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# Racial Selection in Deployment to Iraq and Afghanistan

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**ABSTRACT**

The US Armed Forces officially desegregated in 1948. Over the following 70 years, the military has made great strides in promoting racial integration. We find evidence, however, that Black soldiers' experience of military service still differs significantly from that of other racial and ethnic groups. Exploiting a database of administrative records for 100,000 Army personnel serving during the conflicts in Iraq and Afghanistan, we find that Blacks were less likely than other service members to have deployed, or to face intense combat if deployed, during the early phases of the campaigns.

The end of overt segregation in the armed forces had not spelled the end of discrimination. The persistence of subtle forms of racism in an otherwise completely integrated setting defines to this day the experience of blacks in the military. Yet there is no question that on the whole the military has served blacks well, just as blacks have served the military well. The story of blacks in the military is instructive. So is the fact that it has received little attention.

Charles Moskos[1]

## Introduction

On 26 July 1948, President Truman signed Executive Order 9981, which committed the government both to the physical desegregation of the Armed Forces, as well as the equalization of opportunities and treatment for Blacks and Whites who serve in uniform. Since then, the US military has made huge strides. Nothing more vividly illustrates this than the ascension of Colin Powell to the Chairmanship of the Joint Chiefs of Staff in 1989, only 40 years after EO 9981.

Since Vietnam, Blacks have been over-represented in the US military and they have served disproportionately in non-combat roles.[2] This is widely assumed to be the result of economic considerations, since there is evidence – reviewed later in this paper – that Black veterans enjoy higher lifetime incomes than Blacks who never served. In addressing how this affects career choices that Blacks make during their military service, Clarence Johnson, the current director of the Pentagon's Office of Diversity Management, recounts that:

> Kids I've spoken to, who choose to do supply, who choose to do lawyer, who choose to do admin, have the impression that 'If I go to Army and become an infantry person, that is not a skill that I can carry to the civilian work force.' Young black officers choose other fields because they want to prepare for a future outside of the military, and they believe that being in communications, being in logistics will provide them a better opportunity to succeed. [3]

In this paper, we find evidence that differences between Blacks and other service members in the U.S. military are far deeper than heretofore understood. When compared to members of other racial or

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ethnic groups, Blacks – whether assigned to combat or non-combat roles – were far less likely to serve in units that were deployed to Afghanistan or Iraq during the initial phases of these campaigns.

We also find evidence that Blacks who served in deployed units were more likely to be left behind and not accompany their comrades, and that Blacks who did deploy with their units were less likely to be serving in units that would experience intense combat. Finally, Blacks were more likely to be excluded from deployment due to disciplinary problems.

As a whole, the portrait that emerges is that of a racial minority whose experience of, and motivation for, military services – 70 years after EO 9981 – diverges radically from that of all other identifiable American ethnic and racial groups.

This paper has seven sections. In Section Two, we describe the relevant literature. In Section Three, we describe the data used in this paper. In Section Four, we report the results of logit analyses that demonstrate considerable racial selection in deployment. In Section Five, we use bivariate probit to consider whether this selection bias took place within or between units. In Section Six, we consider the implications and drivers of our findings. Section Seven concludes the paper.

## Literature

More than 2.5 million Americans served overseas in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF). Those young men and women will carry their experiences of war with them for the rest of their lives, and it will affect them and their families – potentially in ways that require a policy response. As a result, there has been considerable research interest in identifying the impact of service in OEF and OIF on the veterans of those conflicts.

The challenge in doing such research has always been to differentiate between effects that are caused by participation in the military and effects that are caused by fundamental differences in personality and character that lead some people to serve in the military while others avoid service.

One approach, first articulated in Angrist's seminal 1990 paper, uses the birthdates of those drafted in WWII and the Vietnam War as an instrument for military service. Other papers that have exploited this strategy include Angrist (1990), Angrist and Krueger (1994), Dobkin and Shabani (2009), Rohlfs (2010), and Angrist and Chen (2011). This approach, however, cannot really shed light on the impact of military service and combat on volunteers, nor can it differentiate between the impacts on service members who actually participated in combat as opposed to those who served in non-combats roles. Hence, the results of such studies may provide little insight on what we can expect to see amongst the veterans of OEF/OIF.

An emerging line of research has pursued alternative approaches in order to study the specific impact of deployment and combat on OEF/OIF veterans – all of whom were volunteers. A number of these recent papers – Engel, Gallagher, and Lyle (2010), Shen et al. (2010), Cesur, Sabia, and Tekin (2013), Edwards (2015) and Armey and Lipow (2015) – have sought to explain the impact of OEF/OIF deployment on veterans' mental health, interest in higher education, and the school performance of their children.

The earliest papers in this literature assume that for those who already serve, deployment is exogenous since individuals neither choose nor are chosen to deploy. Rather, entire units are chosen, and individuals are deployed if they have been assigned to those units. If individuals have little control over their unit assignment, and no control of the deployments of their assigned units, researchers could treat deployment as a kind of natural experiment among military personnel and compare life outcomes between those who deployed and those who did not after adjusting for other observable personal characteristics.

More recent papers, however – including Edwards (2015), Engel, Gallagher, and Lyle (2010), Cesur and Sabia (2016), Cunha, Shen, and Burke (2017), Carter, Smith, and Wojtaszek (2017), and Armey (2018) – have offered evidence that, despite this absence of individual control over assignments and unit deployment, individual deployment may nevertheless be non-random in a number of ways.

In this paper, we investigate the drivers of this non-random selection, and we consider many possible sources of bias in selection for deployment. What we find is a large, highly significant, and robust degree of selection bias.

