 percent, the total cost of this expansion declines to $1,056,317 and the average cost per filled billet increases to $7,099. We do not apply the 33-percent take-rate assumption to this scenario because we do not have a clear estimate of how many currently eligible but nonparticipating Marines will be induced to submit their expenses if the maximum is increased.

Summary

From an average-cost perspective, the expansion scenario that minimizes IDT travel reimbursement costs is the expansion to all hard-to-fill billets at $3,502. No Marines who are currently serving will need to be reimbursed for travel under this expansion option. While the range of cost estimates for each expansion scenario varies dramatically, each option addresses a different manpower issue in the SMCR. Although, from an average-cost perspective, the expansion of the program to E5 billets may be one of the most expensive scenarios at an average of $5,589 per filled billet, it might address the manpower issues that the Marine Corps views as most important and, thus, might be the right expansion scenario to choose.

Considering the total cost of the potential expansions is also important because, while the average costs to expand the program to E5s

and E6s is not considerably different, the number of E5 billets is much larger than the number of E6 billets. The Marine Corps might be able to afford the estimated $339,153 tab for the E6 expansion, but it might not be able to increase its total reimbursement costs by $800,389 for the E5 expansion. The appropriate expansion scenario is highly dependent on the needs of the Marine Corps and its budget constraints.

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A cost-benefit analysis of IDT travel reimbursement program relative to other manpower tools

We have shown that the IDT travel reimbursement program is effective at filling vacant billets and increasing drill attendance. We also have provided cost estimates of potential expansion scenarios for the program. The next step is to determine how IDT travel reimbursement aligns with other Marine Corps manpower tools to determine if and when the program is the most appropriate and effective. That is, are there aspects of the IDT travel reimbursement program that make it more attractive than other programs, such as affiliation bonuses, retraining Marines into different MOSs, or increasing NPS officer recruiting through ROCP? Also, are there ways that the IDT travel reimbursement program can work in tandem with other manpower tools that increase overall manpower efficiency?

To compare the IDT reimbursement program with these other manpower tools, we must consider not only the features of each tool, but the specific issues that each program addresses. Table 9 summarizes each manpower tool's ability to address specific issues—namely, regional, paygrade, and occupational manpower shortages—as well as the issue of Marines incurring out-of-pocket expenses to affiliate.

Throughout this study, we have shown that the IDT travel reimbursement program offers flexible options when addressing billet vacancy issues. Specifically, the Marine Corps can choose the program qualification criteria and design those criteria to address prevailing manpower issues. Therefore, the IDT travel reimbursement program can address all the issues that make a billet hard to fill, whether they are geographic, paygrade, or occfield specific. The program also can help decrease the out-of-pocket expenses that Marines might incur by choosing to drill with an SMCR unit. The other manpower tools used

for manpower shortfalls are not as effective at addressing all of these issues; next, we discuss these manpower programs in more detail.

Table 9. Do manpower tools address all regional, paygrade, and occupational manpower issues and the problem of Marines' out-of-pocket expenses?[a]

	SMCR manpower tool			
Manpower issue	IDT travel reimbursement	Affiliation bonuses	PMOS retraining	NPS recruiting
Regional	Yes	Yes	Yes	Yes
Paygrade	Yes	Yes	No	No
Occfield	Yes	Yes	Yes	Yes
Out-of-pocket expenses	Yes	No	No	No

a. Source: SME input and program MARADMINs [10–14, 19–21].

SMCR affiliation bonuses

The Marine Corps has two affiliation bonus programs: the SMCR enlisted affiliation bonus (EAB) and the SMCR unit officer affiliation bonus (OAB). For FY 2014, the EAB program offers corporals and sergeants $15,000 to affiliate with the SMCR; the OAB is $20,000 for company-grade officers who affiliate with units listed in the OAB MARADMIN and $10,000 for those who affiliate with other SMCR units [19, 20]. These bonus values are larger than the average annual IDT travel reimbursements for company-grade officers ($1,163/FY) and our estimated one-year expansion costs for sergeants ($5,589). Even when we divide the bonus amount by the number of additional years of obligated service—for example, $10,000 divided by three years of obligated service equals $3,333 per year—IDT travel reimbursement continues to be cheaper for company-grade officers.

Although affiliation bonuses can alleviate regional, paygrade, and occfield-specific manpower shortfalls (see table 9), they do not directly address the fact that a Marine might still have to pay out of pocket for travel to and from drill. In addition, bonuses come with service obligations, which Marines, particularly prior-service Marines, might consider a drawback in deciding whether to take a bonus when they join the SMCR. Despite this, and because it is also possible for

Marines to receive both an affiliation bonus and IDT travel reimbursement, the IDT travel reimbursement increases the Marine Corps' return on affiliation bonuses because, as previously shown, participation in IDT travel reimbursement increases drill attendance.

SMCR retraining program

The Marine Corps uses the SMCR retraining program to get the right Marines in the right billets at the right time. The program is available to Marines who are PMOS-paygrade mismatches for the SMCR billet assignment and to prior-service Marines who wish to fill a vacant billet at their local SMCR unit but do not have the requisite MOS [21]. As a result, the Marine Corps can use the retraining program if there are not enough Marines with a particular PMOS in a particular location, thus decreasing regional and occupational-specific manpower shortfalls (see table 9).

Retraining, however, may not always address paygrade manpower issues because the program is only available to certain paygrades and to Marines with enough remaining contractual time to commit to a one-, two-, or three-year SMCR obligation [21].[30] According to FY 2013 retraining data (provided by RA), the majority of retrained SMCR Marines were in the paygrades of E6 and below.[31] This occurs for two reasons: (1) junior enlisted Marines are the least expensive to retrain given they are the lowest paid, and (2) most of these Marines have sufficient time left on their current military service obligations for the Marine Corps to see the returns to retraining.

