

DEPLOYMENTS, COMBAT EXPOSURE, AND CRIME

D. Mark Anderson*
Montana State University

Daniel I. Rees
University of Colorado Denver
Institute for the Study of Labor (IZA)

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During the period 2001-2009, four combat brigades and the 3rd Armored Cavalry Regiment were based at Fort Carson, Colorado. These units were repeatedly deployed during the Iraq War, allowing us to measure the effect of arguably exogenous changes in troop levels on violent crime in El Paso County, where Fort Carson is located. We find that never-deployed units contributed to community violence in the form of assaults, murders, rapes, and robberies. In contrast, estimates of the relationship between previously deployed units at Fort Carson and violent crime are generally small and statistically insignificant at conventional levels. We interpret this pattern of results as evidence that never-deployed units represent a greater threat to public safety than units recently returned from combat.

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* Corresponding author. Address: Department of Agricultural Economics and Economics, Montana State University, P.O. Box 172920, Bozeman, MT 59717. Phone: 406-366-0921. Email: dwight.anderson@montana.edu.

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I'm happier. I know I'm alive and I'm home. There's no reason to be mad.

-- Army National Guard Specialist Michael Gillis

I get mad a lot...I feel like fighting. Even if someone looks like he could beat me up, I don't care.

-- Marine Corporal Jose Rosales

1. INTRODUCTION

Although flagged for symptoms of mental illness by the U.S. Army, Specialist Robert H. Marko was deployed to Iraq in February 2007, where he served with the 2nd Brigade of the 2nd Infantry Division. He returned to Fort Carson, Colorado almost a year later convinced that he was transforming into “a true Black Raptor,” able to kill “without mercy or reason.” On October 13, 2008, he admitted to raping and murdering Judilianna Lawrence, a local 19-year-old woman he had met online.¹

The tragic killing of Ms. Lawrence was not an isolated incident. In the space of four years (2005-2008), 10 soldiers from Fort Carson were charged by civilian authorities in connection with 9 murders and an 11th soldier from Fort Carson committed suicide after killing his wife (Henley and Roeder 2005; Olinger 2008).² The majority of these soldiers had been exposed to intense conflict while serving in Iraq, leading the media and prominent policymakers such as U.S. Senator Kenneth Salazar to question whether the units deployed from Fort Carson had been pushed too far (Mitchell 2008b; Luning 2009; Alvarez and Frosch 2009a).³

¹ Our description of Specialist Marko's history and the murder of Judilianna Lawrence is based on reporting by Benzel (2008), Frosch and Alvarez (2008), and Mitchell (2008a).

² A 12th Fort Carson soldier, Private Timothy Parker, was convicted of involuntary manslaughter by a military court for beating Specialist Piotr Szczypka to death on November 11, 2005 (Huspeni 2006; Riley and Roeder 2009). Private Parker belonged to the 3rd Brigade of the 4th Infantry Division, based at Fort Carson.

³ While the Fort Carson murders received more attention from the media and policymakers, soldiers from Forts Bragg, Campbell, Drum, and Riley were also charged in connection with high profile violent crimes after returning from Iraq and Afghanistan (Main 2005; Milburn 2005; Collins 2009; Lowary 2010; Tang 2010; Kristof 2012).

In theory, combat exposure could have either a positive or negative effect on post-deployment violence. Exposure to combat is often described by mental health experts as the trigger for, or indirectly leading to, acts of violence committed upon returning home (Killgore et al. 2008; Songtag and Alvarez 2008; Sreenivasan et al. 2013), but studies have found that exposure to adversity, including combat, can result in “post-traumatic growth.” Several features of post-traumatic growth (e.g., increased compassion, self-discipline, resilience, and spirituality) could reduce the propensity to engage in violent behavior.⁴

A substantial proportion of American soldiers who saw combat in Iraq developed post-traumatic stress disorder (PTSD) and/or exhibited the symptoms of depression upon returning home (Smith et al. 2008; Sciolli et al. 2010). Although PTSD and depression are associated with domestic violence (Chaffin et al. 1996; Galovskia and Lyons 2004), anger issues (Fava 1998; Jakupcak et al. 2007), substance use (Swendsen and Merikangas 2000; Mills et al. 2006) and arrest (Fazel and Danesh 2002; Elbogen et al. 2012a), they can lead to withdrawal from social activities (Schnurr et al. 2009; Sharpley and Bitsika 2010), potentially limiting the opportunities to engage in violent behavior. PTSD has also been linked to emotional numbing (Mason et al. 2001; Galovskia and Lyons 2004), while depression can cause fatigue and lower energy levels (Nestler et al. 2002; Nutt et al. 2007). Criminologists have argued that individuals suffering

⁴ Studies that document post-traumatic growth include Elder and Clipp (1989), Fontana and Rosenheck (1998), Koenig et al. (1998), McMillen and Cook (2003), Dohrenwend et al. (2004), Maguen et al. (2006), and Forstmeier et al. 2009. Park et al. (1996), Tedeschi and Calhoun (1996), and Linley and Joseph (2004) review the concept of post-traumatic growth (also known as “stress-related growth”). According to Linley and Joseph (2004, p. 11):

Positive changes following adversity have long been recognized in philosophy, literature, and religion... They have been reported empirically following chronic illness, heart attacks, breast cancer, bone marrow transplants, HIV and AIDS, rape and sexual assault, military combat, maritime disasters, plane crashes, tornadoes, shootings, bereavement, injury, recovery from substance addiction, and in the parents of children with disabilities... It is through this process of struggling with adversity that changes may arise that propel the individual to a higher level of functioning than that which existed prior to the event. These positive changes have been labeled posttraumatic growth, stress-related growth... and positive adaptation.

from depression may lack the requisite drive to engage in violent behavior (Agnew 1992; Mazerolle and Piquero 1997; Broidy 2001).

Economists have typically relied on draft lotteries to examine military service and criminal acts committed years or even decades after discharge (Rohlf's 2010; Galiani et al. 2011; Lindo and Stoecker 2014). In contrast, our interest is in the immediate impact of combat exposure on post-deployment violence. Exploiting a unique natural experiment, we draw on incident-level crime reports provided by Colorado Front Range police agencies for the period 2001-2009. During this period, well over 100 U.S. soldiers, many stationed at Fort Carson, were charged with murder after returning from Iraq or Afghanistan (Songtag and Alvarez 2008; Riley and Roeder 2009). Our empirical strategy is based on the premise that troop movements into and out of Fort Carson were exogenous, driven by events in Iraq and the recommendations of the 2005 Base Realignment and Closure (BRAC) Commission.

We find strong evidence that never-deployed combat units represent a threat to public safety. Specifically, increases in the number of never-deployed combat brigades at Fort Carson are associated with more reports of assault, murder, rape, and robbery in El Paso County, where Fort Carson is located. They are also associated with more arrests of 18- through 29-year old males for violent crimes. In contrast, estimates of the relationship between previously deployed combat brigades and violent crime are generally small and statistically insignificant; the hypothesis that previously deployed brigades had the same effect on violent crime as never-deployed brigades is typically rejected at conventional levels. Although mental health experts often describe combat exposure as a trigger for post-deployment violence, these results suggest that never-deployed brigades at Fort Carson were a greater threat to public safety than brigades recently returned from combat.

2. BACKGROUND

Fort Carson is located just a few miles south of Colorado Springs, a medium-sized city in El Paso County, Colorado that was experiencing rapid population growth during the 2000s.⁵ When the spate of murders involving Fort Carson soldiers occurred, residents of Colorado Springs were described as “shaken” and “outraged” (Frosch 2008; Smith 2009). U.S. Senator Kenneth Salazar asked for a review of the soldiers’ records (Mitchell 2008b), and the Army responded by conducting a three-month-long investigation focused on the 2nd Brigade of the 2nd Infantry Division. Nine of the Fort Carson soldiers connected to the murders belonged to the 2nd Brigade, which experienced heavy casualties during its two deployments to Iraq.

This investigation, the results of which were released in July 2009, found an association between combat exposure and violence. Noting that such an association was “consistent with recent research on combat exposure” (U.S. Army Medical Command 2009, p. ES-3), the investigation concluded that the “combination of multiple pre-existing personal risk factors in given individuals, combat intensity/exposure, and other unmeasured unit factors may have increased the risk of violent behavior...” (U.S. Army Medical Command 2009, p. ES-3).⁶

A few months after these results were released, the Army-wide Comprehensive Soldier Fitness program (CSF) was launched (Hames 2009; Millerrodgers 2010; Horgan 2011). The

⁵ Colorado Springs had a population of 360,890 according to the 2000 U.S. Census; its population had reached 416,427 by 2010. El Paso County had a population of 519,463 according to the 2000 U.S. Census; its population had reached 627,159 by 2010.

⁶ The U.S. Army Medical Command (2009) reached this conclusion by comparing the personnel records of soldiers from the 2nd Brigade of the 2nd Infantry Division with those of soldiers from the 3rd Brigade of the 4th Infantry Division, also based at Fort Carson. Soldiers from the 2nd Brigade were more likely to have been diagnosed with an anxiety disorder such as PTSD and were more likely to have tested positive for an illegal drug than were soldiers from the 3rd Brigade (pp. 11-12). Citing previous research (Elbogen and Johnson 2009), the U.S. Army Medical Command went on to note that both substance use and anxiety disorders are risk factors for aggressive behavior (p. 17).

goal of the CFS is to help soldiers cope with the stresses involved with military service by fostering resilience and “providing Soldiers skills needed to take care of themselves, their families, and their peers” (Lester et al. 2011, p. 24). Fort Carson responded to the murders and subsequent investigation by developing the Embedded Behavioral Health (EBH) program (Fisher 2009; Carabajal 2011).⁷ Under this program, EBH teams composed of one psychiatrist (or psychiatric nurse practitioner), psychologists, and social workers were tasked with providing counseling to troops deployed overseas and evaluating the mental health of returning soldiers (Carabajal 2011; Collins 2012; Sheehy 2012; Cho-Stutler 2013). Since their debut at Fort Carson in 2009, EBH teams have been established at Forts Bliss, Campbell, Drum, Hood, and Knox (Ingram 2009a; Carabajal 2011; Rose 2012; Block 2013; Grey 2013; Kocherga 2013). The Army is requiring that all combat brigades incorporate EBH teams by 2016 (Collins 2012; Holley 2013).

2.1. Fort Carson troop movements 2001-2009

At the outset of the Iraq War, Fort Carson was home to the 3rd Armored Cavalry Regiment (3ACR) and the 3rd Brigade of the 4th Infantry Division (3BCT-4ID).⁸ These were

⁷ Fort Carson also established the Courtesy Patrol program, under which military officers patrol the streets of downtown Colorado Springs on Friday and Saturday nights encouraging off-duty soldiers to act responsibly (Cantrell 2011; Ingram 2012). Civilian authorities responded to the series of murders involving Fort Carson soldiers by establishing the El Paso County Veteran Trauma Court, a jail-diversion program for veterans with trauma-related disorders or substance abuse problems (Warner 2010; Benzel 2011; Werthmann 2012).

⁸ In addition to the 3ACR and the 3BCT-4ID, the 10th Special Forces Group (Airborne) was stationed at Fort Carson when the Iraq War began. Composed of approximately 1,000 soldiers, its repeated deployments to Iraq and Afghanistan were kept secret (Roeder 2004a). The 3rd Battalion of the 10th Special Forces Group (Airborne), composed of approximately 400 soldiers, was activated at Fort Carson on August 19, 2010. Non-combat units stationed at Fort Carson at the outset of the Iraq War included the 4th Engineer Battalion, the 43rd Area Support Group, the 10th Combat Support Hospital, the 759th Military Police Battalion, the 13th Air Support Operations Squadron, and the Headquarters Company of the 7th Infantry Division. The 71st Ordnance Group was activated at Fort Carson on October 16, 2005. Approximately 300 Colorado National Guard soldiers belonging to the 2nd Battalion of the 135th Aviation Regiment, headquartered at Buckley Air Force Base, were deployed to Iraq from August 2006 through August 2007. In addition, support personnel and approximately 30 pilots belonging to

among the first Army units to be deployed to Iraq, and both conducted combat operations through the remainder of 2003 and into 2004 (Ricks 2006; Defense Department 2007; Roeder 2013).

The 3ACR was deployed to Iraq once more before being permanently relocated to Fort Hood based on the recommendations of the 2005 BRAC Commission.⁹ When the 3ACR was relocated to Fort Hood, its aviation element stayed at Fort Carson, reflagged as the 1st Squadron, 6th Cavalry (1-6 CAV).¹⁰ The 3BCT-4ID was deployed two more times during the period under study. Its third deployment was unexpectedly extended to 15 months after President Bush announced the so-called “surge” in U.S. troops (Brook and Michaels 2007; Tyson and White 2007).