## Data

In this paper, we examine the cohort of male enlisted members of the US Army who volunteered for service prior to September 2001 but had yet to complete their first term of service by March 2003, when Operation Iraqi Freedom commenced. The data for this study is drawn from comprehensive administrative records of enlisted personnel housed at the Defense Manpower Data Center (DMDC).

We focus on males because those in combat roles faced far more intense combat and these roles were closed to women during the time frame being analyzed. By focusing on this cohort, we eliminate any possibility that attitudes towards 9/11, the justifications for the invasion of Iraq, or the prospect of imminent combat deployment could have influenced volunteers' decisions to serve in the armed forces. We also focus on first-term enlistees so as not to conflate deployment probability and the choice to reenlist.

As a check of the robustness of our findings, we examined the cohort of those who volunteered for the US Army between January 2002 and December 2005.[4] This group is made up of recruits who understood that enlistment was likely to result in deployment to Afghanistan and/or Iraq, and inevitable exposure to combat. As an additional test of robustness, we examined the cohort of those who had volunteered for service in the US Marine Corps prior to 9/11 but where still in their first term of service in March 2003.

Our analysis considers several possible drivers of non-random selection for deployment. These are described in Table 1. For our dependent variables, we determine whether someone was deployed to Iraq or Afghanistan at least once during their first term of service. The individuals in our sample were primarily deployed in 2002–2004. We also include mortality information from DMDC data on individuals' OEF/OIF deployments. We use unit (company) level data on monthly deaths and other casualties – which includes information as to whether the casualties were due to hostile action – to calculate whether hostile deaths were sustained by each individual's unit during his deployment. We treat the presence of an in-unit death as a proxy for the intensity of combat an individual experienced.

**Table 1.** Variables.

| Variable | Value | Definition |
| --- | --- | --- |
| Deployed | 1,0 | Value of 1 if service member was deployed during first term |
| Unit Mortality | 1,0 | Value of 1 if unit experienced a fatality while service member was deployed |
| AFQT | 1-98 | Percentile score on AFQT |
| Age | 17-35 | Age in September 2001 |
| Married | 1,0 | Value of 1 if married as of September 2001 |
| Children | 1,0 | Value of 1 if service member had children as of September 2001 |
| Black | 1,0 | Value of 1 if self identifies as Black |
| Hispanic | 1,0 | Value of 1 if self identifies as Hispanic |
| Unit Deployed | 1,0 | Value of 1 if at least 30% of unit deployed in any year of first term |
| Disciplinary Exclusion | 1,0 | Value of 1 if was exempted from deployment for disciplinary reasons |
| Dishonorable Discharge | 1,0 | Value of 1 if dishonorably discharged |
| Disciplinary Problems | 1,0 | Value of 1 if disciplinary exclusion or dishonorable discharge |
| Medical Separations | 1,0 | Value of 1 if medically separated from service |
| Low Income | 1,0 | Value of 1 if income of home zipcode at enlistment is 2 st. devs below average |
| Change Unit | 1,0 | Value of 1 if unit changed during first term |
| Infantry | 1,0 | Value of 1 if MoS designated as infantry |
| Other Combat | 1,0 | Value of 1 if MoS is combat profession other than infantry |
| Support Job | 1,0 | Value of 1 if MoS is in a combat support role |
| Medical Job | 1,0 | Value of 1 if MoS is in a medical vocation |

We also include data on 'Military Occupation Specialty' (MOS), which identifies the specific job that an individual performs within the military. Service members are generally able to choose their MOS from a list of options for which they are qualified and for which there is need. This can influence the likelihood and nature of their deployment in a number of ways. For example, certain specialties – such as 'infantry' – lead to assignments with an extremely high probability of exposure to combat, while other specialties – such as 'musician' – lead to assignments in units that are unlikely to be exposed to combat.

For simplicity and brevity, we aggregate all MOS designations that involve direct combat engagement with the enemy into two categories: (i) infantry; and (ii) other combat specialties (armor, artillery, and combat engineering). All non-combat MOSs are divided into three categories – combat support, medical, and 'other.' To be clear, many soldiers holding Non-combat MOS designations were exposed to combat and served in units that sustained casualties. The distinction is that it is not the job of those with Non-combat MOSs to engage in combat. Rather, their jobs often lead to being exposed to combat while fulfilling non-combat missions.[5]

The data includes annual updates of marital status, number of children, MOS, and age. In most of our specifications, we use age, marital status, MOS, and a dummy variable for whether or not someone has children, as of 2001, when our data starts. We include data on an individual's race and ethnicity.

As a proxy for intellectual and vocational aptitude, we include percentile scores on the Armed Forces Qualification Test (AFQT). The AFQT is a subtest of the larger Armed Services Vocational Aptitude Battery (ASVAB), and is formed from a composite score of four general areas: arithmetic reasoning, word knowledge, paragraph comprehension, and mathematics knowledge.

Some of our tests require additional variables. Following Engel, Gallagher, and Lyle (2010) we code an individual's unit, at the company level, as deployed if 30% or more of a unit were deployed while an individual was assigned to that unit.[6] We also code dummy variables for whether someone was dishonorably discharged, medically separated, or ever excluded from deployment for disciplinary reasons. To classify service members according to income, we matched the median income by zip code from the 1999 US Census with the zip code of each service member at the time of his enlistment. We classify someone as low income if they came from a zipcode one standard deviation below the mean for median income.