30. The additional service obligation is determined by the length of a Marine's training. Retraining that takes less than 5 weeks comes with a one-year obligation, whereas training that takes 5 to 12 or more weeks comes with two- and three-year obligations, respectively [21].

31. The Reserve Incentives and Training Branch of RA provided individual-level cost data for Marines retrained during FY 2013. These data included the total cost of retraining and the Marines' paygrade. The data do not include which MOS the Marines were being retrained for nor which MOS the Marines held going into training.

Another drawback is that retraining is expensive and requires a longer time horizon to get Marines drilling with their units than required under the IDT travel reimbursement program. We used the FY 2013 training data to estimate the average time and cost of retraining a Marine by paygrade. In FY 2013, a total of 75 officers were retrained, for an average retraining time of 12 weeks and an average training cost of $22,157, which is greater than the average reimbursement of $1,163 per officer per fiscal year we observed for the IDT travel reimbursement program. If we divide the cost to retrain each officer by the number of additional obligated service years incurred through retraining, the average cost per additional year of service becomes $9,272, which is still greater than the cost of IDT travel reimbursement. By this comparison, reimbursing a commissioned officer for IDT travel is more cost-effective and timely than retraining.

Today, enlisted Marines who are eligible for IDT travel reimbursement (E7s through E9s) are not eligible for retraining; however, if the Marine Corps were to expand the program to E5s or E6s, the Marine Corps would want to know if it is cheaper to reimburse them for travel expenses or to pay to retrain them so that they are qualified for local SMCR billets. In FY 2013, the estimated average cost of retraining an E6 was $23,561, which is roughly 4.5 times larger than the estimated cost of filling an open billet with an E6 who rates the maximum IDT travel reimbursement ($5,194). Also, the average number of weeks of retraining is about 15 for an E6. So, it not only costs more to retrain an E6 to fill an SMCR billet but also takes an average of 15 weeks before that Marine can drill with his or her SMCR unit. For E5s, we estimate that the average cost of retraining is $8,003—more than the average cost of filling an open SMCR billet with an E5 reimbursed at the maximum for IDT travel ($5,589)—an average of 7 weeks. Therefore, retraining E5s costs the Marine Corps more than filling open billets with E5s who rate the maximum IDT travel reimbursement.

If we spread the cost of retraining over the additional obligated years of service (dividing the total cost of retraining by the additional years of obligated service), we estimate that the average yearly cost of retraining falls to $8,883 for E6 Marines and $5,096 for E5 Marines. These retraining estimates are closer to the IDT travel reimbursement cost estimates—still higher for E6s but now lower for E5s.

Overall, retraining enlisted Marines for SMCR billets comes at a similar cost to IDT travel reimbursement (more up-front, but spread over additional years of obligated service). However, retraining requires time to get Marines to SMCR billets, whereas IDT travel reimbursement has the ability to place Marines in billets immediately.

Reserve Officer Commissioning Program

Finally, increasing ROCP recruiting also can be used to staff hard-to-fill company-grade billets. Historically, ROCP has helped the Marine Corps fill SMCR lieutenant billets, which it had trouble filling in the past [3]. Through ROCP, the Marine Corps is able to recruit NPS officers who serve four-year service obligations in the SMCR.

As table 9 shows, ROCP has many of the same benefits as retraining. For example, the Marine Corps can concentrate recruiting in certain regions where there are company-grade manpower shortfalls. ROCP also allows the Marine Corps to build its own reservists so that, if there are shortages in junior paygrades or particular occupations, the Marine Corps can recruit people to these occfields and ensure that they are promoted within that community. Similar to retraining, one drawback to increased ROCP is that it does not directly address manpower issues for the senior enlisted billets (should this become a problem in the future) without the help of continuation incentives.

On the surface, it would appear that ROCP officer recruiting is more expensive than the IDT travel reimbursement program, considering that, in FY 2013, $8,950,327 was spent to recruit 146 ROCP officers, for an average of $61,304 per recruit.[32] After accounting for the ROCP officers' four-year service obligation, this averages to $15,326 per additional year of obligated service, which continues to dwarf the average of $1,163 in IDT travel reimbursements for company-grade officers. Without ROCP, however, there would be fewer company-grade SMCR officers to use IDT travel reimbursement, and the Marine Corps may still have trouble staffing its SMCR lieutenant bil-

32. We obtain the ROCP cost data from the Reserve Affairs Plans and Policy Branch within RA. These data include the total cost of ROCP recruiting in FY 2013 and the number of accessed ROCP Marines in FY 2013.

lets. In fact, the IDT travel reimbursement program may make ROCP recruiting more cost-efficient since it increases the recruitable population, making it more likely to recruit to vacant SMCR billets. Our recommendation, therefore, is for the Marine Corps to continue to use these two manpower programs together.

Summary

Compared with other manpower tools, the IDT travel reimbursement program appears to be one of the most flexible and timely ways to get Marines into hard-to-fill billets at a relatively low cost to the Marine Corps. In this section, we also discussed ways that the IDT travel reimbursement program can work with the other manpower tools to make them more cost-effective. For these reasons, and because the program improves manpower levels and IDT drill attendance, one of our recommendations is that the Marine Corps continue to use the IDT travel reimbursement program in addition to its other manpower tools. In the next section, we discuss our recommendations in more detail.