Based on the recommendations of the 2005 BRAC Commission, three additional combat brigades were reassigned to Fort Carson during the period under study (Robson 2004; Slevin 2005; Lorge 2007).¹¹ The 2nd Brigade of the 2nd Infantry Division (2BCT-2ID) arrived in July 2005 after spending one year in Iraq; the 2nd Brigade of the 4th Infantry Division (2BCT-4ID) arrived from Fort Hood in June 2007; and the 1st Brigade of the 4th Infantry Division (1BCT-4ID) arrived from Fort Hood in July 2009. The 2BCT-2ID was deployed to Iraq in October

the 120th Fighter Squadron of the Colorado Air National Guard at Buckley Air Force Base were repeatedly deployed to Iraq during the period under study. Buckley Air Force Base is located in Aurora, Colorado. Dropping crime reports from the Aurora Police Department has very little impact on the estimates discussed below.

⁹ The 2005 BRAC Commission recommended closing 22 major U.S. military bases and “realigning” 33 other military bases (Gonzales 2009). The commission’s recommendations went into effect on November 9, 2005 after Congress failed to pass a joint resolution of disapproval (Miles 2005).

¹⁰ Composed of approximately 380 soldiers, the 1-6 CAV was deployed to Iraq in August 2007. It was permanently relocated from Fort Carson to Fort Riley in June 2009, replaced by the 1st Battalion, 2nd Aviation Regiment, 2nd Infantry Division (1-2 AVN). The 1-2 AVN arrived at Fort Carson from Camp Eagle, South Korea in April 2009.

¹¹ Appendix B of Anderson and Rees (2013) provides more information about the combat units stationed at Fort Carson during the period 2001-2009, including deployment dates. Deployment dates were gathered from a wide variety of sources including the following: *Army News*, *Colorado Springs Gazette*, *Denver Post*, *Fort Carson Mountaineer*, *Killeen Daily Herald*, and *Laredo Morning Times*.

2006, reflagged as the 4th Brigade of the 4th Infantry Division in April 2008, and deployed to Afghanistan in May 2009. The 2BCT-4ID was deployed to Iraq in August 2008.

3. PREVIOUS STUDIES

No previous study has examined whether troop movements such as those described above are related to the number of crimes reported to local law enforcement authorities. Medical researchers have documented an association between being exposed to combat in Iraq or Afghanistan and post-deployment violence (MacManus et al. 2012, MacManus et al. 2013). However, these researchers measured combat exposure using military occupation (e.g., whether a soldier was assigned to an infantry or logistics unit), which is likely to be correlated with factors such as personality and test scores (Zeidner et al. 2001; Ball and Peake 2006; MacLean and Parsons 2010).¹²

Economists have adopted more credible identification strategies based on draft lottery outcomes (Rohlf's 2010; Galiani et al. 2011; Albæk et al. 2013; Siminski et al. 2013; Lindo and Stoecker 2014). Their focus, however, has been on the relationship between military service and crimes committed after discharge.¹³ Moreover, their results have been mixed. For instance, Galiani et al. (2011) found that service in the Argentine military increased the likelihood of being prosecuted or convicted of committing a property crime, but had no impact on the likelihood of being prosecuted or convicted of committing a violent crime; Lindo and Stoecker (2014) found that service in the U.S. military during the Vietnam War decreased the likelihood of

¹² Other studies in the medical literature that have documented a positive, but potentially spurious, association between combat exposure and violent behavior include Elbogen et al. (2012a, 2013).

¹³ Economists have also used the Vietnam-era draft lottery to study the effects of military service on earnings (Angrist 1990; Angrist and Chen 2007), disability status (Angrist and Chen 2007), health and mortality (Angrist and Chen 2007; Dobkin and Shabani 2009; Conley and Heerwig 2012), and household stability (Conley and Heerwig 2011).

incarceration for nonviolent crime, but increased the likelihood of incarceration for violent crime.¹⁴

In addition to exploiting a unique natural experiment, the current study differs from the previous work by economists on military service and crime in at least three important respects. First, we are able to assess the immediate impact of troops returning home from combat. Rather than relying on arrest or incarceration records from years or even decades after service, we observe monthly crime and arrest data before, during, and after overseas deployments.

Second, previous studies by economists have typically estimated the effects of military service per se, but the number of people who serve in the military greatly exceeds the number who actually see combat (Siminski et al. 2013). In contrast, our focus is on combat units that saw action in Iraq during the period under study. Using unit-specific information on fatalities suffered in Iraq, we are able to explore the relationship between combat intensity and post-deployment violence. To our knowledge, no previous study has used unit-specific information on fatalities to examine the effect of combat intensity on crime.

Lastly, our results are likely to be more relevant to current policy formation than results based on data pertaining to Vietnam War veterans. Perhaps the most obvious difference between soldiers who served in Iraq and those who served in Vietnam is that the former were volunteers whereas a substantial portion of the latter were draftees. While tour lengths for the U.S. Army were roughly equal during the Iraq War and the Vietnam War, the vast majority of troops in Vietnam served single, year-long deployments. Repeated deployments were much more

¹⁴ Using draft lottery outcomes as an instrument, Siminski et al. (2013) examined a sample of Australian men between 41 and 65 years of age. These authors found no evidence that military service was related to violent crime. Using a similar empirical approach, Albæk et al. (2013) found that peacetime service in the Danish military had no impact on the likelihood of being arrested for a violent crime. Rohlfs (2010) analyzed data from the National Vietnam Veterans Readjustment Study. He found evidence that self-reported exposure to combat in Vietnam was associated with more violent crime among blacks. Among whites, estimates of the relationship between combat exposure and violent crime were positive but not statistically significant.

common among American troops during the Iraq War and many soldiers spent three to four cumulative years at war (Zoroya 2010). In addition, U.S. soldiers faced radically different threats and combat environments during the two wars.¹⁵

4. TROOP LEVELS AND CRIME

Information on crimes reported to Colorado Front Range police agencies was obtained from incident-level files compiled by the National Incident Based Reporting System (NIBRS) and made available by the Interuniversity Consortium for Political and Social Research (ICPSR). These data include information on the type of offense, where the crime took place, and when it occurred. One advantage to using the incident-level files is that they include information on all offenses reported as opposed to only those that ended in an arrest. Because we are interested in relatively rare events such as murder and rape, the distinction between reported crimes and arrests is potentially important.

Twenty-one Colorado Front Range police agencies provided data to NIBRS during the period 2001-2009.¹⁶ Several of these agencies (including the Arapahoe County Sheriff's Office, the Aurora Police Department, the Colorado Springs Police Department, the El Paso County

¹⁵ In Vietnam, U.S. forces faced a well-defined threat in the Vietcong and North Vietnamese Army, while U.S. forces in Iraq faced an unorganized, "mixed-bag" insurgency (Akers 2011, p. 2). Carpenter (2007, p. 21) described the conflict in Iraq as resembling a "...Hobbesian struggle of all against all rather than the kind of conventional insurgency the United States encountered in Vietnam." While the loss of life was greater in Vietnam, the enemy in Iraq has been described as crueler, with a penchant for execution rather than taking prisoners (Komarow 2005).

¹⁶ The Colorado Front Range extends north from Pueblo to Fort Collins along Interstate Highway 25, and includes the Denver-Aurora-Lakewood Metropolitan Statistical Area (MSA) and the Colorado Springs MSA. The 21 police agencies that contributed data to the analysis are: the Adams County Sheriff's Office, the Arapahoe County Sheriff's Office, the Aurora Police Department, the Berthoud Police Department, the Broomfield Police Department, the Centennial Police Department, the Colorado Springs Police Department, the Commerce City Police Department, the Eaton Police Department, the El Paso County Sheriff's Office, the Erie Police Department, the Glendale Police Department, the Golden Police Department, the Greenwood Village Police Department, the Jefferson County Sheriff's Office, the Lakewood Police Department, the Larimer County Sheriff's Office, the Northglenn Police Department, the Parker Police Department, the Sheridan Police Department, and the Wheat Ridge Police Department.

Sheriff's Office, and the Jefferson County Sheriff's Office) had jurisdiction over communities with more than 100,000 residents. Unfortunately, the Denver Police Department did not provide data to NIBRS during the period under study.

The Colorado Springs Police Department and the El Paso County Sheriff's Office routinely interact with, and arrest, soldiers from Fort Carson (Huspeni and Roeder 2007; Ridder 2007; Olinger 2008; Philipps 2009; Warner 2010). The other 19 Colorado Front Range police agencies that provided data to NIBRS during the period under study are located outside of El Paso County and are considered untreated. That is, we assume that troop movements into and out of Fort Carson had no effect on crime in the communities over which these 19 agencies had jurisdiction.¹⁷

Figure 1 shows the number of combat brigades at Fort Carson over the period 2001-2009. The largest changes in troop levels correspond to the 13-month deployments of the 3ACR and the 3BCT-4ID when the Iraq War began. The 3BCT-4ID was composed of approximately 3,500 soldiers, the standard size of a U.S. Army combat brigade (Slevin 2005; Foster 2006; Benzel 2010). Because the 3ACR was composed of approximately 5,200 soldiers (Finely 2005; Roeder 2013), its 2003 deployment corresponds to a 1.5-brigade decrease and its return to Fort Carson in April 2004 corresponds to a 1.5-brigade increase.

¹⁷ The portion of Fort Carson located within El Paso County forms a census-designated place with a 2010 population of 13,339. Covering an area of more than 500 square miles, Fort Carson extends into unincorporated Pueblo County and unincorporated Fremont County. The population living on base is not under the jurisdiction of the Colorado Springs Police Department or the El Paso County Sheriff's Office. The resort town of Manitou Springs, located in El Paso County, is only 13 miles from Fort Carson. Grouping crime reports from the Manitou Springs Police Department with those from the Colorado Springs Police Department and the El Paso County Sheriff's Office did not have an appreciable impact on the estimates discussed below. Although Fountain, Colorado is located in El Paso County, crime reports from the Fountain Police Department were not used in the analysis because they were only available for a limited number of years. The nearest untreated Front Range community for which we have data is Parker, located approximately 50 miles from Fort Carson. Archived issues of the *Parker Chronicle*, the local newspaper, contain no accounts of Fort Carson soldiers committing violent crimes in or around Parker. There are newspaper accounts of Fort Carson soldiers committing violent crimes in Pueblo County (Rappold 2005; Riley and Roeder 2009), but the Pueblo County Sheriff's Office did not provide data to NIBRS during the period under study and the Pueblo Police Department only provided data for 2009.

After April 2004, the number of combat brigades at Fort Carson did not fall below unity. Nevertheless, there was still considerable variation in troop levels resulting from overseas deployments and the re-stationing of brigades according to the recommendations of the 2005 BRAC Commission. This variation can be thought of as exogenous. As noted by previous researchers, operational needs and world events determine where U.S. Army units are stationed and when they are deployed (Lyle 2006; Engel et al. 2010; Cesur et al. 2013).

Figure 2a plots the natural log of violent crimes reported in month t to the El Paso County Sheriff's Office against the number of combat brigades stationed at Fort Carson but not deployed overseas. The solid line in Figure 2a is from an ordinary least squares (OLS) regression of violent crimes on troop levels. An additional combat brigade at Fort Carson is associated with a 6.3 percent increase in violent crimes reported to the El Paso County Sheriff's Office ($e^{.0613} - 1 = .063$).

Figure 2b plots violent crimes reported to the Colorado Springs Police Department against the number of combat brigades stationed at Fort Carson but not deployed overseas. Again, the solid line is from a simple bivariate regression. An additional combat brigade at Fort Carson is associated with a 2.5 percent increase in violent crimes reported to the Colorado Springs Police Department.

Figures 2a and 2b provide descriptive evidence consistent with the hypothesis that Fort Carson soldiers directly contributed to community violence, but there are at least two alternative explanations that merit exploration. First, it is possible that economic activity mediates the relationship between troop levels and violent crime. Soldiers clearly contribute to local economic activity (Hooker and Knetter 2001; Poppert and Herzog 2003) and their extended overseas deployments could have forced civilian residents of El Paso County to turn to illicit

sources of income (e.g., theft or robbery). Second, it is possible that the number of combat brigades stationed at Fort Carson tracked secular crime trends. We can rule out these alternative explanations by estimating a Poisson regression in which crime is related to troop movements into and out of Fort Carson by the following equation:

$$(1) \quad \ln \lambda_{jt} = \alpha_0 + \alpha_1 \text{Brigades}_{jt} + \mathbf{X}_{jt}\boldsymbol{\beta} + v_j + \varepsilon_{jt}.$$

where λ_{jt} represents the expected number of offenses in agency j and month t .¹⁸ The independent variable of interest is Brigades_{jt} , equal to 0 for the 19 untreated police agencies. For the treated agencies (the Colorado Springs Police Department and the El Paso County Sheriff's Office), Brigades_{jt} is equal to the number of combat brigades based at Fort Carson but not deployed overseas in month t . The vector of controls, \mathbf{X}_{jt} , includes 8 year indicators, 11 month indicators, the county unemployment rate, and the natural log of the population over which agency j had jurisdiction¹⁹; the inclusion of agency fixed effects, v_j , ensures that our estimates of α_1 are identified using within-agency variation. Equation (1) can be augmented with agency-specific linear time trends to account for smoothly evolving crime trends at the community level.