Table 2 provides information on AFQT scores, age, race, marital and family status, and whether individuals or their units were deployed to Iraq or Afghanistan. The data reveal meaningful differences in personal characteristics among those who were deployed when compared to those who

**Table 2.** Descriptive statistics all first term enlisted army personnel.

| Variable | All | Deployed | Not deployed | Black | Not Black |
|---|---|---|---|---|---|
| AFQT | 59.30984 | 60.67358 | 58.7105 | 51.15563 | 62.45024 |
| Age | 23.83801 | 24.49776 | 23.54798 | 24.00062 | 23.72949 |
| Marriage 2001 | 0.236728 | 0.1940193 | 0.2555031 | 0.23417 | 0.229168 |
| Children 2001 | 0.208895 | 0.1691586 | 0.2263635 | 0.25656 | 0.188546 |
| Black | 0.22089 | 0.1886684 | 0.2351225 | | |
| Hispanic | 0.114527 | 0.1140199 | 0.1147505 | 0.010361 | 0.067474 |
| Deployed | 0.305366 | 1 | 0 | 0.261693 | 0.319057 |
| Unit Mortality | 0.032846 | 0.1074172 | 0.0000644 | 0.022612 | 0.035805 |
| Medical Seperation | 0.079318 | 0.0586045 | 0.0884241 | 0.075092 | 0.081746 |
| Disciplinary | 0.013312 | 0.0042216 | 0.0173085 | 0.018054 | 0.012182 |
| Dishonorable Disch | 0.026642 | 0.0094987 | 0.0341788 | 0.038896 | 0.023887 |
| Unit 30 percent | 0.316852 | 0.9059807 | 0.0578668 | 0.277225 | 0.329507 |
| Low Income | 0.146593 | 0.1340763 | 0.1530707 | 0.242176 | 0.102583 |
| Change Unit | 0.521856 | 0.8337962 | 0.3844552 | 0.51754 | 0.525112 |
| Infantry | 0.153632 | 0.1498974 | 0.1552737 | 0.047967 | 0.181207 |
| Combat Other | 0.136184 | 0.1301085 | 0.1388545 | 0.107837 | 0.145816 |
| Support Job | 0.164348 | 0.1709176 | 0.1614599 | 0.13744 | 0.175009 |
| Medical Job | 0.056552 | 0.0516271 | 0.0587174 | 0.075225 | 0.048827 |

were not. Comparing these subgroups shows that those with higher AFQT scores were more likely to deploy. Not surprisingly, soldiers who were married, or had children, were also less likely to be deployed. These differences were large. We also find that those deployed were a year older on average than the non-deployed.

There are also notable differences among racial groups. Blacks made up 22% of the sample, but only 19% of those deployed. By comparison, in the 2000 Census, Blacks constituted 14.8% of the 18–24-year-old population[7]. Viewed a different way, 26% of Blacks deployed in their first term, while 32% of non-Blacks deployed.

By comparison, Hispanics comprise 11% of the sample, while constituting 17.5% of the 18–24-year-old population.[8] Asch et al. (2009a) find that low Hispanic participation does not reflect any lack of enthusiasm for military service amongst Hispanic youth, but rather low rates of high school completion and high rates of obesity.[9] Hispanics also constitute 11% of those who were deployed.

Those not deployed had greater separation and discharge rates than those who were deployed. Table 2 also shows that 90% of those deployed went as part of a unit that was itself deployed. Similarly, fewer than 6% were left behind in units that were deployed.

This simple cut of the data is sufficient to raise concerns about racial biases. Clearly, a number of factors connected to underlying demographics shape the likelihood of deployment. Table 2 also suggests that Black soldiers differ in a variety of observable ways from other soldiers, which suggests that any meaningful analysis would take these differences into account. Controlling for these factors requires a multivariate analysis, which we turn to in the next section.

## Model for Selection

How does one get sent to a combat zone? How does one end up serving in a unit with combat deaths? From the point of view of the U.S. Armed Forces, these are not the outcomes of random processes. Each situation calling for deployment has operational objectives and challenges. Each unit has different capabilities and different levels of combat readiness. Individuals are deployed with their units, though not by any means do all members of a unit deploy. The choice of who to send within a unit creates another level of potentially non-random selection.

The probability that an individual deploys is based on the probability that a unit is sent, the probability an individual is in that unit, and the probability that an individual is in the fraction of the unit that is sent. The probability that a unit is sent, while not random, has nothing to do with the individual characteristics of service members. An airborne unit is sent because an airborne unit is required, not because it has more Hispanics or because fewer married people were assigned to it.

The probability that an individual is in a particular unit is also not random, and may be shaped by individual decisions. There is a selection based on observable characteristics – such as marriage and family status – and potentially also on less easily observable characteristics, such as an individual's motivation for joining the military in the first place. Helmus et al. (2018) find that the three motivations most often cited by recruits in explaining their decision to enlist are a desire for adventure, educational benefits, and patriotism.

Several decisions shape the likelihood of being in a unit that deploys. Joining the Marines, for example, results in a higher likelihood of deployment that joining one of the other services. Within the Army, one might expect that joining elite infantry units such as the 82nd Airborne Division and the Ranger Regiment results in a higher likelihood of deployment that joining other units. Hence, explicitly asking to 'go airborne' might get a soldier assigned to a unit that carries a higher chance of deployment.

Finally, even within units that deploy, some individuals are not sent – potentially as a result of observable personal characteristics. In our sample, 6% of the non-deployed were in units that were deployed. Additionally, some individuals were assigned to augment deploying units, even when only small fractions of their own units deployed. Of personnel who were deployed, 10% were in non-deployed units. Decisions on who is deployed reflect the commander's judgement of the readiness

of individuals to deploy, which may be influenced by marriage and family status, discipline, medical condition, or myriad other factors.

To sum this up, individual choice of service, MOS, and preference for the type of unit may influence which unit an individual serves in. Command choices based on operational needs, and not explicitly on the characteristics of personnel, determine which units are sent. Command decisions based on unit needs *and* individual characteristics determine who within a unit is sent.[10]

In order to deepen our understanding of who is deployed and who is not, we estimate logit regressions in which the main covariates are the observable, predetermined characteristics of soldiers.[11] In Table 3, we report the results of logit analyses of the likelihood of deployment based on personal characteristics. It also reports the results of logit analyses for the likelihood of being in a unit that sustains fatalities during its deployment. Once control variables are taken into account, a much more noticeable selection story appears than what could be identified in the descriptive statistics.