Conclusions and recommendations

The Marine Corps implemented the IDT travel reimbursement program in the spring of FY 2009. Since then, the program has grown in terms of both reimbursement costs and participation. In FY 2010, the IDT travel reimbursement program served 247 Marines and had total costs of just under $260,000; in FY 2013, the program served 609 Marines with costs of almost $714,000. Some of the growth in the program is due to increased awareness, but much if it is has resulted from the Marine Corps expanding the program to more Marines.

Our analysis of IDT travel reimbursement and Marine Corps manpower data indicates that a number of Marines travel long distances to attend IDT drills and that, as a result, some of these Marines may be using their drill pay and/or paying out of pocket to attend IDT. Despite this, we find that only half of program-eligible SMCR Marines were actually reimbursed, and the likelihood of reimbursement was highest for those who had the farthest to travel.

If the Marine Corps is concerned that there are Marines who are *paying to affiliate* with reserve units, it might consider implementing practices that encourage participation among currently eligible Marines. We estimate that a 10-percent increase in enlisted and commissioned officer participation would cost the Marine Corps an additional $217,905 per year. Because the IDT travel reimbursement program relies on SMCR Marines submitting their travel expenses for reimbursement, these efforts should focus on increasing program awareness and making the process of submitting IDT travel expenses as easy and as transparent as possible.

The Marine Corps can increase program awareness by several means. One way is to provide unit leaders (including the unit I&Is) with sufficient knowledge of how the program works and, most important, the benefits the program offers. Our study shows that those benefits include higher manpower levels and IDT drill attendance. If unit

leaders were aware of the merits of the program, they might be more likely to tell eligible Marines about it. The Marine Corps also may consider educating its career planners and recruiters about the program and encouraging them to discuss it with Marines. One caveat to consider is that recruiters are more likely to talk about programs when their recruits are guaranteed eligibility; therefore, if there is uncertainty as to which BIC a unit might assign a recruit, the recruiter will be less likely to talk about IDT travel reimbursement.

Our examination of participation trends revealed that less experienced Marines (in terms of both years of service and rank) are less likely to participate than more experienced Marines, given that they meet the program eligibility requirements. It might benefit the Marine Corps to investigate whether junior Marines experience barriers to participation that more senior Marines do not. One barrier to consider is the process of submitting travel expenses for reimbursement. It is possible that less experienced Marines (such as junior commissioned officers) are less familiar with this process and, therefore, are less likely to submit their travel expenses for reimbursement than more experienced Marines (such as the senior enlisted), who are more likely to have submitted travel expenses before. If this is true, the Marine Corps might consider encouraging more experienced Marines to assist those less experienced with the submission process when these Marines join SMCR units.

As mentioned earlier, our analysis indicated that the IDT travel reimbursement program is associated with higher manpower levels and drilling attendance—factors that are thought to positively affect force readiness. Given these findings, it would benefit the Marine Corps to continue to use the IDT travel reimbursement program to address its SMCR manpower shortages.

In addition to the continued use of the program, we also analyzed how the Marine Corps could expand the program to address prevailing manpower issues. By analyzing billet vacancy durations, we identified the following ways in which the Marine Corps may want to consider expanding the IDT travel reimbursement program:

- Extend eligibility for Marines filling hard-to-fill billets (billets that have been vacant for 24 or more months).

- Extend eligibility to staff sergeants (E6s) and/or sergeants (E5s).
- Extend eligibility to Marines in hard-to-fill occupations.
- Raise the maximum reimbursement to $500.

Using the manning and billet structure for September 2013, we estimate that the costs of these expansion scenarios range from a low of $309,210 (for the extension to Marines in hard-to-fill billets) to a high of $1,056,317 (for increasing the maximum reimbursement to $500) assuming that staffing and participation rates do not reach their maximum levels. Maximum program expansion costs, assuming 100-percent staffing and 100-percent participation, range from $2,525,925 (for the extension to E6s) to $8,749,616 (increasing the maximum reimbursement to $500).

Because the majority of our expansion scenarios and cost estimates are based on manpower trends as of September 2013, we recommend that the Marine Corps monitor and track billet vacancies to identify developing manpower issues. This would allow the Marine Corps to periodically adjust IDT travel reimbursement program eligibility to help reduce prevailing SMCR manpower shortfalls.

In addition to addressing geographic differences in manpower levels, another purpose of increasing the maximum reimbursement is to alleviate the travel costs experienced by Marines who travel great distances (e.g., more than 1,000 miles one-way) to attend IDT. Getting the maximum reimbursement changed from $300, however, requires a change to federal law. The Marine Corps has already attempted to get this part of the IDT travel reimbursement program changed, indicating that it is not in favor of Marines paying to attend IDT. If the Marine Corps continues to take this position, it may want to consider further analysis of IDT travel program participants' actual travel costs—something that was beyond the scope of the data used in our study. This type of analysis would help the Marine Corps to estimate the maximum reimbursement needed to cover Marines' travel costs and to provide an analytically driven case for asking Congress to increase the maximum reimbursement.

Overall, the IDT travel reimbursement program helps the Marine Corps to staff hard-to-fill billets by relaxing SMCR manpower constraints and allows it to alleviate out-of-pocket expenses that some Marines face while serving as reservists. The combination of these two features makes the program a unique and effective manpower tool in the Marine Corps' toolbox. IDT travel reimbursement is also extremely flexible and cost-effective relative to other manpower tools such as affiliation bonuses, MOS retraining, and increased ROCP recruiting. In addition, the IDT travel reimbursement program may make these other manpower programs more efficient. We recommend that the Marine Corps continue to use the IDT travel reimbursement program and consider adjusting the eligibility requirements so that the program addresses prevailing manning issues while staying within the program's allotted budget.