¹⁸ See Cameron and Trivedi (1986) and Grootendorst (2002) for descriptions of the Poisson regression model. As noted by Card and Dahl (2011), an advantage of the Poisson regression model is that including fixed effects does not lead to an incidental parameters problem. Appendix Table A1 provides descriptive statistics for the variables used in the analysis.

¹⁹ There is evidence that economic conditions and time of year are important predictors of crime (Raphael and Winter-Ebmer 2001; Gould et al. 2002; Jacob et al. 2007; McDowall et al. 2012).

Table 1 presents estimates of equation (1). Standard errors are corrected for clustering at the county-year level.²⁰ Although not shown, controls for the county unemployment rate and agency population are included.

The baseline specification suggests that a one-brigade increase in troop levels at Fort Carson is associated with a 2.4 percent increase in violent crime. Adding agency-specific linear time trends does not have an appreciable impact on this estimate, although it does become more precise. There is no evidence of a relationship between the number of combat brigades at Fort Carson and property crimes reported to the Colorado Springs Police Department and the El Paso County Sheriff’s Office.

When violent crimes are decomposed, we find that an additional combat brigade is associated with a 5 percent increase in robberies and a 3.7 percent increase in aggravated assaults.²¹ These estimates suggest that the typical Fort Carson soldier was more prone to violence than the residents of communities over which the El Paso County Sheriff’s Office and the Colorado Springs Police Department had jurisdiction. As noted above, a standard U.S. Army

²⁰ Correcting for clustering at the agency level produces similar results to those reported. We also experimented with clustering the standard errors at the county level. Because one regressor (unemployment) varied at the county level and 9 Colorado Front Range counties contributed data to the analysis, we used critical values from a t_{G-K-1} distribution, where G is 9 and K is 1 (Cohen and Dupas 2010). The results were similar to those reported in Tables 1-6. We can test the assumption that troop movements into and out of Fort Carson had no effect on crime in the communities over which the 19 control agencies had jurisdiction by estimating the following equation:

$$\ln \lambda_{jt} = \beta_0 + \beta_1 N_t + \beta_2 N_{jt} * T_j + \mathbf{X}_{jt} \beta_3 + v_j + \varepsilon_{jt},$$

where N_t is equal to the number of combat brigades at Fort Carson in month t , and a treatment indicator, T_j , is equal to one for the treated agencies (the Colorado Springs Police Department and the El Paso County Sheriff’s Office) and zero for the control agencies. Consistent with the assumption that troop levels at Fort Carson had no effect on violent crime outside of El Paso County, estimates of β_1 were small and statistically insignificant. Estimates of β_2 were similar to those reported in Table 1.

²¹ The estimated relationship between $Brigades_{jt}$ and reported rapes, although positive, is not statistically significant at conventional levels. Likewise, the estimated relationship between $Brigades_{jt}$ and simple assaults (defined as a weaponless assault in which the victim did not suffer severe bodily harm) is positive but not statistically significant. The estimated relationship between murder and $Brigades_{jt}$ is from an OLS regression. An additional brigade is associated with a 0.0007 reduction in the probability that a murder occurred. However, this estimate is not statistically significant at conventional levels.

combat brigade consists of approximately 3,500 soldiers, or slightly more than 0.5 percent of the combined population of the treated agencies, while a one-brigade increase in troop levels is associated with a 2.4 percent increase in the total number of violent crimes and even larger increases in robberies and aggravated assaults.²²

As a test of whether troop movements into and out of Fort Carson can be thought of as exogenous, we experimented with adding leads of $Brigades_{jt}$ to the right-hand side of equation (1). The results of this exercise are reported in Table 2. Adding leads of one to 12 months has very little impact on the estimated relationship between troop levels and violent crime. Moreover, these leads are never significant at conventional levels.²³

5. EXPOSURE TO COMBAT AND CRIME

Our primary interest is in the relationship between combat exposure and violent crime. To explore this relationship, we estimate:

$$(2) \quad \ln \lambda_{jt} = \alpha_0 + \alpha_1(\text{Never-Deployed Brigades}_{jt}) + \alpha_2(\text{Brigades Returned} > 6 \text{ Months}_{jt}) + \alpha_3(\text{Brigades Returned} \leq 6 \text{ Months}_{jt}) + \mathbf{X}_{jt}\boldsymbol{\beta} + v_j + \Theta_j \cdot t + \varepsilon_{jt}$$

²² Because population estimates at the agency level from NIBRS are not broken down by age or gender, and because information on the age distribution of Fort Carson personnel is unavailable, we cannot gauge whether soldiers at Fort Carson were more prone to violence than males of similar ages living in the communities over which the El Paso County Sheriff's Office and the Colorado Springs Police Department had jurisdiction.

²³ Other robustness checks included estimating equation (1) using OLS and as a negative binomial regression model. The estimated relationship between $Brigades_{jt}$ and violent crime obtained using these approaches were similar to the baseline estimates presented in Table 1. Excluding observations from the El Paso County Sheriff's Office from the analysis resulted in a smaller estimate of α_1 : a one-brigade increase in troop levels at Fort Carson was associated with a statistically significant 2.1 percent increase in violent crime. When the Colorado Springs Police Department observations were excluded, an additional brigade was associated with a statistically significant 6.2 percent increase in violent crime. Estimates of α_1 were also robust to replacing the year and month fixed effects with month-year fixed effects and restricting the analysis to agencies with a population over 50,000.

where, for the treated agencies, *Never-Deployed Brigades_{jt}* is equal to the number of combat brigades at Fort Carson that had not been deployed to Iraq prior to month t ; *Brigades Returned > 6 Months_{jt}* is equal to the number of previously deployed combat brigades at Fort Carson that had not returned from overseas in the past six months; and *Brigades Returned ≤ 6 Months_{jt}* is equal to the number of previously deployed combat brigades at Fort Carson that had returned from overseas in the past six months.²⁴ For the 19 untreated police agencies, the variables *Never-Deployed Brigades_{jt}*, *Brigades Returned > 6 Months_{jt}*, and *Brigades Returned ≤ 6 Months_{jt}* are always equal to zero. Agency-specific linear time trends are represented by $\Theta_j \cdot t$. If combat exposure leads to post-deployment violence, then estimates of α_2 and α_3 should be larger than estimates of α_1 .

Table 3 reports estimates of equation (2). They suggest that the association between troop levels and violent crime documented in Table 1 is almost entirely driven by never-deployed combat units. An additional never-deployed brigade at Fort Carson is associated with a .103 increase in the probability that a murder occurred, a 13.9 percent increase in robberies, an 8.6 percent increase in rapes, and an 8.4 percent increase in aggravated assaults. In contrast, regardless of when they returned from Iraq, previously deployed brigades do not appear to have contributed to community violence. Estimates of α_2 and α_3 are considerably smaller than the corresponding estimates of α_1 , and are (with one exception) statistically insignificant²⁵; the hypothesis that previously deployed brigades had the same effect on violent crime as never-deployed brigades ($H_0: \alpha_1 = \alpha_2$ or $H_0: \alpha_1 = \alpha_3$) is rejected at conventional levels except when the

²⁴ Appendix Figures A1 through A3 show the variation over time in *Never-Deployed Brigades_{jt}*, *Brigades Returned > 6 Months_{jt}*, and *Brigades Returned ≤ 6 Months_{jt}*.

²⁵ In general, we cannot reject the hypothesis that $\alpha_2 = \alpha_3 = 0$; it is rejected only in the case of rape.

outcome is rape or simple assault.²⁶ Increases in *Brigades Returned > 6 Months*_{jt}, are actually associated with *fewer* murders, raising the possibility that experienced soldiers functioned as positive role models, instilling discipline and discouraging aggressive or violent behavior among never-deployed soldiers.²⁷

6. COMBAT INTENSITY

To investigate the effects of combat intensity on post-deployment violence, we use data from the Iraq Coalition Casualty Count on the number of fatalities experienced by Fort Carson units while deployed. These data include information on the fallen soldier's military branch, unit, and date of death. Construction of the fatality counts required matching fatality reports with Fort Carson combat units (i.e., the 3ACR, the 1BCT-4ID, the 2BCT-2ID, the 2BCT-4ID,

²⁶ In the case of rape, we fail to reject the hypothesis that α_1 is equal to α_3 (p-value = .101). We also estimated a modified version of equation (2) that distinguished between previously deployed brigades based on whether they had returned from Iraq in the past three, as opposed to six, months. Army policies in effect during the Iraq War ensured that unit composition was stable for three months after a deployment. So-called "stop-loss" rules forced soldiers whose terms of service had expired to remain on active duty for 90 days after returning to the United States (Hess 2004; Squitieri 2004; Tice 2009). "Stop-move" rules prevented reassignments for 90 days after a unit returned (Squitieri 2004; Tice 2009). The results were similar to those presented in Table 3. Because soldiers were eligible for 30 days of leave upon completing a one-year deployment, and because mental health issues such as depression and PTSD often emerge several months after returning home (Bliese et al. 2007), we did not examine the relationship between the number of combat brigades that had been deployed in the past two months and violent crime in El Paso County.

²⁷ In other words, the presence of previously-deployed units could help socialize less experienced soldiers into what Katz (1990, p. 460) described as the "organizational ethos" of the U.S. Army. According to Katz (1990), this ethos requires soldiers "to act in a highly disciplined, rigidly specified, and coordinated manner and to strictly control any individual behavior that is aggressive, angry or violent" (p. 460).

and the 3BCT-4ID).²⁸ During the period under study, 6 deployments of Fort Carson combat units resulted in 17 or more fatalities.²⁹ Using 17 fatalities as a benchmark, we estimate:

$$(3) \quad \ln \lambda_{jt} = \alpha_0 + \alpha_1(\text{Never-Deployed Brigades}_{jt}) + \alpha_2(\text{Brigades 0-16 Fatalities}_{jt}) + \alpha_3(\text{Brigades} \geq 17 \text{ Fatalities}_{jt}) + \mathbf{X}_{jt}\boldsymbol{\beta} + v_j + \Theta_j \cdot t + \varepsilon_{jt},$$

where, for the treated agencies, *Brigades 0-16 Fatalities_{jt}* is equal to the number of brigades at Fort Carson in month *t* that had experienced between 0 and 16 fatalities when they were last deployed and *Brigades \geq 17 Fatalities_{jt}* is equal to the number of brigades at Fort Carson in month *t* that had experienced 17 or more fatalities when they were last deployed. For the 19 untreated police agencies, the variables *Brigades 0-16 Fatalities_{jt}* and *Brigades \geq 17 Fatalities_{jt}* are always equal to zero. Again, if combat exposure leads to post-deployment violence, then estimates of α_2 and α_3 should be larger than estimates of α_1 .

Table 4 reports estimates of equation (3). They provide little evidence that exposure to combat, even intense combat, leads to post-deployment violence: estimates of α_2 and α_3 are, with only one exception, significantly smaller than the corresponding estimates of α_1 ³⁰; an additional brigade that experienced 17 or more fatalities when last deployed is associated with a 7.0 percent *reduction* in robberies.

²⁸ For example, Sgt. Denis Gallardo, who died on November 22, 2005, was assigned to Troop E, 2nd Squadron. Troop E, 2nd Squadron belonged to the 3ACR. To take another example, Corp. Jason Pautsch, who died on April 10, 2009, was assigned to Company A, 1st Battalion, 67th Armor Regiment. Company A, 1st Battalion, 67th Armor Regiment belonged to the 2BCT-4ID. These data are available at <http://icasualties.org/Iraq/Index.aspx>.

²⁹ The Fort Carson BCTs deployed a total of 11 times during the period 2001-2009. The 3ACR deployed twice before being permanently relocated to Fort Hood.

³⁰ The hypothesis that α_2 is equal to α_1 cannot be rejected in the case of simple assault. The hypothesis that $\alpha_2 = \alpha_3 = 0$ is rejected when the outcome is either robbery or simple assault.

7. CUMULATIVE EXPOSURE

Equation (2) can be modified to examine the effects of cumulative, as opposed to recent, exposure to combat. During the Iraq War, recruits typically committed to four years of active duty upon joining the Army (Moniz 2005). Reenlistment rates were between 35 and 50 percent after the first term of service (Hosek and Martorell 2009, p. 11), but Fort Carson units regularly exceeded their retention goals (Roeder 2004b; Egbert 2008; Ingram 2009b).³¹ By the end of the war, a non-trivial proportion of soldiers at Fort Carson had deployed to Iraq with the same unit two or even three times (Emery and Olinger 2008; Alvarez and Frosch 2009b).

Given the relatively low turnover among soldiers serving with Fort Carson combat units, a natural modification of (2) is:

$$(4) \quad \ln \lambda_{jt} = \alpha_0 + \alpha_1(\text{Never-Deployed Brigades}_{jt}) + \alpha_2(\text{Once-Deployed Brigades}_{jt}) + \alpha_3(\text{Twice-Deployed Brigades}_{jt}) + \mathbf{X}_{jt}\boldsymbol{\beta} + v_j + \Theta_j \cdot t + \varepsilon_{jt},$$

where, for the treated agencies, *Once-Deployed Brigades_{jt}* is equal to the number of brigades at Fort Carson that had been deployed to Iraq once prior to month *t*, and *Twice-Deployed Brigades_{jt}* is equal to the number of brigades at Fort Carson that had been deployed to Iraq a total of two or more times.