Unsurprisingly, family concerns lead to a greatly reduced likelihood of deployment. Being married reduced the odds of deployment by 36%, while having children led to as much as a 35% reduction in the odds of deployment. Those who are married and have children face about 60% lower odds of deployment. However, personnel that are married and have children make up less than 20% of deployable personnel amongst first-term soldiers.

Due to the large size of our samples, even unimportant parameters appear statistically significant. For example, differences in the average age and AFQT scores are highly significant, but the small standard deviation in age in most of the sample and the small size of the coefficient on AFQT, make these unimportant results. A one standard deviation increase in AFQT – about 20 percentage points – would increase odds of deploying by about 10%.

Of far greater interest, the racial patterns identified in the descriptive statistics grew more pronounced in the multivariate analysis. Blacks were *far less likely* than others to deploy, and had they deployed, they faced up to 26% lower odds of having served in units that sustained fatalities. In

Table 3. Logit all-first term army personnel for probability of deployment and probability of unit experiencing fatalities if deployed.

| Variables | Deployment | Deployment | Deployment | Unit mortality | Unit mortality | Unit mortality |
|---|---|---|---|---|---|---|
| AFQT | 1.002*** | 1.002*** | 1.002*** | 0.999 | 1.001 | 0.998** |
| | (0.000403) | (0.000446) | (0.000405) | (0.00108) | (0.00118) | (0.00111) |
| Age | 1.100*** | 1.101*** | 1.100*** | 0.989* | 1.004 | 0.997 |
| | (0.00217) | (0.00224) | (0.00218) | (0.00570) | (0.00588) | (0.00574) |
| Married | 0.635*** | 0.648*** | 0.633*** | 0.829*** | 0.889* | 0.884* |
| | (0.0137) | (0.0143) | (0.0137) | (0.0531) | (0.0588) | (0.0576) |
| Children | 0.652*** | 0.636*** | 0.652*** | 0.939 | 0.934 | 0.938 |
| | (0.0149) | (0.0148) | (0.0149) | (0.0640) | (0.0657) | (0.0651) |
| Black | 0.770*** | 0.847*** | 0.763*** | 0.738*** | 0.977 | 0.931 |
| | (0.0139) | (0.0163) | (0.0141) | (0.0389) | (0.0559) | (0.0506) |
| Hispanic | 1.071** | 1.120*** | 1.073** | 0.999 | 1.127 | 1.093 |
| | (0.0328) | (0.0352) | (0.0330) | (0.0791) | (0.0924) | (0.0878) |
| Infantry | | | 0.898*** | | | 3.551*** |
| | | | (0.0187) | | | (0.171) |
| Combat Other | | | 0.928*** | | | 1.736*** |
| | | | (0.0199) | | | (0.0977) |
| Support Job | | | 1.007 | | | 1.570*** |
| | | | (0.0197) | | | (0.0829) |
| Medical Job | | | 0.788*** | | | 1.490*** |
| | | | (0.0255) | | | (0.132) |
| Constant | 0.0494*** | 0.242*** | 0.0508*** | 0.189*** | 0.246*** | 0.0994*** |
| | (0.00248) | (0.0251) | (0.00261) | (0.0281) | (0.0385) | (0.0152) |
| MoS Controls | No | Yes | No | No | Yes | No |
| | 100,245 | 100,227 | 100,245 | 30,716 | 29,942 | 30,716 |

Standard errors in parentheses
*** p < 0.01, ** p < 0.05, * p < 0.1

contrast, Hispanics were significantly *more likely* to deploy than non-Hispanics, and were as likely as non-Hispanics to serve in units that sustained fatalities.

We conducted several robustness checks and find that these patterns are consistent across cohorts and correcting for various fixed effects. In Tables 3 and 4, we also looked at whether MOS choices would explain deployment patterns. We ran regression with dummy variables for the five categories of MOSs and with MOS fixed effects. MOS fixed effects reduce, but do not eliminate, the impact of being Black on the probability of deployment. However, including either MOS categories or fixed effects renders the impact of being black on unit mortality insignificant in our sample.

Table 4 replicates models from Table 3 for the pre-9/11 cohort of U.S. Marine Corps (USMC) enlisted personnel. Blacks were less well represented in the Marines; our analysis shows similar negative impacts of being Black on the odds of deployment and facing intense combat if deployed to our analysis of army personnel. Adding MOS categories to the model for the probability of unit mortality similarly reduces the impact of being black on the probability of unit mortality.

We next examined whether the relationships identified above persist when we examine the sample of first-term personnel recruited between 2002 and 2005. Table 4 also shows these results and demonstrates patterns consistent – but attenuated – with those identified above for the pre-9/11 cohort of recruits. In this cohort, adding MOS categories does not eliminate the significant negative impact of being black on the odds of being in a unit that experiences fatalities.

From this initial look at the results, it appears that race and ethnicity play an important role in determining whether soldiers will deploy to combat zones. The question is why?

## Interunit v. Intraunit Selection for Deployment

There can be only two possible, but not mutually exclusive, explanations for the low deployment rates observed for soldiers who are married, have children, or are Black. One possibility is that they are not deploying with their units – intraunit selection. The other is that units with disproportionate numbers of these types of soldiers are not being deployed as often as other units – interunit selection.

Some evidence that we have already seen hints that interunit selection is an important driver of differences in deployment history. First, the preponderance of soldiers deploy with their units. Second, we have already reported that units that incurred fatalities differed demographically from units that did not.