Appendix A: The SMCR laydown

According to the February Modified Strength Report (MSR), which is based on the Authorized Strength Report (ASR) produced biannually by the Marine Corps, the FY 2014 SMCR consists of 308 units (identified by their unit identification codes (UICs)) scattered across 165 cities in the United States and Puerto Rico. Figure 12 (on the next page) maps the density of units in U.S. cities.

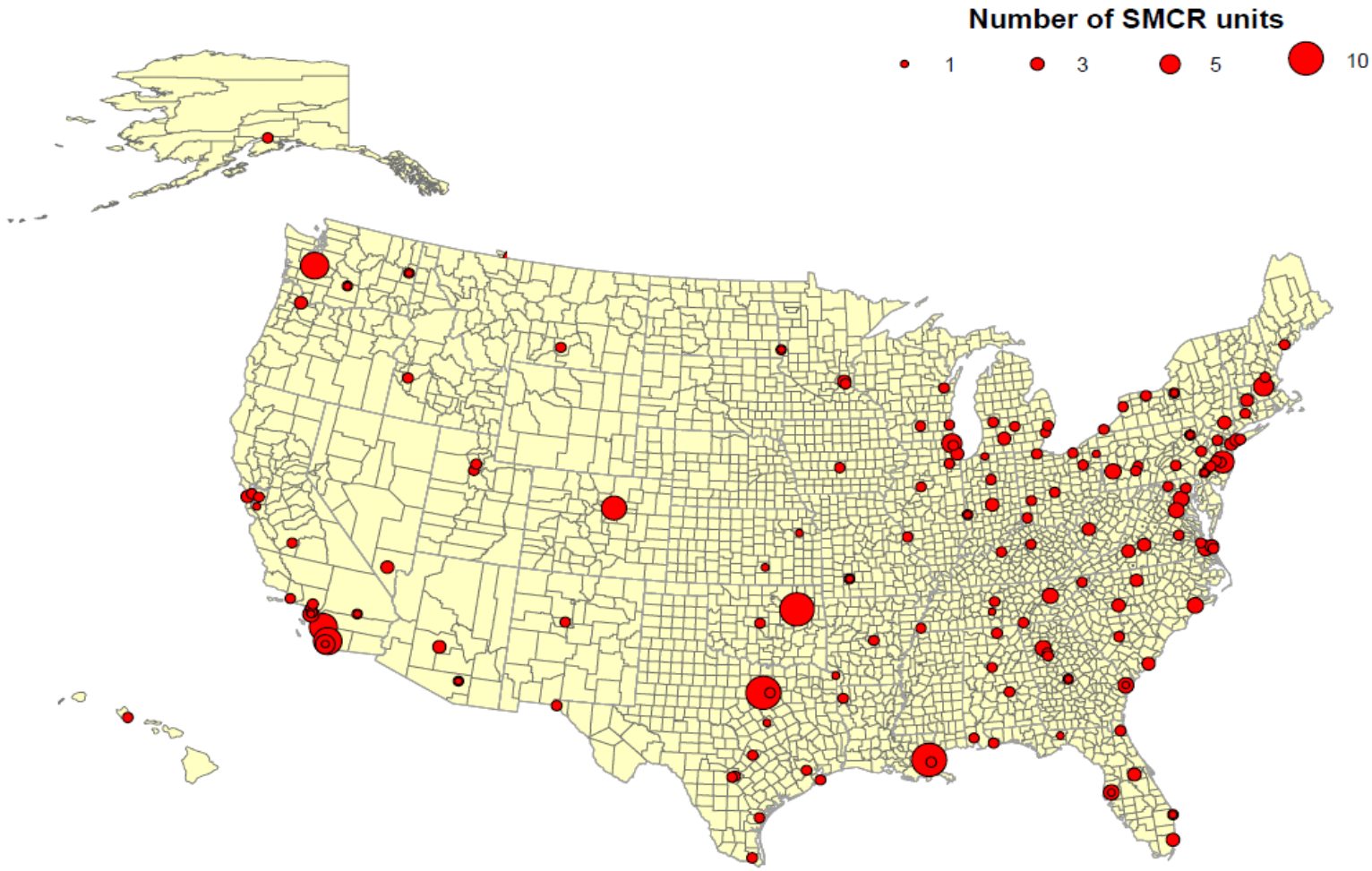
The MSR contains 32,456 SMCR billets for the 308 units. These billets are distributed across ranks according to table 10. Overall, enlisted billets account for 92 percent of SMCR billets, commissioned officer billets for 7 percent, and warrant officers for 1 percent.

Table 10. FY14 SMCR billet distribution by paygrade[a]

Paygrade	Percentage of all BICs
E1–E3	48.5%
E4–E6	39.3%
E7–E9	4.2%
O2–O3	4.8%
O4–O5	2.0%
O6–O8	0.2%
W1–W2	0.6%
W3–W5	0.3%

a. Source: February FY14 MSR.