Fort Carson soldiers who returned from Iraq and chose not to reenlist when their term of service expired were replaced by recruits who, on average, were of lower quality than pre-war

³¹ In the fall of 2004, the Army implemented a “unit manning system,” under which new recruits served for three years with the same brigade (Naylor 2004; Towell 2004). Reenlistment rates were between 60 and 80 percent after the second term of service (Hosek and Martorell 2009, p. 11). The annual retention rate of active soldiers in the U.S. Army was between 82 and 87 percent (Congressional Budget Office 2006, p. 12).

recruits.³² Ninety percent of U.S. Army recruits were high school graduates at the outset of the Iraq War (Congressional Budget Office 2006, p. 6). By 2006, this figure had fallen to 82 percent and one in five recruits entered the Army under some type of waiver (Congressional Budget Office 2006, p. 6; Baldor 2012). Waivers were given for low aptitude scores, medical problems, past substance use problems, and criminal convictions including robbery and manslaughter (Balder 2012).

Table 5 presents estimates of equation (4). Again, there is strong evidence that never-deployed units contributed to community violence. Estimates of α_1 are positive and (with one exception) statistically significant. Despite the relaxation of Army recruitment standards over the course of the war, estimates of the relationship between once-deployed combat units at Fort Carson (α_2) and violent crime are significantly smaller than estimates of α_1 except in the case of simple assault. Estimates of α_1 and α_3 are statistically indistinguishable except in the case of murder, leaving open the possibility that repeated (i.e., two or more) deployments led to more violent crime in El Paso County.³³

³² In addition to replacing soldiers whose 4-year term of service expired, brigades returning from Iraq had to replace soldiers killed in action and seriously injured soldiers, a process that could take up to two years (Philipps 2013). From 2001-2009, 7,626 soldiers were discharged from the U.S. Army after being diagnosed with a personality disorder (Ader et al. 2012, p. 8). Although there is anecdotal evidence that many of these soldiers were actually suffering from PTSD or Traumatic Brain Injury (Kors 2007), only 15 percent of military personnel discharged for personality disorders had been deployed to Afghanistan or Iraq (U.S. Department of Defense 2010). Eighty-five percent of personality disorder discharges occurred in the first two years of service (U.S. Department of Defense 2010). From 2002-2007, a total of 3,372 service members were discharged from the U.S. military for personality disorders after returning from a deployment in support of Operation Iraqi Freedom or Operation Enduring Freedom (U.S. Department of Defense 2010). This figure represents only 0.2 percent of the total number of service members who served in Afghanistan or Iraq during the period 2002-2007 (Hosek and Martorell. 2009, p. 1).

³³ In general, we cannot reject the hypothesis that $\alpha_2 = \alpha_3 = 0$; it is rejected only when the outcome is robbery. An additional twice-deployed brigade at Fort Carson is associated with a 7.4 percent increase in robberies. In comparison, an additional never-deployed brigade is associated with a 9.1 percent increase in robberies. An additional twice-deployed brigade is associated with a 6.2 percent increase in rapes, but this estimate is not statistically significant at convention levels. We also estimated the impact of cumulative fatalities suffered in Iraq during the period 2001-2009 on violent crime. The results were broadly consistent with those reported in Table 4. That is, we found little evidence that intensity of combat was related to post-deployment violence.

8. EVIDENCE FROM ARREST RECORDS

A disadvantage of examining crime reports is that they often do not contain information on the perpetrator, especially when the crime goes unsolved. In this section we take advantage of the fact that all 21 of the Front Range police agencies that contributed data to the analysis of crime reports also provided data to NIBRS with regard to arrests. The arrest data include information on the arresting agency, the date the arrest was made, the type of crime that was committed, and the age and gender of the offender. These data are available from the ICPSR for the period 2001-2007.

Table 6 presents estimates of the relationship between troop levels at Fort Carson and arrests of males 18 years of age and older for violent crimes (i.e., murder, robbery, rape, aggravated assault, and simple assault).³⁴ An additional never-deployed brigade at Fort Carson is associated with a 5.4 percent increase in arrests of 18- through 29-year-old males for violent crimes, but an additional previously deployed brigade is associated with a (statistically insignificant) 0.7 percent increase in arrests of 18- through 29-year-old males for violent crimes.³⁵ Our principal interest is in the difference between these two estimates. Importantly, we can reject the hypothesis that this difference is zero at conventional levels.³⁶

³⁴ Our focus is on this age group because most 17-year-olds, although permitted to enlist with the written permission of their parents, were effectively barred from service due to the Army's strong preference for high school graduates. Seventeen-year-old recruits would have spent at least three months in basic training before being assigned to Fort Carson (Schwartz and Mael 1990; Cavallaro 2007). According to Child Soldiers International (2004, 2008), less than one percent of recruits into the U.S. armed forces were under the age of 18 after completing basic training. Until 2012, women were barred from serving in combat units such as the 3ACR, the 1-6 CAV, and the BCTs (Lopez and Henning 2012). By 2016, all occupational specialties in these units will be open to women (Lopez and Henning 2012).

³⁵ *Deployed Brigades_{*t*}* is equal to the number of brigades at Fort Carson that had been deployed to Iraq at least once prior to month *t*. Although the results are not shown in Table 6, we also regressed arrests of women 18 years of age and older on troop levels at Fort Carson. This regression, which can be thought of as a falsification test, produced no evidence that troop movements into and out of Fort Carson were related to arrests of women for violent crimes.

³⁶ The advantage of examining arrests as opposed to crime reports is that we know the age and sex of the arrestee. Moreover, we can infer that the police viewed the arrestee as culpable. The disadvantage is that arrests are, at least

9. CONCLUSION

During the period 2005-2008, 10 soldiers from Fort Carson were charged by civilian authorities in connection with a series of high-profile murders (Olinger 2008; Philipps 2009; Riley and Roeder 2009). Under pressure from the public and policymakers, the U.S. Army responded by conducting a three-month investigation focused on the 2nd Brigade of the 2nd Infantry Division, which had experienced heavy casualties in Iraq. The investigation concluded that soldiers from this unit were especially prone to violent behavior as a result of having been exposed to intense combat in Iraq (U.S. Army Medical Command 2009, p. ES-3).

Fort Carson responded to the murders and subsequent investigation by developing Embedded Behavioral Health teams composed of psychiatrists, psychologists and social workers (Fisher 2009; Carabajal 2011). These teams were tasked with providing counseling to soldiers in the field and evaluating their mental health upon returning home (Carabajal 2011; Collins 2012; Sheehy 2012; Cho-Stutler 2013). The Army is committed to assigning Embedded Behavioral Health teams to all of its combat brigades by 2016 (Collins 2012; Holley 2013).

The current study relies on troop movements into and out of Fort Carson during the period 2001-2009 to estimate the relationship between combat exposure and post-deployment violence. Because operational needs and world events determine where U.S. Army units are stationed and when they are deployed (Lyle 2006; Engel et al. 2010; Cesur et al. 2013), these troop movements are arguably exogenous.

in part, a function of policing effort. As a test of whether policing effort can explain our results, we regressed the number of sworn officers employed by agency j on troop levels at Fort Carson. Annual data on sworn police officers are from the Uniform Crime Reporting Program and are available at <http://www.fbi.gov/about-us/cjis/ucr/ucr-publications#Crime> for the period 2001-2009. Estimates of the relationship between troop levels and sworn police officers were generally small and statistically insignificant.

Using data from Colorado Front Range police agencies, we find a positive association between the number of never-deployed combat brigades at Fort Carson and reports of violent crime in El Paso County. For instance, an additional never-deployed combat brigade based at Fort Carson is associated with an 8.4 percent increase in aggravated assaults, an 8.6 percent increase in rapes, and a 13.9 percent increase in robberies. In contrast, estimates of the relationship between previously deployed combat brigades and violent crime in El Paso County are generally small and statistically insignificant at conventional levels. In fact, there is some evidence of a negative association between the number of previously deployed units at Fort Carson and violent crime. This negative association raises the possibility that experienced soldiers served as role models, instilling discipline and discouraging aggressive behavior.

The disadvantage of examining crime reports is that they often do not contain information on the perpetrator. To address this shortcoming, we turn to arrest records and find that an additional never-deployed brigade at Fort Carson is associated with a 5.4 percent increase in arrests of 18- through 29-year-old males for violent crimes. In contrast, there is no evidence of a relationship between the number of previously deployed brigades at Fort Carson and arrests for violent crime. The hypothesis that previously deployed units had the same effect on arrests of 18- through 29-year-old males for violent crimes as never-deployed units is rejected at conventional levels.

The Embedded Behavioral Health program was built on the premise that combat exposure contributes to post-deployment violence (Fisher 2009; Carabajal 2011). Providing psychological counseling to soldiers in the field through Embedded Behavioral Health teams may ultimately yield benefits. However, our results suggest that never-deployed units represent a greater threat to public safety than units recently returned from combat.

REFERENCES

- Ader, Melissa, Robert Cuthbert, Kendall Hoechst, Eliza H. Simon, Zachary Strassburger, and Michael Wishnie. 2012. "Casting Troops Aside: The United States Military's Illegal Personality Disorder Discharge Problem." Silver Springs MD: Vietnam Veterans of America. Available at: <http://www.vva.org/ppd-whitepaper.html>.
- Agnew, Robert. 1992. "Foundation for a General Strain Theory of Delinquency." *Criminology*, Vol. 30, No. 1, pp. 47-87.
- Akers, Joshua. 2011. "The Unconventional War: Parallels between the Combat Experience in Vietnam and Iraq." *Valley Humanities Review*, Spring, pp. 1-20.
- Albæk, Karsten, Soren Leth-Petersen, Daniel le Maire, and Torben Tranæs. 2013. "Does Peacetime Military Service Affect Crime?" IZA Discussion Paper No. 7528.
- Alvarez, Lizette and Dan Frosch. 2009a. "A Focus on Violence by Returning G.I.'s." *New York Times*, January 1. Available at: <http://www.nytimes.com/2009/01/02/us/02veterans.html?pagewanted=all>
- Alvarez, Lizette and Dan Frosch. 2009b. "Army Studies Possible Link between Combat Duty and Homicides." *New York Times*, January 2. Available at: <http://www.nytimes.com/2009/01/02/world/americas/02iht-vets.1.19051718.html?pagewanted=all>.
- Anderson, D. Mark, and Daniel I. Rees. 2013. "Deployments, Combat Exposure, and Crime" IZA Discussion Paper No. 7761.
- Angrist, Joshua. 1990. "Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Administrative Records." *American Economic Review*, Vol. 80, No. 3, pp. 313-336.
- Angrist, Joshua and Stacey Chen. 2007. "Long-Term Consequences of Vietnam-Era Conscription: Schooling, Experience, and Earnings." NBER Working Paper No. 13411.
- Baldor, Lolita C. 2012. "Army More Selective on Recruits, Re-Enlistments." *Military.com*, May 23. Available at: <http://www.military.com/daily-news/2012/05/23/army-more-selective-on-recruits-reenlistments.html>
- Ball, J.D., and Thomas H. Peake. 2006. "Brief Psychotherapy in the U.S. Military: Principles and Applications." In Carrie H. Kennedy and Erica A. Zillner (eds.), *Military Psychology: Clinical and Operational Applications*. New York: The Guilford Press, pp. 61-73.
- Benzel, Lance. 2008. "Carson Soldier Admits he Killed Woman, Sheriff's Office Says." *Colorado Springs Gazette*, October 13. Available at: <http://gazette.com/carson-soldier-admits-he-killed-woman-sheriffs-office-says/article/41817>.

Benzel, Lance. 2010. "Fort Carson Soldiers Lead Way into Iraq's 'Uncertain Future'." *Colorado Springs Gazette*, March 3, Available at: <http://gazette.com/fort-carson-soldiers-lead-way-into-iraqs-uncertain-future/article/95069>.

Benzel, Lance. 2011 "Veterans Court Reclaims those Struggling with War Trauma." *Colorado Springs Gazette*, October 27. Available at: <http://gazette.com/veterans-court-reclaims-those-struggling-with-war-trauma/article/127445>.

Bliese, Paul D., Kathleen M. Wright, Amy B. Adler, Jeffrey L. Thomas, and Charles W. Hoge. 2007. "Timing of Postcombat Mental Health Assessments." *Psychological Services*, Vol. 4, No. 3, pp. 141-148.

Block, Gordon. 2013. "Fort Drum to Pair Combat Brigades with Behavioral Health Care Teams." *Watertown Daily Times*, January 27. Available at: <http://www.watertowndailytimes.com/article/20130127/NEWS03/701279860>.

Broidy, Lisa. 2001. "A Test of General Strain Theory." *Criminology*, Vol. 39, No. 1, pp. 9-36.