Interunit selection requires that soldiers who are married, have children, or are Black, be disproportionately represented in units that are less likely to deploy. How could this be? There is no explicit or even implicit policy segregating Blacks or those with families into different units.

Oddly enough, however, it isn't that hard for such segregation to take place. As we mentioned above, certain types of units are deployed more often than other types of units. It is quite conceivable that soldiers with families, for example, who hold an infantry MOS disproportionately prefer to serve in mechanized infantry units rather than airborne units. Airborne units are highly 'expeditionary' and are often sent overseas at a moment's notice to deal with crisis situations. Soldiers with spouses and children may not find that feature of service as a paratrooper particularly appealing.

It is not difficult to understand how intraunit selection could also take place either for married soldiers or those with children. For example, consider a unit commander who has an opportunity to leave one soldier behind while the rest of the unit deploys (such opportunities occasionally present themselves). All else equal, the commander might choose to leave a service member with a family behind.

It is, however, much tougher (and much more important) to understand how either interunit or intraunit selection could be taking place for Blacks. A more detailed discussion and analysis of this question is offered below in Section Six of this paper.

**Table 4.** Logit all-first term marine personnel and army personnel enlisted 2002–2005 for probability of deployment and probability of unit experiencing fatalities if deployed.

| Variables | Deployed | Deployed | Unit mortality | Unit mortality | Deployed 2002-2005 Sample | Deployed 2002-2005 Sample | Unit mortality 2002-2005 Sample | Unit mortality 2002-2005 Sample |
|---|---|---|---|---|---|---|---|---|
| | Marines | Marines | Marines | Marines | | | 2002-2005 Sample | 2002-2005 Sample |
| AFQT | 0.997*** | 0.999*** | 0.988*** | 0.994*** | 1.000 | 1.001*** | 1.004*** | 1.005*** |
| | (0.000461) | (0.000470) | (0.000869) | (0.000938) | (0.000262) | (0.000269) | (0.000714) | (0.000729) |
| Age | 1.104*** | 1.104*** | 0.964*** | 0.962*** | 0.976*** | 0.978*** | 0.979*** | 0.983*** |
| | (0.00340) | (0.00343) | (0.00596) | (0.00622) | (0.00136) | (0.00137) | (0.00435) | (0.00437) |
| Married | 0.491*** | 0.503*** | 0.601*** | 0.651*** | 1.105*** | 1.118*** | 1.464*** | 1.520*** |
| | (0.0120) | (0.0124) | (0.0329) | (0.0377) | (0.0219) | (0.0222) | (0.111) | (0.116) |
| Children | 0.784*** | 0.792*** | 1.033 | 1.093 | 0.717*** | 0.729*** | 0.458*** | 0.481*** |
| | (0.0263) | (0.0267) | (0.0772) | (0.0866) | (0.0127) | (0.0129) | (0.0319) | (0.0338) |
| Black | 0.767*** | 0.835*** | 0.635*** | 0.909* | 0.799*** | 0.852*** | 0.539*** | 0.642*** |
| | (0.0191) | (0.0212) | (0.0322) | (0.0494) | (0.0110) | (0.0118) | (0.0267) | (0.0323) |
| Hispanic | 1.172*** | 1.216*** | 0.917 | 1.079 | 1.117*** | 1.139*** | 0.972 | 0.991 |
| | (0.0389) | (0.0407) | (0.0553) | (0.0698) | (0.0167) | (0.0171) | (0.0386) | (0.0397) |
| Infantry | | 2.214*** | | 0.868 | | 0.678*** | | 0.907 |
| | | (0.482) | | (0.358) | | (0.0138) | | (0.0638) |
| Combat Other | | 2.117*** | | 6.205*** | | 1.024 | | 0.805*** |
| | | (0.0565) | | (0.277) | | (0.0150) | | (0.0391) |
| Support Job | | 1.347*** | | 4.974*** | | 1.496*** | | 2.497*** |
| | | (0.0278) | | (0.192) | | (0.0209) | | (0.0767) |
| Medical Job | | 1.309*** | | 1.508*** | | 1.038*** | | 1.055 |
| | | (0.0376) | | (0.0884) | | (0.0139) | | (0.0423) |
| Constant | 0.0605*** | 0.0464*** | 2.115*** | 0.658*** | 3.614*** | 2.928*** | 0.0740*** | 0.0469*** |
| | (0.00452) | (0.00353) | (0.318) | (0.105) | (0.118) | (0.0985) | (0.00735) | (0.00478) |
| Observations | 76,978 | 76,978 | 22,353 | 22,353 | 200,982 | 200,982 | 132,866 | 132,866 |

Standard errors in parentheses
*** p < 0.01, ** p < 0.05, * p < 0.1

To clarify to what extent interunit and/or intraunit selection account for our results, Table 5 report the results of a bivariate probit analysis. The two dependent variables are (1) whether a soldier was in a unit that deployed; and (2) whether a soldier was himself deployed. This allows us to identify intra-unit and inter-unit selection on observables. The biprobit also explains four possible outcomes: (i) the soldier's unit deployed and the soldier was deployed; (ii) the soldier's unit deployed but the soldier was not deployed; (iii) the soldier's unit did not deploy but the soldier was deployed – ostensibly with another unit; and (iv) neither the unit nor the soldier were deployed. The independent variables are the same demographic characteristics and MOS categories as in Table 3.

The first two columns in Table 5 are the coefficients of the biprobit regressions. The first column contains the coefficients for the probability that a soldier's unit was deployed. The second column contains the coefficients for the probability of an individual soldier's deployment. Not surprisingly, these are not independent of each other and Rho is significant at the 99% level. The coefficients on the demographic characteristics in both columns are all highly significant, as expected with nearly 30,000 observations. The results clearly indicate that both intraunit and interunit selection took place, and followed the same demographic patterns.