Figure 12. FY14 SMCR unit locations[a]

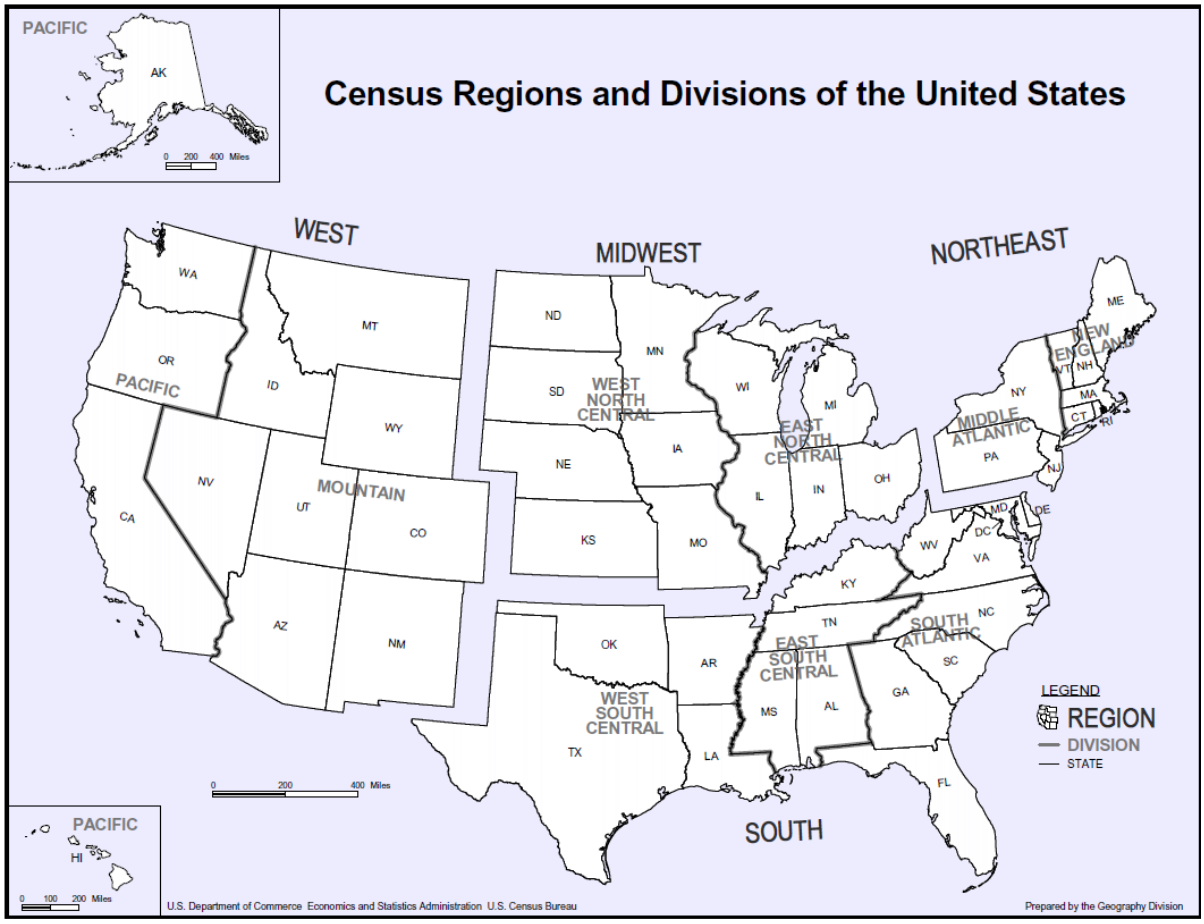


a. Source: FY 2014 Feb. MSR. A UIC location is identified by a UIC-city-state combination in the MSR. Puerto Rico has 3 UIC locations (not shown).

Appendix B: U.S. Census regions and divisions

The Census Bureau identifies four regions of the United States: the Northeast, the Midwest, the South, and the West. These regions are further divided into nine divisions, as shown in figure 13.

Figure 13. U.S. Census Bureau regions and divisions[a]



a. Source: [22].

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Appendix C: Descriptive statistics for program-eligible SMCR Marines

Table 11 contains descriptive statistics on the SMCR Marines we identified as being eligible for the IDT travel reimbursement program between May 2012 and September 2013. We present statistics for eligible Marines who were never reimbursed (nonparticipants) separately from those who were reimbursed (participants) for the following populations: all eligible Marines, eligible enlisted Marines, and eligible commissioned officers.

Table 11. Descriptive statistics for eligible Marines, by participation status and rank[a]

	All		Enlisted Marines		Commissioned officers	
Characteristic	Non-participants	Participants	Non-participants	Participants	Non-participants	Participants
Rank						
Enlisted Marine	**19.8%**	**28.7%**	N/A[b]	N/A	N/A	N/A
Warrant officer	**3.8%**	**10.5%**	N/A	N/A	N/A	N/A
Commissioned officer	**76.4%**	**60.8%**	N/A	N/A	N/A	N/A
Paygrade in last month of eligibility						
E7	**10.2%**	**5.0%**	**51.7%**	**17.4%**	N/A	N/A
E8	**7.4%**	**12.9%**	37.5%	44.9%	N/A	N/A
E9	**2.1%**	**10.8%**	**10.8%**	**37.7%**	N/A	N/A
O1–O2	**21.0%**	**7.7%**	N/A	N/A	**27.4%**	**12.7%**
O3	**36.1%**	**25.5%**	N/A	N/A	47.3%	41.9%
O4–O6	**19.3%**	**27.5%**	N/A	N/A	**25.3%**	**45.3%**
W1–W2	**2.6%**	**6.9%**	N/A	N/A	N/A	N/A
W3–W5	**1.2%**	**3.6%**	N/A	N/A	N/A	N/A
Paygrade in first month of eligibility						
E7	**11.2%**	**5.5%**	**55.8%**	**18.6%**	N/A	N/A
E8	**6.8%**	**13.1%**	*34.2%*	*45.5%*	N/A	N/A
E9	**2.0%**	**10.3%**	**10.0%**	**35.9%**	N/A	N/A

Table 11. Descriptive statistics for eligible Marines, by participation status and rank[a]