Brook, Tom Vanden and Jim Michaels. 2007. "Questions Fill the Air as Bush Speaks on Iraq." *USA Today*, January 10. Available at: http://usatoday30.usatoday.com/news/washington/2007-01-09-iraq-surge-cover_x.htm.

Cameron, A. Colin and Pravin K. Trivedi. 1986. "Econometric Models Based on Count Data: Comparisons and Applications of some Estimators and Tests." *Journal of Applied Econometrics*, Vol. 1, No. 1, pp. 29-53.

Cantrell Craig, 2011. "Courtesy Patrol Provides Option." *CSMG.com*, August 26. Available at: <http://csmng.com/2011/08/26/courtesy-patrol-provides-option/>.

Carabajal, Shannon. 2011. "Army Expanding Successful Embedded Behavioral Health Program." *Army.mil*, November 17. Available at: <http://www.army.mil/article/69479/>.

Card, David, and Gordon B. Dahl. 2011. "Family Violence and Football: The Effect of Unexpected Emotional Cues on Violent Behavior." *Quarterly Journal of Economics*, Vol. 126, No. 1, pp. 103-143.

Carpenter, Ted. 2007. "Iraq and Vietnam: Some Unsettling Parallels." *Mediterranean Quarterly*, Vol. 18, No. 3, pp. 21-30.

Cavallaro, Gina. 2007. "Basic Training Extended to 10 Weeks." *The Army Times*, October 9. Available at: <http://www.armytimes.com/article/20071009/NEWS/710090312/Basic-training-extended-to-10-weeks>.

Cesur, Resul, Joseph J. Sabia, and Erdal Tekin. 2013. "The Psychological Costs of War: Military Combat and Mental Health." *Journal of Health Economics*, Vol. 32, No. 1, pp. 51-65.

Chaffin, Mark, Kelly Kelleher, and Jan Hollenberg. 1996. "Onset of Physical Abuse and Neglect: Psychiatric, Substance Abuse, and Social Risk Factors from Prospective Community Data." *Child Abuse and Neglect*, Vol. 20, No. 3, pp. 191-203.

Child Soldiers International. 2004. *Child Soldiers Global Report 2004 - United States of America*. London, United Kingdom: Coalition to Stop the Use of Child Soldiers. Available at: http://www.child-soldiers.org/global_report_reader.php?id=281.

Child Soldiers International. 2008. *Child Soldiers Global Report 2008 - United States of America*. London, United Kingdom: Coalition to Stop the Use of Child Soldiers. Available at: http://www.child-soldiers.org/global_report_reader.php?id=97.

Cho-Stutler, Laura. 2013. "Staff Voices: Q & A on the Army's Embedded Behavioral Health (EBH) Program." *Center for Deployment Psychology*, October 7. Available at: <http://www.deploymentpsych.org/blog/staff-voices-q-army%E2%80%99s-embedded-behavioral-health-ebh-program>.

Cohen, Jessica and Pascaline Dupas. 2010. "Free Distribution or Cost-Sharing? Evidence from a Randomized Malaria Prevention Experiment." *Quarterly Journal of Economics*, Vol. 125, No. 1, pp. 1-45.

Collins, Dan. 2009. "4 Wives Slain in 6 Weeks at Fort Bragg." *CBS News*, February 11. Available at: http://www.cbsnews.com/2100-201_162-517033.html.

Collins, Elizabeth M. 2012. "Bringing Behavioral Health to the Troops." *Soldiers*, September. Available at: <http://soldiers.dodlive.mil/2012/09/bringing-behavioral-health-to-the-troops/#sthash.cAXYSjnA.dpuf>.

Congressional Budget Office. 2006. *Recruiting, Retention, and Future Levels of Military Personnel*, Publication Number 2777. Washington DC: The Congress of the United States.

Conley, Dalton and Jennifer Heerwig. 2011. "The War at Home: Effects of Vietnam-Era Military Service on Postwar Household Stability." *American Economic Review: Papers & Proceedings*, Vol. 101, No. 3, pp. 350-354.

Conley, Dalton and Jennifer Heerwig. 2012. "The Long-Term Effects of Military Conscription on Mortality: Estimates from the Vietnam-era Draft Lottery." *Demography*, Vol. 49, No. 3, pp. 841-855.

Defense Department. 2007. "Army 3rd Armored Cavalry - Valorous Unit Award." *Army.mil*, March 28. Available at: <http://www.army.mil/article/2438>.

Dobkin, Carlos and Reza Shabani. 2009. "The Health Effects of Military Service: Evidence from the Vietnam Draft." *Economic Inquiry*, Vol. 47, No. 1, pp. 69-80.

Dohrenwend, Bruce P., Yuval Neria, J. Blake Turner, Nicholas Turse, Randall Marshall, Roberto Lewis-Fernandez, and Karestan C. Koenen. 2004. "Positive Tertiary Appraisals and Posttraumatic Stress Disorder in U.S. Male Veterans of the War in Vietnam: The Roles of Positive Affirmation, Positive Reformulation, and Defensive Denial." *Journal of Consulting and Clinical Psychology*, Vol. 72, No. 3, pp. 417-433.

Egbert, James H. 2008. "Carson Soldiers: 'Army Strong'." *Fort Carson Mountaineer*, Vol. 66, No. 2, p. 1.

Elbogen, Eric and Sally Johnson. 2009. "The Intricate Link Between Violence and Mental Disorder." *Archives of General Psychiatry*, Vol. 66, No. 2, pp. 152-161.

Elbogen, Eric, Sally Johnson, Virginia Newton, Kristy Straits-Troster, Jennifer Vasterling, H. Ryan Wagner, and Jean Beckham. 2012a. "Criminal Justice Involvement, Trauma, and Negative Affect in Iraq and Afghanistan War Era Veterans." *Journal of Consulting and Clinical Psychology*, Vol. 80, No. 6, pp. 1097-1102.

Elbogen, Eric, Sally Johnson, H. Ryan Wagner, Virginia Newton, Christine Timko, Jennifer Vasterling, and Jean Beckham. 2012b. "Protective Factors and Risk Modification of Violence in Iraq and Afghanistan War Veterans." *Journal of Clinical Psychiatry*, Vol. 73, No. 6, pp. e767-e773.

Elbogen, Eric, Sally Johnson, Virginia Newton, Sara Fuller, H. Ryan Wagner, VA Mid-Atlantic MIRECC Registry Workgroup, and Jean Beckham. 2013. "Self-Report and Longitudinal Predictors of Violence in Iraq and Afghanistan War Era Veterans." *Journal of Nervous and Mental Disease*, Vol. 201, No. 10, pp. 872-876.

Elder, Glen H., and Elizabeth Clipp. 1989. "Combat Experience and Emotional Health: Impairment and Resilience in Later Life." *Journal of Personality* Vol. 57, No. 2, pp. 311-341.

Emert, Rick. 2009. "1-6th Cavalry Prepares for Move to Riley." *Army.mil*, February 19, 2009. Available at: <http://www.army.mil/article/17119/>.

Emery, Erin and David Olinger. 2008. "The Battle Within." *Denver Post*, August 25. Available at: http://www.denverpost.com/thebattlewithin/ci_10293242

Engel, Rozlyn C., Luke B. Gallagher, and David S. Lyle. 2010. "Military Deployments and Children's Academic Achievement: Evidence from Department of Defense Education Activity Schools." *Economics of Education Review*, Vol. 29, No. 1, pp. 73-82.

Fava, Maurizio. 1998. "Depression with Anger Attacks." *Journal of Clinical Psychiatry*, Vol. 59, Suppl. 18, pp. 18-22.

Fazel, Seena and John Danesh. 2002. "Serious Mental Disorder in 23,000 Prisoners: A Systematic Review of 62 Surveys." *Lancet*, Vol. 359, No. 9306, pp. 545-550.

Finley, Bruce. 2005. "Working, Waiting, Worrying." *Denver Post*, April 15. Available at: <http://brucefinley.com/page/18/>.

Fisher, Devin. 2009. "Study Finds no Link in Homicides." *Fort Carson Mountaineer*, Vol. 67 No. 29, p. 1.

Fontana Alan, and Robert Rosenheck. 1998. "Psychological Benefits and Liabilities of Traumatic Exposure in the War Zone." *Journal of Traumatic Stress*, Vol. 11, No. 3, pp. 485–503.

Forstmeier, Simon, Philipp Kuwert, Carsten Spitzer, Harald J. Freyberger, and Andreas Maercker. 2009. "Posttraumatic Growth, Social Acknowledgment as Survivors, and Sense of Coherence in Former German Child Soldiers of World War II." *American Journal of Geriatric Psychiatry*, Vol.17, No. 12, pp. 1030-1039.

Foster, Dick. 2006. "3 Fort Carson Soldiers Killed." *Rocky Mountain News*, October 21. Available at: <http://m.rockymountainnews.com/news/2006/oct/21/3-fort-carson-soldiers-killed/>.

Frosch, Dan, and Lizette Alvarez. 2008. "Mental State of Soldier Questioned." *New York Times*, November 20. Available at: http://www.nytimes.com/2008/11/21/us/21army.html?pagewanted=all&_r=0.

Frosch, Dan. 2008. "3 Buddies Home From Iraq Are Charged With Murdering a 4th." *New York Times*, January 12. Available at: http://www.nytimes.com/2008/01/12/us/12soldier.html?pagewanted%3Dall&_r=0.

Galiani, Sebastian, Martin Rossi, and Ernesto Schargrotsky. 2011. "Conscription and Crime: Evidence from the Argentine Draft Lottery." *American Economic Journal: Applied Economics*, Vol. 3, No. 2, pp. 119-136.

Galovskia, Tara, and Judith A. Lyons. 2004. "Psychological Sequelae of Combat Violence: A Review of the Impact of PTSD on the Veteran's Family and Possible Interventions." *Aggression and Violent Behavior*, Vol. 9, No. 5, pp. 477-501.

Gonzales, Oscar R. 2009. "Economic Development Assistance for Communities Affected by Employment Changes Due to Military Base Closures (BRAC)." Washington DC: Congressional Research Service Report RL34709.

Gould, Eric, Bruce Weinberg, and David Mustard. 2002. "Crime Rates and Local Labor Market Opportunities in the United States: 1979-1997." *Review of Economics and Statistics*, Vol. 84, No. 1, pp. 45-61.

Grey, Philip 2013. "101st Airborne Vastly Expands Care for 'Unseen Wounds'." *The Army Times*, April 30. Available at: <http://www.armytimes.com/article/20130430/NEWS/304300005/101st-Airborne-vastly-expands-care-unseen-wounds->.

- Grootendorst, Paul V. 2002. "A Comparison of Alternative Models of Prescription Drug Utilization." In Andrew M. Jones and Owen O'Donnell (eds.), *Econometric Analysis of Health Data*, Hoboken, NJ: John Wiley and Sons, Ltd, pp. 73-86.
- Hames, Jacqueline M. 2009. "Resiliency Training to be Given Army-Wide." *Army News Service*, October 6. Available at: <http://www.nationalguard.mil/news/archives/2009/10/100809-Resiliency.aspx>.
- Henley, Kyle and Tom Roeder. 2005. "Carson Soldier Kills Wife, Himself." *Colorado Springs Gazette*, August 5. Available at: <http://gazette.com/article/8332>.
- Hess, Pamela. 2004. "Army Extends Stop-Loss Order." *United Press International*, June 2. Available at: http://www.upi.com/Business_News/Security-Industry/2004/06/02/Army-extends-stop-loss-order/UPI-43651086200189/.
- Holley, Rayna. 2013. "Clinics to Offer Behavioral Health Services." *Northwest Guardian*, June 27. Available at: <http://www.nwguardian.com/2013/06/27/15784/clinics-to-offer-behavioral-health.html>.
- Hooker, Mark A. and Michael M. Knetter. 2001. "Measuring the Economic Effects of Military Base Closures." *Economic Inquiry*, Vol. 39, No. 4, pp. 583-598.
- Horgan, John. 2011. "Beware the Military-Psychological Complex: A \$125-million Program to Boost Soldiers' "Fitness" Raises Ethical Questions." *Scientific American*, April 18. Available at: <http://blogs.scientificamerican.com/cross-check/2011/04/18/beware-the-military-psychological-complex-a-125-million-program-to-boost-soldiers-fitness-raises-ethical-questions/>.
- Hosek, James and Francisco Martorell. 2009. *How Have Deployments During the War on Terrorism Affected Reenlistment?* Santa Monica, CA: RAND Corporation.
- Huspeni, Dennis and Tom Roeder. 2007. "Coming Home Changed." *Colorado Springs Gazette*, December 22. Available at: <http://gazette.com/coming-home-changed/article/31171>.
- Huspeni, Dennis. 2006. "Soldier Convicted of Manslaughter." *Colorado Springs Gazette*, April 7. Available at: <http://gazette.com/soldier-convicted-of-manslaughter/article/9908>.
- Ingram, Andrew. 2009a. "New Behavioral Health Programs Aims to Heal." *CSMG.Com*, August 27. Available at: <http://csmng.com/2009/08/27/new-behavioral-health-programs-aims-to-heal/>.
- Ingram, Andrew, 2009b. "4th Inf. Div. Achieves Highest Retention Rate in Army." *Army.mil*, July 9. Available at: <http://www.army.mil/article/24065/>.
- Ingram, Andrew. 2012. "Fort Carson Courtesy Patrol Safeguards Soldiers." *Army.mil*, June 27th. Available at: http://www.army.mil/article/82689/Fort_Carson_Courtesy_Patrol_safeguards_Soldiers/.