The next four columns give the marginal effects for the four outcomes. The third column of Table 5 corresponds to a soldier being deployed with his unit. It shows that if a soldier was married, had children, or was Black, his unit was less likely to be deployed and the soldier himself was less likely to be deployed. A soldier is 9 percentage points less likely to deploy and be in a deployed unit if he had children, 8 percentage points less likely if he was married, and 5 percentage points less likely if he was Black.

The fourth column shows the effect of demographics on the probability that a soldier was in a unit that deployed but the soldier did not. As only 6% of our sample was in this group, it is not surprising that none of the marginal impacts in this column are very large. The fifth column is the effect of demographics on the probability that a soldier deployed but his unit did not. Again, this is a small fraction of our sample – only 9%, but consistent, however, with the selection story we see throughout, married soldiers and Blacks are significantly less likely to find themselves in this group. The final column is the effect of demographics on both unit and soldier not deploying. Having children, being married, and being Black, made a soldier far more likely to land in this group.

The biprobit results confirm that personal status, race, and ethnicity play powerful roles in the placement of personnel into units that were deployed to OEF/OIF. These factors significantly affected who deployed with their units and who deployed with other units. The fact, however, remains that a large majority of first-term personnel deployed along with their units. Hence, interunit assignments were much more important than intraunit deployment decisions.

We cannot, however, rule out the possibility that some of this interunit selection is actually intraunit sorting driven by pending deployments – more than half of first-term personnel change units at least once during their first term of enlistment. To clarify this, we looked at the data to see if there was evidence that certain personnel were being reassigned due to their unsuitability for deployment. In Table 6, we find that married soldiers, soldiers with children, and Blacks are actually slightly less rather more likely to be reassigned.

The story of how both intra-unit and inter-unit selection occurs for those with families is an easy one to tell. But why Blacks are less likely to deploy with their units and why they tend to be assigned to less deployable units within the same career specialty, remains a mystery. We explore several possible drivers of this selection story in the next section.

## Why Don't Blacks Deploy?

As we have seen, during the early days of OEF and OIF, Black soldier were less likely to serve in units that were sent to Afghanistan or Iraq. They were also less likely than others to deploy with the rest of their unit when serving in units that where assigned to OEF or OIF. And if deployed to OEF or OIF, they were less likely to be in units that participated in intense combat.

**Table 5.** Bivariate probit of unit deployment and individual deployment.

| Variables | Unit | Individual | Margins | Margins | Margins | Margins |
| --- | --- | --- | --- | --- | --- | --- |
| | Deployed | Deployed | Unit deployed / Indiv Deployed | Unit Deployed / Indiv Not | Unit Not / Indiv Deployed | Unit Not / Indiv Not |
| AFQT | 0.00132*** | 0.00160*** | 0.000491*** | −2.46e-05 | 6.66e-05*** | −0.000533*** |
| | (0.000243) | (0.000244) | (7.78e-05) | (2.73e-05) | (2.25e-05) | (8.61e-05) |
| Age | 0.0685*** | 0.0600*** | 0.0213*** | 0.00294*** | −0.000380*** | −0.0238*** |
| | (0.00118) | (0.00119) | (0.000378) | (0.000130) | (0.000107) | (0.000418) |
| Married | −0.266*** | −0.272*** | −0.0854*** | −0.00488*** | −0.00526*** | 0.0955*** |
| | (0.0128) | (0.0128) | (0.00368) | (0.00135) | (0.00108) | (0.00419) |
| Children | −0.246*** | −0.254*** | −0.0793*** | −0.00407*** | −0.00527*** | 0.0886*** |
| | (0.0134) | (0.0135) | (0.00386) | (0.00142) | (0.00113) | (0.00439) |
| Black | −0.136*** | −0.158*** | −0.0481*** | 0.00109 | −0.00568*** | 0.0527*** |
| | (0.0109) | (0.0109) | (0.00329) | (0.00121) | (0.000920) | (0.00370) |
| Hispanic | 0.0532*** | 0.0447** | 0.0163*** | 0.00265 | −0.000647 | −0.0183*** |
| | (0.0185) | (0.0185) | (0.00606) | (0.00216) | (0.00169) | (0.00664) |
| Infantry | −0.00441 | −0.0704*** | −0.0135*** | 0.0119*** | −0.0110*** | 0.0126*** |
| | (0.0125) | (0.0126) | (0.00399) | (0.00143) | (0.00118) | (0.00441) |
| Combat Other | −0.0232* | −0.0491*** | −0.0124*** | 0.00424*** | −0.00463*** | 0.0128*** |
| | (0.0128) | (0.0129) | (0.00409) | (0.00146) | (0.00120) | (0.00452) |
| Support Job | 0.0113 | 0.00455 | 0.00253 | 0.00146 | −0.000950 | −0.00304 |
| | (0.0118) | (0.0118) | (0.00376) | (0.00130) | (0.00107) | (0.00416) |
| Medical Job | −0.217*** | −0.143*** | −0.0588*** | −0.0179*** | 0.00899*** | 0.0677*** |
| | (0.0193) | (0.0192) | (0.00614) | (0.00215) | (0.00175) | (0.00679) |
| Constant | −2.046*** | −1.872*** | | | | |
| | (0.0308) | (0.0310) | | | | |
| Arthro | | 2.093*** | | | | |
| | | (0.0119) | | | | |
| Observations | 100,245 | 100,245 | 100,245 | 100,245 | 100,245 | 100,245 |

Standard errors in parentheses
*** p < 0.01, ** p < 0.05, * p < 0.1

**Table 6.** Logit all-first term army personnel for probability of reassignment during first-term probablity of disciplinary problems and medical exclusion.