Characteristic	All		Enlisted Marines		Commissioned officers	
	Non-participants	Participants	Non-participants	Participants	Non-participants	Participants
O1–O2	**23.6%**	**11.4%**	N/A	N/A	**30.9%**	**18.7%**
O3	**34.8%**	**23.9%**	N/A	N/A	*45.6%*	*39.4%*
O4–O6	**18.0%**	**25.5%**	N/A	N/A	**23.5%**	**41.9%**
W1–W2	**2.6%**	**6.9%**	N/A	N/A	N/A	N/A
W3–W5	**1.0%**	**3.4%**	N/A	N/A	N/A	N/A
Gender						
Female	4.6%	3.8%	3.3%	3.0%	5.0%	4.5%
Race/ethnicity						
White	**51.8%**	**44.2%**	30.8%	31.7%	*57.7%*	*51.8%*
Black	4.5%	2.2%	0.8%	1.2%	*5.2%*	*2.8%*
Hispanic	5.6%	6.4%	9.2%	5.4%	5.0%	5.7%
NA/API[c]	3.5%	3.4%	**0.0%**	**3.6%**	4.3%	4.0%
Other	**34.7%**	**43.7%**	59.2%	58.1%	**27.9%**	**35.7%**
Education						
Post-graduate	**9.9%**	**15.9%**	6.1%	10.4%	**10.7%**	**17.3%**
Family background						
Married	**59.9%**	**75.2%**	**75.8%**	**85.0%**	**55.3%**	**70.3%**
No. of dependents	**1.5**	**2.1**	*2.3*	*2.6*	**1.3**	**1.8**
Census division						
New England	4.1%	2.8%	0.8%	1.8%	5.0%	3.4%
Mid Atlantic	**10.4%**	**6.2%**	10.8%	8.4%	**10.8%**	**5.7%**
EN Central	10.2%	9.6%	13.3%	9.6%	9.1%	8.8%
WN Central	4.0%	5.9%	5.8%	6.6%	3.7%	4.8%
South Atlantic	31.0%	35.1%	**23.3%**	**36.5%**	32.2%	35.4%
ES Central	4.0%	4.0%	*1.7%*	*6.0%*	4.5%	3.1%
WS Central	14.7%	13.6%	18.3%	12.0%	14.3%	13.9%
Mountain	*3.3%*	*9.5%*	8.3%	7.2%	**5.8%**	**10.5%**
Pacific	15.0%	13.4%	17.5%	12.0%	14.7%	14.4%
MOS						
Aviation	**4.5%**	**7.2%**	*10.0%*	*4.8%*	**2.8%**	**8.5%**
Combat arms	29.0%	25.0%	16.7%	10.8%	33.5%	35.1%
Support	66.5%	67.8%	**73.3%**	**84.4%**	**63.7%**	**56.4%**
Service history						
Received monetary incentive pay	**50.7%**	**35.5%**	**13.3%**	**1.2%**	62.9%	57.5%
Prior-service	*60.9%*	*66.3%*	53.3%	54.5%	**63.7%**	**75.9%**

Table 11. Descriptive statistics for eligible Marines, by participation status and rank[a]

Characteristic	All		Enlisted Marines		Commissioned officers	
	Non-participants	Participants	Non-participants	Participants	Non-participants	Participants
Satisfactory years	**10.8**	**15.3**	**18.8**	**21.6**	**8.4**	**11.6**
Peer participation rate	**81.5%**	**94.4%**	**73.3%**	**92.5%**	**83.4%**	**96.9%**
Distance between residence and unit						
150–200	**15.8%**	**10.7%**	17.5%	15.0%	**14.9%**	**9.3%**
200–299	*19.6%*	*15.3%*	*25.0%*	*16.2%*	17.9%	15.3%
300–399	11.4%	9.5%	*14.2%*	*7.8%*	10.8%	10.8%
400–499	10.2%	10.3%	10.8%	6.6%	10.2%	9.9%
500–599	**5.1%**	**9.0%**	**4.2%**	**11.4%**	5.6%	8.2%
600–999	**14.5%**	**22.2%**	**10.0%**	**22.2%**	**15.3%**	**21.8%**
1000+	23.3%	23.1%	18.3%	21.0%	25.3%	24.6%
Number of billets at unit						
E7	*3.99*	*4.35*	4.73	4.63	3.65	3.89
E8	**1.90**	**2.21**	2.38	2.45	1.74	1.92
E9	**0.94**	**1.11**	*0.94*	*1.29*	0.94	0.99
O2	**3.92**	**4.30**	**3.10**	**4.16**	*4.13*	*4.56*
O3	6.19	5.70	3.93	4.32	6.92	6.65
O4	**4.20**	**3.38**	3.26	3.10	**4.54**	**3.63**
W1-W5	**1.41**	**1.83**	1.78	1.93	1.23	1.42
UIC BIC alignment	73.3%	72.8%	72.6%	73.0%	73.4%	73.6%
Months eligible for IDT travel reimbursement						
1	**12.4%**	**2.8%**	**11.7%**	**2.4%**	**13.0%**	**2.8%**
2	**11.7%**	**2.8%**	**11.7%**	**3.0%**	**11.2%**	**2.5%**
3	**13.7%**	**2.1%**	**9.2%**	**1.8%**	**14.7%**	**2.0%**
4	**12.5%**	**6.4%**	**19.2%**	**7.2%**	**10.4%**	**6.2%**
5	**8.3%**	**5.3%**	6.7%	3.6%	8.9%	6.2%
6	5.8%	4.0%	**8.3%**	**1.8%**	5.2%	5.4%
7	4.8%	5.0%	5.0%	3.6%	5.0%	6.2%
8	3.3%	4.3%	2.5%	3.0%	3.7%	5.4%
9	5.9%	7.2%	15.8%	13.2%	3.7%	5.1%
10	**1.5%**	**5.0%**	0.8%	3.6%	**1.7%**	**5.4%**
11	2.8%	3.4%	*0.0%*	*2.4%*	3.7%	4.2%
12	**3.0%**	**6.5%**	*2.5%*	*7.2%*	**3.0%**	**6.5%**
13	**1.7%**	**6.4%**	**0.0%**	**9.6%**	**1.9%**	**5.1%**
14	*2.5%*	*4.3%*	0.8%	3.6%	3.0%	4.5%
15	**2.1%**	**4.8%**	**0.0%**	**5.4%**	2.6%	4.5%