Jacob, Brian, Lars Lefgren, and Enrico Moretti. 2007. "The Dynamics of Criminal Behavior: Evidence from Weather Shocks." *Journal of Human Resources*, Vol. 42, No. 3, pp. 489-527.

Jakupcak, Matthew, Daniel Conybeare, Lori Phelps, Stephen Hunt, Hollie A. Holmes, Bradford Felker, Michele Klevens, Miles E. McFall. 2007. "Anger, Hostility, and Aggression among Iraq and Afghanistan War Veterans Reporting PTSD and Subthreshold PTSD." *Journal of Traumatic Stress*, Vol. 20, No. 6, pp. 945-954.

Katz, Pearl. 1990. "Emotional Metaphors, Socialization, and Roles of Drill Sergeants." *Ethos*, Vol. 18, No. 4, pp. 457-480.

Killgore, William D.S., Dave I. Cotting, Jeffrey L. Thomas, Anthony L. Cox, Dennis McGurk, Alexander H. Vo, Carl A. Castro, and Charles W. Hoge. 2008. "Post-Combat Invincibility: Violent Combat Experiences are Associated with Increased Risk-Taking Propensity Following Deployment." *Journal of Psychiatric Research*, Vol. 42, No. 13, pp. 1112-1121.

Kocherga, Angela. 2013. "Fort Bliss Suicide Rate Declines to Army's Lowest." *KVEU News*, February 5. Available at: <http://www.kvue.com/news/189921231.html>.

Koenig, Harold G., Kenneth I. Pargament, and Julie Nielsen. 1998. "Religious Coping and Health Status in Medically Ill Hospitalized Older Adults." *Journal of Nervous and Mental Disease*, Vol. 186, No. 9, pp. 513-521.

Komarow, Steven. 2005. "Vietnam Vets in Iraq See 'Entirely Different War'." *USA Today*, June 20. Available at: http://usatoday30.usatoday.com/news/world/iraq/2005-06-20-iraq-vietnam-vets_x.htm.

Kors, Joshua. 2007. "How Specialist Town Lost His Benefits." *The Nation*, April 2007. Available at: <http://www.thenation.com/article/how-specialist-town-lost-his-benefits>.

Kristof, Nicholas. 2012. "When War Comes Home." *New York Times*, November 9. Available at: http://www.nytimes.com/2012/11/11/opinion/sunday/kristof-when-war-comes-home.html?_r=0.

Lester, Paul, P.D. Harms, Denise Bulling, Mitchel Herian, and Seth Spain. 2011. "Evaluation of Relationships Between Reported Resilience and Outcomes – Report #1: Negative Outcomes (Suicide, Drug Use, & Violent Crimes)." TKC Global Solutions LLC, Anchorage, AK.

Lindo, Jason and Charles Stoecker. 2014. "Drawn into Violence: Evidence on 'What Makes a Criminal' From the Vietnam Draft Lotteries." *Economic Inquiry*, Vol. 52, No. 1, 239-258.

Linley, P. Alex, and Stephen Joseph. 2004. "Positive Change Following Trauma and Adversity: A Review." *Journal of Traumatic Stress*, Vol. 17, No. 1, pp. 11-21.

Lopez, Todd, and Julia Henning. 2013. "Army Describes Plans for Integrating Women into Combat." *Army.mil*, June 18. Available at: <http://www.army.mil/article/105814/>.

Lorge, Elizabeth M. 2007. "Army Announces Stationing Decisions for New Troops." *Army News Service*, December 19. Available at: <http://www.army.mil/article/6683/>.

Lowary, Jake. 2010. "Fort Campbell Soldier Charged in Wife's Death." *The Leaf-Chronicle*, December 10. Available at: <http://www.theleafchronicle.com/article/20101210/NEWS08/12100319>.

Luning, Ernest. 2009. "Udall Grills Army Sec. Nominee on Fort Carson Killings, Piñon Canyon." *Colorado Independent*, July 30. Available at: <http://www.coloradoindependent.com/34347/udall-grills-army-secretary-nominee-on-fort-carson-killings-pinon-canyon>.

Lyle, David S. 2006. "Using Military Deployments and Job Assignments to Estimate the Effect of Parental Absences and Household Relocations on Children's Academic Achievement." *Journal of Labor Economics*, Vol. 24, No. 2, pp. 319-350.

MacLean, Alair, and Nicholas L. Parsons. 2010. "Unequal Risk: Combat Occupations in the Volunteer Military." *Sociological Perspectives*, Vol. 53, No. 3, pp. 347-372.

MacManus, Deirdre, Kimberlie Dean, M. Al Bakir, A. C. Iversen, Lisa Hull, Tom Fahy, Simon Wessely, and Nicola T. Fear. 2012. "Violent Behaviour in UK Military Personnel Returning Home after Deployment." *Psychological Medicine*, Vol. 42, No. 8, pp. 1663-1673.

MacManus, Deirdre, Kimberlie Dean, Margaret Jones, Roberto J Rona, Neil Greenberg, Lisa Hull, Tom Fahy, Simon Wessely, and Nicola T. Fear. 2013. "Violent Offending by UK Military Personnel Deployed to Iraq and Afghanistan: A Data Linkage Cohort Study." *The Lancet*, Vol. 381, No. 9870, pp. 907-917.

Maguen, Shira, Dawne S. Vogt, Lynda A. King, Daniel W. King, and Brett T. Litz. 2006. "Posttraumatic Growth Among Gulf War I Veterans: The Predictive Role of Deployment-Related Experiences and Background Characteristics." *Journal of Loss and Trauma*, Vol. 11, No. 5, pp. 373-388.

Main, Frank. 2005. "US GIs – Killers On and Off the Battlefield?" *Rense.com*, February 2. Available at: <http://www.rense.com/general63/GIS.HTM>.

Mason, John W., Sheila Wang, Rachel Yehuda, Sherry Riney, Dennis S. Charney, and Steven M. Southwick. 2001. "Psychogenic Lowering of Urinary Cortisol Levels Linked to Increased Emotional Numbing and a Shame-Depressive Syndrome in Combat-Related Posttraumatic Stress Disorder." *Psychosomatic Medicine*, Vol. 63, No. 3, pp. 387-401.

Mazerolle, Paul and Alex Piquero. 1997. "Violent Responses to Strain: An Examination of Conditioning Influences." *Violence and Victims*, Vol. 12, No. 4, pp. 323-343.

- McDowall, David, Colin Loftin, and Matthew Pate. 2012. "Seasonal Cycles in Crime, and Their Variability." *Journal of Quantitative Criminology*, Vol. 28, No. 3, pp. 389-410.
- McMillen, J. Curtis, and Cynthia Loveland Cook. 2003. "The Positive By-Products of Spinal Cord Injury and their Correlates." *Rehabilitation Psychology*, Vol. 48, No. 2, pp. 77-85.
- Milburn, John. 2005. "Fort Riley Soldiers Begin Appeals." *Lawrence Journal-World*, June 14. Available at: <http://www2.ljworld.com/news/2005/jun/14/fortrileysoldiers/>.
- Miles, Donna. 2005. "BRAC Deadline Expires; DoD to Begin Closures, Realignment." *American Forces Press Service*, November 9. Available at: <http://www.defense.gov/News/NewsArticle.aspx?ID=18352>.
- Millerodgers, Monica. 2010. "Comprehensive Soldier Fitness Marks Change in Army Culture." *Army.mil*, September 27. Available at: <http://www.army.mil/article/45723/comprehensive-soldier-fitness-marks-change-in-army-culture/>.
- Mills, Katherine L., Maree Teesson, Joanne Ross, and Lorna Peters. 2006. "Trauma, PTSD, and Substance Use Disorders: Findings from the Australian National Survey of Mental Health and Well-Being." *American Journal of Psychiatry*, Vol. 163, No. 4, pp. 652-658.
- Mitchell, Kirk. 2008a. "GI Murder Suspect Got Counseling." *Denver Post*, October 16. Available at: http://www.denverpost.com/news/ci_10730616?source=pkg.
- Mitchell, Kirk. 2008b. "Salazar: Review GI Violence." *Denver Post*, October 19. Available at: http://www.denverpost.com/news/ci_10758345?source=pkg.
- Moniz, Dave. 2005. "Army Offers 15-Month Hitch." *USA Today*, May 13. Available at: http://usatoday30.usatoday.com/news/washington/2005-05-13-army-short-tour_x.htm.
- Naylor, Sean D. 2004. "Units of Action: A Catch-22." *Army Times*, September 27. Available at: <http://www.ar15.com/archive/topic.html?b=1&f=5&t=277267>
- Nestler, Eric J., Michel Barrot, Ralph J. DiLeone, Amelia J. Eisch, and Stephen J. Gold, and Lisa M. Monteggia. 2002. "Neurobiology of Depression." *Neuron*, Vol. 34, pp. 13-25.
- Nutt, David Koen Demyttenaere, Zoltan Janka, Trond Aarre, Michel Bourin, Pier Luigi Canonico, Jose Luis Carrasco, and Steven Stahl. 2007. "The Other Face of Depression, Reduced Positive Affect: The Role of Catecholamines in Causation and Cure." *Journal of Psychopharmacology*, Vol. 21 No. 5, pp. 461-471.
- Olinger, David. 2008. "Deadly Duty for Fort Carson." *Denver Post*, November 16. Available at: http://www.denverpost.com/frontpage/ci_10996605.
- Park, Crystal L., Lawrence H. Cohen, and Renee L. Murch. 1996. "Assessment and Prediction of Stress-Related Growth." *Journal of Personality*, Vol. 64, pp. 71-105.

Philipps, Dave. 2009. "Casualties of War, Part II: Warning Signs." *Colorado Springs Gazette*, July 24. Available at: <http://gazette.com/article/59091>.

Philipps, Dave. 2013. Pattern of Misconduct. *Colorado Springs Gazette*, October 7. Available at: <http://cdn.csgazette.biz/soldiers/day4.html>.

Poppert, Patrick E., and Henry W. Herzog Jr., 2003. "Force Reduction, Base Closure, and the Indirect Effects of Military Installations on Local Employment Growth." *Journal of Regional Science*, Vol. 43, No. 3, pp. 459–482.

Raphael, Steven and Rudolf Winter-Ebmer. 2001. "Identifying the Effect of Unemployment on Crime." *Journal of Law and Economics*, Vol. 44, No. 1, pp. 259-283.

Rappold, Scott, R. 2005. "3 Fort Carson Soldiers Injured at Pueblo West Club." *Colorado Springs Gazette*, October 15. Available at: <http://www.highbeam.com/doc/1P2-2773139.html>.

Ricks, Thomas E. 2006. "It Looked Weird and Felt Wrong." *Washington Post*, July 24, p. A01. Available at: http://www.washingtonpost.com/wp-dyn/content/article/2006/07/23/AR2006072300495_pf.html.

Ridder, Knight. 2007. "War Stresses Linked to Soldiers' Crimes." *Military.com*, December 25. Available at: <http://www.military.com/NewsContent/0,13319,158912,00.html>.

Riley, Michael, and Tom Roeder. 2009. "Intense Combat Tied to Homicides by Ft. Carson GIs." *Denver Post*, July 16. Available at: http://www.denverpost.com/frontpage/ci_12847489?source=pkg.

Robson, Seth. 2004. "After Iraq, 2nd BCT will Call Fort Carson Home." *Stars and Stripes*, September 26. Available at: <http://www.stripes.com/news/after-iraq-2nd-bct-will-call-fort-carson-home-1.24504>.

Roeder, Tom. 2004a. "Special Forces Unit at Ft. Carson Secretly Deployed to Iraq." *Colorado Springs Gazette*, December 6. Available at: <http://www.ar15.com/archive/topic.html?b=1&f=5&t=302350>.

Roeder, Tom. 2004b. "Historic Re-Enlistment at Fort Carson." *Colorado Springs Gazette*, December 2 Available at: <http://www.freerepublic.com/focus/f-news/1292745/posts>.

Roeder, Tom. 2013. "Iraq: Ten Years Later." *Colorado Springs Gazette*, March 15. Available at: <http://gazette.com/iraq-ten-years-later/article/152318>.

Rohlf, Chris. 2010. "Does Combat Exposure Make You a More Violent or Criminal Person?" *Journal of Human Resources*, Vol. 45, No. 2, pp. 271–300.

Rose, Maureen. 2012. "Behavioral Health Counseling Effective, Expanding Services."