| Variables | Change unit | Disciplinary problems | Medical exclusion |
|---|---|---|---|
| AFQT | 1.001 | 0.992*** | 0.993*** |
|  | (0.000387) | (0.000527) | (0.000676) |
| Age | 1.181*** | 0.915*** | 1.036*** |
|  | (0.00268) | (0.00280) | (0.00311) |
| Married | 0.689*** | 1.036 | 1.369*** |
|  | (0.0138) | (0.0282) | (0.0443) |
| Children | 0.643*** | 1.105*** | 1.315*** |
|  | (0.0136) | (0.0311) | (0.0439) |
| Black | 0.905*** | 1.347*** | 0.799*** |
|  | (0.0153) | (0.0290) | (0.0243) |
| Hispanic | 1.252*** | 0.803*** | 0.628*** |
|  | (0.0368) | (0.0336) | (0.0370) |
| Infantry | 0.636*** | 0.883*** | 1.102*** |
|  | (0.0125) | (0.0243) | (0.0378) |
| Combat Other | 0.769*** | 1.060** | 0.945 |
|  | (0.0154) | (0.0279) | (0.0344) |
| Support Job | 0.883*** | 0.972 | 1.055 |
|  | (0.0165) | (0.0247) | (0.0346) |
| Medical Job | 1.055* | 0.990 | 0.967 |
|  | (0.0321) | (0.0414) | (0.0512) |
| Constant | 0.0287*** | 2.161*** | 0.0515*** |
|  | (0.00159) | (0.161) | (0.00412) |
|  | 99,380 | 100,245 | 100,245 |

Standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Given this study's limitations, we can offer no definitive explanation for the fundamental differences in the experiences of Blacks who served in the military during the early days of OEF/OIF when compared with those of other Americans. What we can do is offer several hypotheses and evaluate their credibility with logic, some statistics, and common sense.

First, the results are consistent with a pattern of systematic institutional bias or discrimination against Blacks in the US Armed Forces. Burk and Espinoza (2012) review the extensive literature on this subject, and conclude that there is some evidence of racial bias in the promotion of officers and the military justice system (while reporting that there was no evidence of bias or discrimination in recruitment or exposure to combat risks). However, they go on to say with regard to evidence of bias, that 'the evidence for each of these claims should not be overstated,' and make clear that these biases are 'not a direct or intended result of military policy and practice.'[12]

A second possibility is that the results may be evidence of fundamental differences in the motives that lead Blacks to join the Armed Forces when compared to other Americans. Ironically, the idea is that Blacks join the military precisely because it allows them to *avoid discrimination* that remains rampant in the civilian labor market. As a result, their motives differ from those of other recruits and that, in turn, affects the likelihood that they will be deployed to serve in a combat zone.

There is considerable evidence consistent with this argument. As we mentioned in the introduction, Blacks who join the military enjoy meaningful financial benefits over their lifetimes, while those of other ethnic groups do not. Papers that have identified this effect include Ornstein (1976), Lopreato and Poston (1977), Poston (1979), Berger and Hirsch (1983), Hisnanick (2003), Hirsch and Mehay (2003), and Kleykamp (2009).

If Blacks who volunteer for military service can expect to enjoy substantially higher incomes, it would hardly be surprising if a disproportionate number of them were motivated by financial objectives when they joined the Armed Forces. Others – who could expect no lifetime financial gain from their service – would be more likely to be motivated by non-pecuniary objectives such as a desire to experience adventure.

This would explain some of the results that emerged in our analysis. Blacks were disproportionately represented in non-combat professions and Black soldiers were less likely to serve in the most expeditionary units.

To test the hypothesis that those with more to gain economically from military service were less likely to deploy than others, we consider whether personnel from low-income backgrounds were less likely to deploy. Our assumption is that service members from low-income homes are the most likely to have joined the military for pecuniary reasons.

To classify service members according to income, we matched the median income by zip code from the 1999 US Census with the zip code of each service member at the time of his enlistment. The data suggest that Blacks come from markedly poorer neighborhoods on average. Black personnel come from neighborhoods with median incomes around $37,000-$38,000 while non-Black personnel come from neighborhoods with median incomes around $42,000-$43,000.

In Table 7 we report the results from logit regressions on the probability of deployment to test whether those who came from economically disadvantaged backgrounds were less likely to deploy. We code a service member as coming from a low-income background if he enlisted from a zip-code with a median income one standard deviation lower than the mean.

We find evidence that coming from a low-income community reduced one's likelihood of deployment. Specifically, a soldier was 5% percent less likely to deploy if he came from a low-income neighborhood. This impact is significant at the 99% level, but including it in the model of deployment does not reduce the magnitude of our findings for Blacks. These results do suggest that the enlisted personnel likely to benefit the most economically from military service were indeed less likely to deploy.