Table 11. Descriptive statistics for eligible Marines, by participation status and rank[a]

	All		Enlisted Marines		Commissioned officers	
Characteristic	Non-participants	Partici-pants	Non-participants	Partici-pants	Non-participants	Partici-pants
16	**1.8%**	**5.3%**	*1.7%*	*6.0%*	**1.9%**	**4.8%**
17	**6.3%**	**24.4%**	**4.2%**	**22.8%**	**6.5%**	**22.9%**
Number of Marines	606	581	120	167	463	353

a. Source: MCTFS and RESMAT end-of-month snapshots for May 2012 through Sep. 2013 merged with IDT travel reimbursement data. Bolded text indicates that the means for nonparticipants and participants are statistically different at the 5-percent significance level (p-value for t-test is less than 0.05); text in italics indicates that the means are statistically different at the 10-percent significance level (p-value is less than 0.10).
b. N/A stands for not applicable.
c. NA/API stands for Native American/American Pacific Islander.

Appendix D: Participation model estimates

Table 12 displays the marginal effects from estimating participation in the IDT travel reimbursement program as a logistic function of Marines and unit characteristics for all program-eligible Marines, program-eligible enlisted Marines, and program-eligible commissioned officers. The marginal effect is the percentage-point change in the likelihood of participation for Marines with the characteristic of interest, holding all other Marine and unit characteristics constant. For categorical variables, the comparison group is omitted from the model; omitted variables are not displayed For example, our first set of estimates indicates that warrant officers are 12.6 percentage points more likely to participate than otherwise similar enlisted Marines (the omitted group), whereas commissioned officers are no more likely to participant than otherwise similar enlisted Marines.

Table 12. Estimated marginal effects on the likelihood of participating in the IDT travel reimbursement program[a]

	All eligible Marines		Eligible enlisted Marines		Eligible commissioned officers	
Characteristic	Marginal effect	Standard error	Marginal effect	Standard error	Marginal effect	Standard error
Rank						
Warrant officer	**0.120**	**0.060**	N/A[b]	N/A	N/A	N/A
Commissioned officer	-0.006	0.049	N/A	N/A	N/A	N/A
Paygrade						
E8	N/A	N/A	*0.150*	*0.081*	N/A	N/A
E9	N/A	N/A	*0.239*	*0.135*	N/A	N/A
O1–O2	N/A	N/A	N/A	N/A	**-0.109**	**0.052**
O4–O6	N/A	N/A	N/A	N/A	0.045	0.057
Gender						
Female	0.013	0.060	-0.076	0.146	0.029	0.076
Race/ethnicity						
Black	*-0.132*	*0.072*	-0.050	0.179	-0.110	0.068
Hispanic	-0.035	0.056	**-0.374**	**0.142**	-0.001	0.069

Table 12. Estimated marginal effects on the likelihood of participating in the IDT travel reimbursement program[a]

Characteristic	All eligible Marines		Eligible enlisted Marines		Eligible commissioned officers	
	Marginal effect	Standard error	Marginal effect	Standard error	Marginal effect	Standard error
NA/API[c]	-0.013	0.065	N/A	N/A	-0.024	0.079
Other	0.005	0.030	-0.054	0.067	-0.011	0.040
Education						
Post-graduate	0.051	0.039	0.099	0.098	0.033	0.051
Family background						
Married	**0.129**	**0.037**	0.096	0.079	**0.158**	**0.045**
No. of dependents	-0.009	0.011	*0.049*	*0.026*	-0.024	0.015
Census division						
Mid Atlantic	0.035	0.076	**-0.312**	**0.133**	0.007	0.091
EN Central	0.076	0.070	**-0.431**	**0.128**	0.104	0.082
WN Central	0.089	0.084	-0.125	0.154	0.109	0.106
South Atlantic	**0.145**	**0.062**	0.024	0.123	*0.131*	*0.074*
ES Central	0.075	0.089	0.071	0.152	0.039	0.101
WS Central	0.084	0.068	*-0.253*	*0.137*	0.075	0.082
Mountain	**0.157**	**0.075**	**-0.410**	**0.143**	**0.210**	**0.089**
Pacific	0.103	0.068	-0.148	0.121	0.141	0.078
MOS						
Aviation	**0.118**	**0.055**	*-0.565*	*0.145*	**0.225**	**0.069**
Support	0.020	0.032	0.088	0.076	0.006	0.039
Service history						
Received monetary incentive pay	0.005	0.041	0.100	0.154	0.007	0.060
Prior-service	0.036	0.029	-0.055	0.063	0.015	0.043
Satisfactory years	**0.010**	**0.003**	-0.014	0.015	*0.008*	*0.004*
Peer participation rate	**0.051**	**0.024**	0.064	0.062	*0.049*	*0.030*
Distance between residence and unit						
200–299	0.050	0.048	-0.009	0.073	*0.090*	*0.061*
300–399	0.061	0.054	**-0.193**	**0.082**	**0.142**	**0.065**
400–499	*0.102*	*0.055*	**-0.206**	**0.105**	*0.115*	*0.069*
500–599	**0.222**	**0.059**	0.019	0.107	**0220**	**0.071**
600–999	**0.194**	**0.048**	**0.276**	**0.111**	**0.198**	**0.060**
1000+	**0.115**	**0.047**	**0.203**	**0.085**	*0.114*	*0.061*
Number of billets at unit						
E7	-0.014	0.010	**-0.053**	**0.026**	0.002	0.013
E8	0.011	0.021	*0.150*	*0.078*	0.008	0.033
E9	*0.062*	*0.038*	-0.028	0.098	0.038	0.051