The Gold Standard, September 20. Available at:
<http://www.fkgoldstandard.com/content/behavioral-health-counseling-effective-expanding-services>

Schnurr, Paula P., Carole A. Lunney, Michelle J. Bovin, and Brian P. Marx. 2009. "Posttraumatic Stress Disorder and Quality of Life: Extension of Findings to Veterans of the Wars in Iraq and Afghanistan." *Clinical Psychology Review*, Vol. 29, No. 8, pp. 727–735.

Schwartz, Amy C. and Fred A. Mael. 1990. "An Introduction to the Army Personnel System." U.S. Army Research Institute for the Behavioral and Social Sciences, Special Report S-19. Available at:
<http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA247465>.

Scioli, Erica, John Otis, and Terence Keane. 2010. "Psychological Problems Associated with Operation Enduring Freedom/Operation Iraqi Freedom Deployment." *American Journal of Lifestyle Medicine*, Vol. 4, No. 4, pp. 349-359.

Sharpley, Christopher F., and Vicki Bitsika. 2010. "Joining the Dots: Neurobiological Links in a Functional Analysis of Depression." *Behavioral and Brain Functions*, Vol. 6, No. 73.

Sheehy, Gail. 2012. "Army's Huge Culture Shift: No Shame in Mental Health Help." *USA Today*, July 5. Available at: <http://usatoday30.usatoday.com/news/military/story/2012-07-05/soldiers-PTSD-suicide-therapy-fort-carson/56042102/1>.

Siminski, Peter, Simon Ville, and Alexander Paull. 2013. "Does the Military Train Men to Be Violent Criminals? New Evidence from Australia's Conscription Lotteries." IZA Discussion Paper No. 7152.

Slevin, Colleen 2005. "Ft. Carson Gaining New Soldiers." *Denver Post*, July 27. Available at: http://www.denverpost.com/news/ci_2894415.

Smith, Tyler C., Margaret A. K. Ryan, Deborah L. Wingard, Donald J. Slymen, James F. Sallis, and Donna Kritz-Silverstein. 2008. "New Onset and Persistent Symptoms of Post-Traumatic Stress Disorder Self Reported After Deployment and Combat Exposures: Prospective Population Based US Military Cohort Study." *British Medical Journal*, Vol. 336, No. 7640, pp. 366–371.

Smith, L. Christopher. 2009. "The Fort Carson Murder Spree." *Rolling Stone*, November 12. Available at: <http://www.rollingstone.com/politics/news/the-fort-carson-murder-spree-20091112?page=2>.

Solomon, Zahava, and Rachel Dekel. 2007. "Posttraumatic Stress Disorder and Posttraumatic Growth among Israeli Ex-POWs." *Journal of Traumatic Stress*, Vol. 20, No. 3, pp. 303–312.

Songtag, Deborah, and Lizette Alvarez. 2008. "Across America, Deadly Echoes of Foreign Battles." *New York Times*, January 13.

Spelman, Juliette F., Stephen C. Hunt, Karen H. Seal, and A. Lucile Burgo-Black. 2012. "Post Deployment Care for Returning Combat Veterans." *Journal of General Internal Medicine*, Vol. 27, No. 9, pp. 1200-1209.

Squitieri, Tom. 2004. "Army Expanding 'Stop Loss' Order to Keep Soldiers from Leaving." *USA Today*, January 5. Available at: http://usatoday30.usatoday.com/news/nation/2004-01-05-army-troops_x.htm.

Sreenivasan, Shoba, Thomas Garrick, James McGuire, Daniel E. Smee, Daniel Dow, and Daniel Woehl. 2013. "Critical Concerns in Iraq/Afghanistan War Veteran-Forensic Interface: Combat-Related Postdeployment Criminal Violence." *Journal of the American Academy of Psychiatry and the Law*, Vol. 41, No. 2, pp. 263–273.

Swendsen, Joel and Kathleen Merikangas. 2000. "The Comorbidity of Depression and Substance Use Disorders." *Clinical Psychology Review*, Vol. 20, No. 2, pp. 173-189.

Tang, Jeff. 2010. "Ex-Wife of Soldier Accused of Murder Talks of Violent Past." *NewsChannel5.com*, December 27. Available at: <http://www.newschannel5.com/story/13746496/ex-wife-of-soldier-accused-of-murder-talks-of-violent-past>.

Tedeschi, Richard G., and Lawrence G. Calhoun. 1996. "The Posttraumatic Growth Inventory: Measuring the Positive Legacy of Trauma." *Journal of Traumatic Stress*, Vol. 9, No. 3, pp. 455-471.

Tice, Jim. 2009. "Active Stop-Loss Policy Adjusted." *Army Times*, August 23. Available at: <http://www.armytimes.com/article/20090823/NEWS/908230313/Active-stop-loss-policy-adjusted>.

Towell, Pat. 2004. *Forging the Sword: Unit-Manning in the U.S. Army*. Washington, DC: Center for Strategic and Budgetary Assessments.

Tyson, Ann Scott, and Josh White. 2007. "Strained Army Extends Tours To 15 Months." *Washington Post*, April 12. Available at: <http://www.washingtonpost.com/wp-dyn/content/article/2007/04/11/AR2007041100615.html>.

United States Army Medical Command, Office of the Surgeon General. 2009. "Epidemiologic Consultation No. 14-HK-OB1U-09, Investigation of Homicides at Fort Carson, Colorado, November 2008-May 2009, Final Report." Available at: <http://www.armymedicine.army.mil/reports/FinalRedactedEpicon>.

United States Department of Defense. 2010. Text from: U.S. Congress, Hearing of the House Committee on Veterans Affairs, 111th Congress, Second Session, September 15. "Personality Disorder Discharges: Impact on Veteran Benefits." Washington DC: U.S. Government Printing Office, Serial Number 111-97.

United States Government Accountability Office. 2009. "Military Base Realignment and Closures: DOD Faces Challenges in Implementing Recommendations on Time and Is Not Consistently Updating Savings Estimates." Washington DC: GAO-09-217

Warner, Joel. 2010. "Can a Veterans Court Help Former GIs find Justice Here at Home?" *Denver Westword*, Feb 4. Available at: <http://www.westword.com/2010-02-04/news/can-a-veterans-court-help-former-gis-find-justice-here-at-home/>.

Werthmann, Kelly. 2012. "Special Court Helps Local Veterans." *Fox21News.com*, March 8. Available at: <http://www.fox21news.com/news/story.aspx?id=728429>.

Wirthman, Lisa. 2012. "Emotional Casualties of War." *Denver Post*, April 27. Available at: http://www.denverpost.com/opinion/ci_20490749/emotional-casualties-war.

Zeidner, J., D. Scholarios, and C.D. Johnson. 2001. "Classification Techniques for Person-Job Matching: An Illustration Using the US Army." *Kybernetes*, Vol. 30, No. 7/8, pp. 984-1005.

Zoroya, Gregg. 2010. "Repeated Deployments Weigh Heavily on U.S. Troops." *USA Today*, January 1. Available at: http://usatoday30.usatoday.com/news/military/2010-01-12-four-army-war-tours_N.htm.

Figure 1. Number of Combat Brigades at Fort Carson, 2001-2009

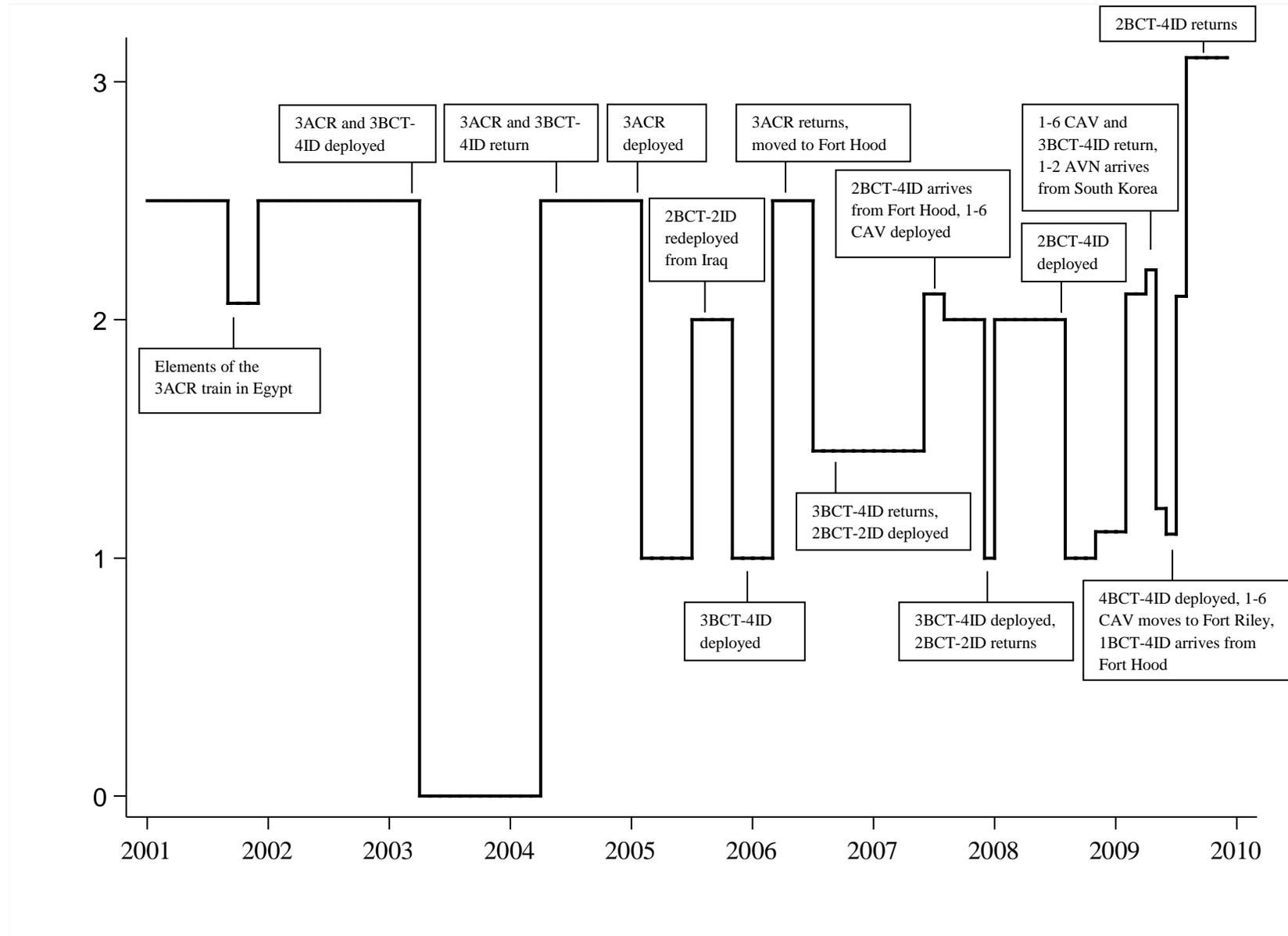


Figure 2a. Troop Levels and Violent Crime

El Paso County Sheriff's Office

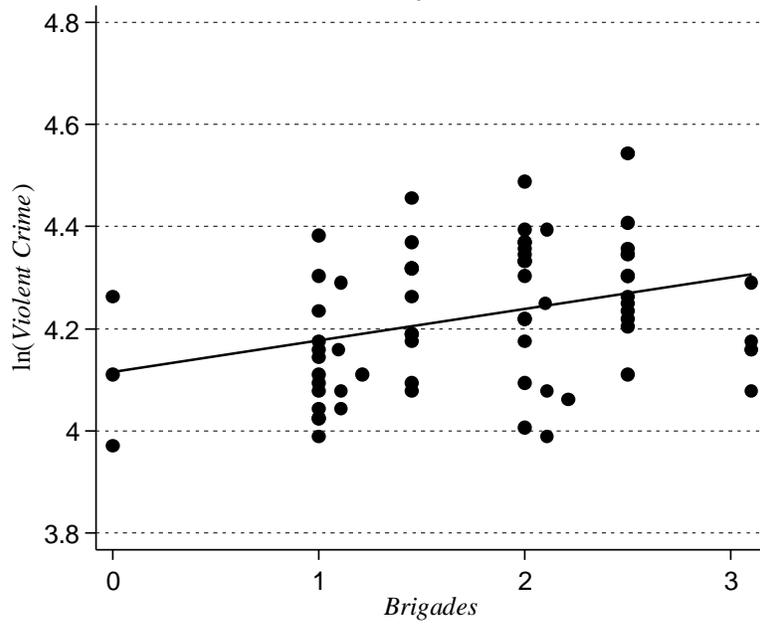


Table 1. Troop Levels at Fort Carson and Crime

	Violent Crime by Type								
	<i>Violent Crime</i>	<i>Violent Crime</i>	<i>Property Crime</i>	<i>Property Crime</i>	<i>Murder</i>	<i>Robbery</i>	<i>Rape</i>	<i>Aggravated Assault</i>	<i>Simple Assault</i>
<i>Brigades</i>	.0242* (.0140)	.0245** (.0119)	.0014 (.0142)	.0076 (.0059)	-.0007 (.0349)	.0488** (.0202)	.0356 (.0298)	.0361** (.0167)	.0128 (.0113)
Mean dep. variable, all agencies	62.72	62.72	361.3	361.3	.1492	6.256	4.143	14.29	37.80
Mean dep. variable, Colorado Springs Police Department	322.5	322.5	2006	2006	.6667	40.01	23.82	81.68	175.6
Mean dep. variable, El Paso County Sheriff's Office	68.40	68.40	323.3	323.3	.2222	2.194	5.222	56.31	4.444
Observations	2,192	2,192	2,192	2,192	2,192	2,192	2,192	2,192	2,192
Agency-specific linear time trends	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes

* Statistically significant at 10% level; ** at 5% level; *** at 1% level

Notes: The estimated relationship between combat brigades at Fort Carson and murders is from an OLS regression. All other estimated coefficients are from Poisson regressions. Data on crime reports at the agency-month level are from the National Incident Based Reporting System and cover the period 2001-2009. Property crimes include arson, burglary, larceny, motor vehicle theft, stolen property and vandalism. Controls include 8 year indicators, 11 month indicators, 20 agency indicators, the natural log of the agency population, and the county unemployment rate. Standard errors (in parentheses) are corrected for clustering at the county-year level.