**Table 7.** Original regression with added controls.

| Variables | Deployment | Deployment | Deployment | Deployment |
|---|---|---|---|---|
| AFQT | 1.003*** | 1.006*** | 1.002*** | 1.003*** |
| | (0.000444) | (0.000435) | (0.000409) | (0.000477) |
| Age | 1.048*** | 1.106*** | 1.095*** | 1.053*** |
| | (0.00233) | (0.00236) | (0.00220) | (0.00252) |
| Married | 0.696*** | 0.658*** | 0.629*** | 0.727*** |
| | (0.0167) | (0.0157) | (0.0137) | (0.0191) |
| Children | 0.742*** | 0.648*** | 0.652*** | 0.739*** |
| | (0.0187) | (0.0163) | (0.0150) | (0.0205) |
| Black | 0.765*** | 0.763*** | 0.787*** | 0.783*** |
| | (0.0153) | (0.0151) | (0.0147) | (0.0169) |
| Hispanic | 0.974 | 1.046 | 1.053* | 0.921** |
| | (0.0325) | (0.0339) | (0.0326) | (0.0324) |
| Infantry | 1.112*** | 0.916*** | 0.886*** | 1.129*** |
| | (0.0257) | (0.0203) | (0.0186) | (0.0278) |
| Combat Other | 1.046* | 0.886*** | 0.936*** | 1.036 |
| | (0.0246) | (0.0199) | (0.0202) | (0.0256) |
| Support Job | 1.075*** | 0.976 | 1.006 | 1.076*** |
| | (0.0231) | (0.0203) | (0.0199) | (0.0246) |
| Medical Job | 0.731*** | 0.869*** | 0.783*** | 0.791*** |
| | (0.0253) | (0.0308) | (0.0256) | (0.0299) |
| Change Unit | 7.671*** | | | 6.480*** |
| | (0.136) | | | (0.125) |
| Low Income | | 0.932*** | | 0.949** |
| | | (0.0213) | | (0.0237) |
| Disciplinary Problems | | | 0.351*** | 0.313*** |
| | | | (0.00867) | (0.00841) |
| Medical Exclusion | | | | 0.498*** |
| | | | | (0.0156) |
| Constant | 0.0405*** | 0.0428*** | 0.0680*** | 0.0521*** |
| | (0.00233) | (0.00237) | (0.00356) | (0.00323) |
| Observations | 99,380 | 83,732 | 100,245 | 83,166 |

Standard errors in parentheses
*** p < 0.01, ** p < 0.05, * p < 0.1

One final possibility was that morale amongst Black troops was lower than that for other service members during the early days of OEF/OIF. Rohall and Ender (2007) find that Black soldiers simply did not support the invasion of Iraq to the extent that others did. Hence, Blacks may have been more likely than others in their units to seek out ways to avoid serving in that conflict. That could plausibly explain why Blacks were less likely to deploy than others serving alongside them. There is considerable evidence consistent with this hypothesis. Asch et al. (2009b) find that 'the 8.3 percentage point drop in Black Army representation between the fourth quarters of 2000 and 2004 can be attributed to a large negative effect of the Iraq war on Black enlistments.'[13]

Lower morale could also manifest itself in shirking and disciplinary problems – and these in turn could lead to lower deployability. A 2011 report from the US Army War College raised concerns about high and growing numbers of soldiers who failed to deploy (Arnold et al. 2011). The report cited three main reasons why soldiers become undeployable – family status, disciplinary problems, and medical problems.

Based on this, we explore whether race and ethnicity influence the propensity to experience disciplinary or medical problems in the US Army. Our data does not specify if someone was non-deployable for medical reasons. Instead, we used medical dismissals from the military as a proxy for medical conditions that might prevent deployment. The results, in Table 6, suggest that Blacks and Hispanics were less likely than Whites to be dismissed from service on medical grounds.

Turning to disciplinary considerations, we looked at the probability that someone had been deemed un-deployable for disciplinary/legal reasons, to have received a Dishonorable Discharge from service, or to have otherwise been deemed unfit for service for disciplinary reasons. Table 6 shows that Blacks were significantly more likely than others to have had these kind of disciplinary problems. Moreover, including a dummy variable for these disciplinary problems in our Table 3 regressions in Table 7 reduces the impact of being Black slightly on the probability of deployment, suggesting that this effect is at least partially responsible for Blacks not deploying at the same rate as others.

Finally, in Table 7 we add all of these possible channels and find that it does reduce the impact of being Black on the probability of deployment slightly, but not enough to suggest that we can explain it away.

## Conclusion

Black soldiers were much less likely to serve in units that were sent to Afghanistan or Iraq. They were much less likely than others to deploy with their comrades when serving in units that where assigned to OEF or OIF. If deployed to OEF or OIF, they were less likely to be in units that participated in intense combat. And they were more likely to be excluded from deployment due to disciplinary infractions or face dishonorable discharges.

It is impossible not to conclude that, even 70 years after the end of segregation in the US Armed Forces, what Blacks experience while serving in the military still differs radically from that of all other Americans who don uniforms. Given the important role that military service plays in enculturation and the forming of social identity amongst veterans – and the large number of young people of all races who serve in the US military – these findings should be of considerable concern.

## Notes

1. See https://www.theatlantic.com/ideastour/military/moskos-full.html.
2. See http://www.prb.org/Publications/Articles/2005/ArmyRecruitmentGoals End angeredas Percent of African American Enlistees Declines .aspx.
3. See http://www.nbcnews.com/id/25809737/ns/us_news-life/t/after-years-black-military-officers-rare/.
4. Table 4 replicates our models in Table 3 for the Marines and the Army cohort that enlisted between 2002 to 2005.
5. In Table 3, we include fixed effects for each Combat and Non-Combat MOS.

6. For robustness, we also ran the analysis with a threshold of 60% but the results are largely unchanged, which is unsurprising given that units typically deploy around 80% of their personnel.
7. see http://www.infoplease.com/us/census/data/demographics and https://www.census.gov/prod/2001/pubs/c2kbr01-12.pdf for underlying data.
8. see http://www.infoplease.com/us/census/data/demographics and https://www.census.gov/prod/2001/pubs/c2kbr01-12.pdf for underlying data.
9. Asch et al. (2009a), xvii.
10. As part of this study, we spoke with several dozen military officers assigned to the Naval Postgraduate School as students or faculty regarding their experiences as company commanders preparing for deployment.
11. We show our result in terms of odds ratios to make interpretation easier. Odds ratios for categorical variables show the difference in odds for an outcome for the categorical variable in question relative to the base, or the percentage change in odds for a one-unit increase in a continuous variable. For example, an odds ratio of 1.09 represents a 9% increase in odds of deployment.
12. See Burk and Espinoza (2012), 401.
13. Asch et al. (2009b), xix.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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