Table 12. Estimated marginal effects on the likelihood of participating in the IDT travel reimbursement program[a]

	All eligible Marines		Eligible enlisted Marines		Eligible commissioned officers	
Characteristic	Marginal effect	Standard error	Marginal effect	Standard error	Marginal effect	Standard error
O2	-0.006	0.008	**0.065**	**0.025**	-0.004	0.010
O3	-0.003	0.003	**-0.074**	**0.018**	-0.004	0.004
O4	-0.005	0.005	-0.005	0.014	-0.007	0.006
W1–W5	0.005	0.015	*0.070*	*0.043*	0.004	0.024
Billets at a percentage of all unit billets						
E7	0.013	0.013	**0.117**	**0.044**	-0.006	0.016
E8	-0.024	0.019	**-0.193**	**0.076**	-0.020	0.028
E9	-0.035	0.037	0.115	0.108	-0.013	0.051
O2	0.008	0.009	-0.006	0.034	0.006	0.011
O3	0.002	0.004	**0.118**	**0.033**	0.000	0.004
O4	-0.002	0.002	-0.002	0.008	-0.001	0.002
W1–W5	-0.022	0.018	**-0.182**	**0.064**	-0.023	0.030
UIC BIC alignment	0.044	0.087	-0.227	0.220	0.131	0.104
Months eligible for IDT travel reimbursement						
2	0.053	0.072	0.087	0.067	0.038	0.080
3	0.017	0.060	0.165	0.117	-0.019	0.053
4	**0.225**	**0.107**	**0.445**	**0.199**	0.242	0.152
5	**0.357**	**0.120**	**0.461**	**0.189**	*0.321*	*0.169*
6	**0.377**	**0.133**	0.071	0.061	**0.453**	**0.178**
7	**0.486**	**0.123**	**0.562**	**0.229**	**0.464**	**0.181**
8	**0.448**	**0.130**	**0.873**	**0.058**	**0.410**	**0.190**
9	**0.437**	**0.128**	**0.624**	**0.186**	**0.412**	**0.197**
10	**0.638**	**0.108**	**0.574**	**0.224**	**0.622**	**0.164**
11	**0.507**	**0.126**	N/A	N/A	**0.437**	**0.181**
12	**0.543**	**0.113**	**0.600**	**0.223**	**0.537**	**0.172**
13	**0.676**	**0.095**	N/A	N/A	**0.627**	**0.163**
14	**0.458**	**0.129**	**0.421**	**0.199**	**0.364**	**0.187**
15	**0.566**	**0.116**	N/A	N/A	**0.491**	**0.183**
16	**0.613**	**0.110**	**0.654**	**0.282**	**0.608**	**0.166**
17	**0.660**	**0.080**	**0.820**	**0.087**	**0.635**	**0.135**
Number of Marines	1,047		213		723	

a. Source: MCTFS and RESMAT end-of-month snapshots for May 2012 through Sep. 2013 merged with IDT travel reimbursement data. All models included monthly fixed effects for the last month of eligibility. Bolded text indicates that the estimated marginal effect is statistically different than zero at the 5-percent significance level (p-value is less than 0.05); italicized text is significant at the 10-percent level l (p-value is less than 0.10).
b. N/A stands for not applicable.
c. NA/API stands for Native American/American Pacific Islander.

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Glossary

AC	Active Component
ASR	Authorized Strength Report
BIC	Billet Identification Code
CWO	Chief Warrant Officer
DC, M&RA	Deputy Commandant, Manpower and Reserve Affairs
DIFOP	Duty Involving Flying-Operational
DTOD	Defense Table of Distances
DTS	Defense Travel System
EAB	Enlisted Affiliation Bonus
FSRG	Force Structure Review Group
HQMC	Headquarters Marine Corps
I&I	Inspector and Instructor
IDT	Inactive Duty Training
IMA	Individual Mobilization Augmentee
JFTR	Joint Federal Travel Regulations
MARADMIN	Marine Administrative Message
MARFORRES	Marine Forces Reserve
MCTFS	Marine Corps Total Force System
MCRC	Marine Corps Recruiting Command
MSC	Major Subordinate Command
MSR	Modified Strength Report
NCO	Noncommissioned Officer

NDAA	National Defense Authorization Act
NMCI	Navy/Marine Corps Intranet
NPS	Non-Prior-Service
OAB	Officer Affiliation Bonus
Occfield	Occupational Field
PMOS	Primary Military Occupational Specialty
POC	Personally Owned Conveyance
RA	Reserve Affairs
ROCP	Reserve Officer Commissioning Program
RESMAT	Reserve Unit Manning Analysis Tool
SMCR	Selected Marine Corps Reserve
SME	Subject Matter Expert
SNCO	Staff Noncommissioned Officer
UIC	Unit Identification Code
U.S.C.	United States Code
WO	Warrant Officer

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