Table 2. Did Violent Crime Change Before Deployments/Redeployments?

	<i>Violent Crime</i>	<i>Violent Crime</i>	<i>Violent Crime</i>	<i>Violent Crime</i>	<i>Violent Crime</i>	<i>Violent Crime</i>
<i>Brigades (12 month lead)</i>				...	...	-.0094 (.0161)
<i>Brigades (9 month lead)</i>	...	...	...	...	-.0071 (.0165)	-.0037 (.0116)
<i>Brigades (6 month lead)</i>	...	...	...	.0071 (.0095)	.0102 (.0082)	.0100 (.0080)
<i>Brigades (3 month lead)</i>	...	...	.0194 (.0142)	.0156 (.0137)	.0153 (.0134)	.0168 (.0137)
<i>Brigades (2 month lead)</i>	...	.0045 (.0129)	-.0118 (.0174)	-.0108 (.0162)	-.0110 (.0162)	-.0112 (.0165)
<i>Brigades (1 month lead)</i>	-.0065 (.0091)	-.0104 (.0118)	-.0097 (.0122)	-.0098 (.0121)	-.0090 (.0120)	-.0107 (.0113)
<i>Brigades</i>	.0296** (.0135)	.0301** (.0132)	.0317** (.0125)	.0317*** (.0119)	.0303** (.0119)	.0279** (.0118)
Observations	2,192	2,192	2,192	2,192	2,192	2,192

* Statistically significant at 10% level; ** at 5% level; *** at 1% level

Notes: Estimated coefficients are from Poisson regressions. Data on crime reports at the agency-month level are from the National Incident Based Reporting System and cover the period 2001-2009. Controls include 8 year indicators, 11 month indicators, 20 agency indicators, agency-specific linear time trends, the natural log of the agency population, and the county unemployment rate. Standard errors (in parentheses) are corrected for clustering at the county-year level.

Table 3. Combat Exposure and Crime: Returned from a Deployment in the Past 6 Months

	<i>Violent Crime</i>	<i>Property Crime</i>	<i>Violent Crime by Type</i>				
			<i>Murder</i>	<i>Robbery</i>	<i>Rape</i>	<i>Aggravated Assault</i>	<i>Simple Assault</i>
<i>Never-Deployed Brigades</i>	.0506 ^{***} (.0123)	-.0033 (.0099)	.1031 ^{***} (.0330)	.1298 ^{***} (.0353)	.0825 ^{**} (.0386)	.0806 ^{***} (.0180)	.0230 (.0161)
<i>Brigades Returned > 6 Months</i>	.0022 (.0115)	.0208 (.0137)	-.0604 ^{**} (.0302)	-.0120 (.0350)	-.0426 (.0340)	.0133 (.0195)	.0007 (.0128)
<i>Brigades Returned ≤ 6 Months</i>	.0026 (.0157)	.0148 (.0101)	-.0612 (.0443)	-.0267 (.0412)	.0264 (.0250)	.0059 (.0245)	.0032 (.0158)
Observations	2,192	2,192	2,192	2,192	2,192	2,192	2,192

* Statistically significant at 10% level; ** at 5% level; *** at 1% level

Notes: The estimated relationship between combat brigades and murders is from an OLS regression. All other estimated coefficients are from Poisson regressions. Data on crime reports at the agency-month level are from the National Incident Based Reporting System and cover the period 2001-2009. Property crimes include arson, burglary, larceny, motor vehicle theft, stolen property and vandalism. Controls include 8 year indicators, 11 month indicators, 20 agency indicators, agency-specific linear time trends, the natural log of the agency population, and the county unemployment rate. Standard errors (in parentheses) are corrected for clustering at the county-year level.

Table 4. Fatalities Suffered During Last Deployment and Crime

	Violent Crime by Type						
	<i>Violent Crime</i>	<i>Property Crime</i>	<i>Murder</i>	<i>Robbery</i>	<i>Rape</i>	<i>Aggravated Assault</i>	<i>Simple Assault</i>
<i>Never-Deployed Brigades</i>	.0513 ^{***} (.0132)	-.0027 (.0101)	.1056 ^{***} (.0273)	.1439 ^{***} (.0386)	.0817 [*] (.0421)	.0845 ^{***} (.0190)	.0177 (.0140)
<i>Brigades 0-16 Fatalities</i>	-.0004 (.0105)	.0137 (.0117)	-.0717 (.0470)	-.0727 ^{**} (.0342)	.0042 (.0223)	-.0104 (.0180)	.0274 ^{**} (.0122)
<i>Brigades ≥ 17 Fatalities</i>	.0054 (.0201)	.0200 (.0123)	-.0478 (.0443)	.0364 (.0488)	.0013 (.0316)	.0271 (.0288)	-.0222 (.0170)
Observations	2,192	2,192	2,192	2,192	2,192	2,192	2,192

* Statistically significant at 10% level; ** at 5% level; *** at 1% level

Notes: The estimated relationship between combat brigades and murders is from an OLS regression. All other estimated coefficients are from Poisson regressions. Data on crime reports at the agency-month level are from the National Incident Based Reporting System and cover the period 2001-2009. Property crimes include arson, burglary, larceny, motor vehicle theft, stolen property and vandalism. Controls include 8 year indicators, 11 month indicators, 20 agency indicators, agency-specific linear time trends, the natural log of the agency population, and the county unemployment rate. Standard errors (in parentheses) are corrected for clustering at the county-year level.

Table 5. Cumulative Deployments and Crime

	Violent Crime by Type						
	<i>Violent Crime</i>	<i>Property Crime</i>	<i>Murder</i>	<i>Robbery</i>	<i>Rape</i>	<i>Aggravated Assault</i>	<i>Simple Assault</i>
<i>Never-Deployed Brigades</i>	.0471*** (.0125)	.0002 (.0134)	.1177*** (.0292)	.0872*** (.0259)	.0539 (.0394)	.0744*** (.0191)	.0310* (.0178)
<i>Once-Deployed Brigades</i>	.0004 (.0144)	.0187** (.0077)	-.0524 (.0318)	-.0492* (.0269)	-.0152 (.0203)	.0044 (.0237)	.0064 (.0146)
<i>Twice-Deployed Brigades</i>	.0106 (.0177)	.0085 (.0277)	-.0905 (.0664)	.0718* (.0429)	.0606 (.0375)	.0220 (.0241)	-.0178 (.0276)
Observations	2,192	2,192	2,192	2,192	2,192	2,192	2,192

* Statistically significant at 10% level; ** at 5% level; *** at 1% level

Notes: The estimated relationship between combat brigades and murders is from an OLS regression. All other estimated coefficients are from Poisson regressions. Data on crime reports at the agency-month level are from the National Incident Based Reporting System and cover the period 2001-2009. Property crimes include arson, burglary, larceny, motor vehicle theft, stolen property and vandalism. Controls include 8 year indicators, 11 month indicators, 20 agency indicators, agency-specific linear time trends, the natural log of the agency population, and the county unemployment rate. Standard errors (in parentheses) are corrected for clustering at the county-year level.

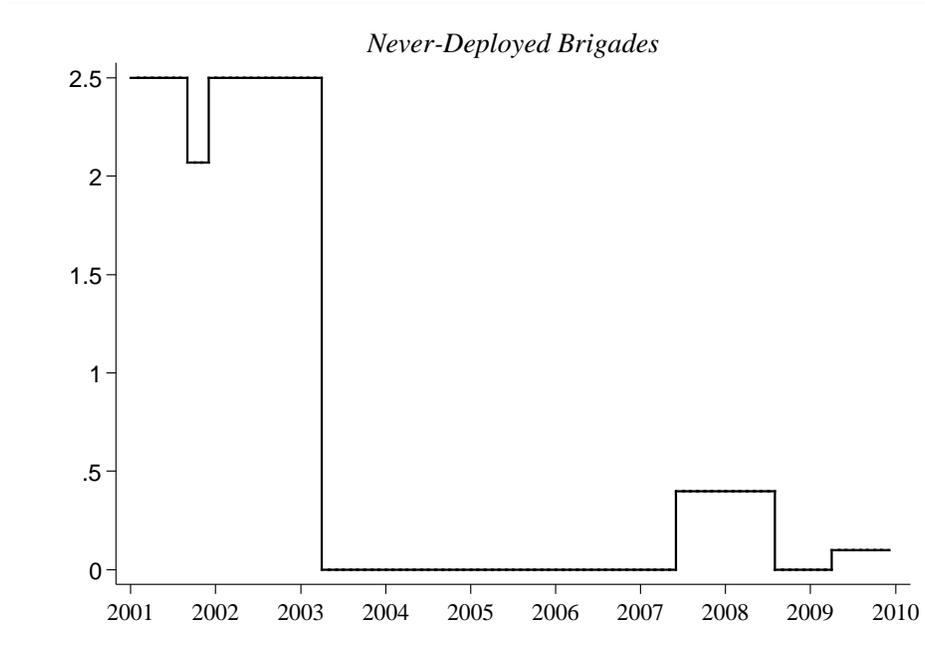
Table 6. Combat Exposure and Arrests

	Arrests of Males for Violent Crime		
	18-29 year olds	30-39 year olds	40+ year olds
<i>Never-Deployed Brigades</i>	.0526*** (.0180)	.0278 (.0261)	-.0091 (.0189)
<i>Deployed Brigades</i>	.0067 (.0176)	.0275 (.0195)	-.0053 (.0215)
Observations	1,669	1,635	1,627

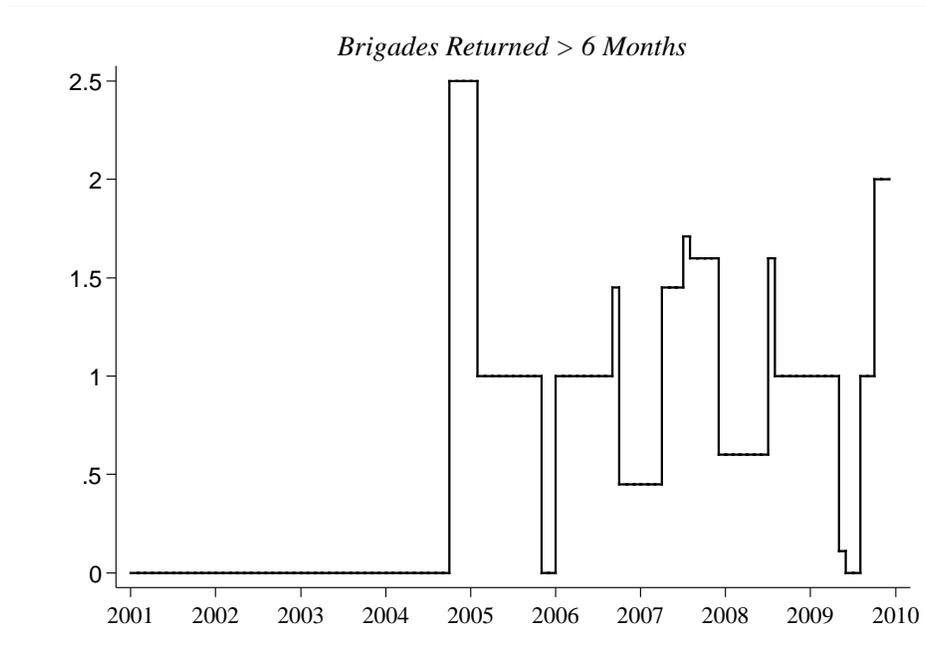
* Statistically significant at 10% level; ** at 5% level; *** at 1% level

Notes: All estimated coefficients are from Poisson regressions. Data on arrests at the agency-month level are from the National Incident Based Reporting System and cover the period 2001-2007. Controls include 6 year indicators, 11 month indicators, 20 agency indicators, agency-specific linear time trends, the natural log of the agency population, and the county unemployment rate. Standard errors (in parentheses) are corrected for clustering at the county-year level.

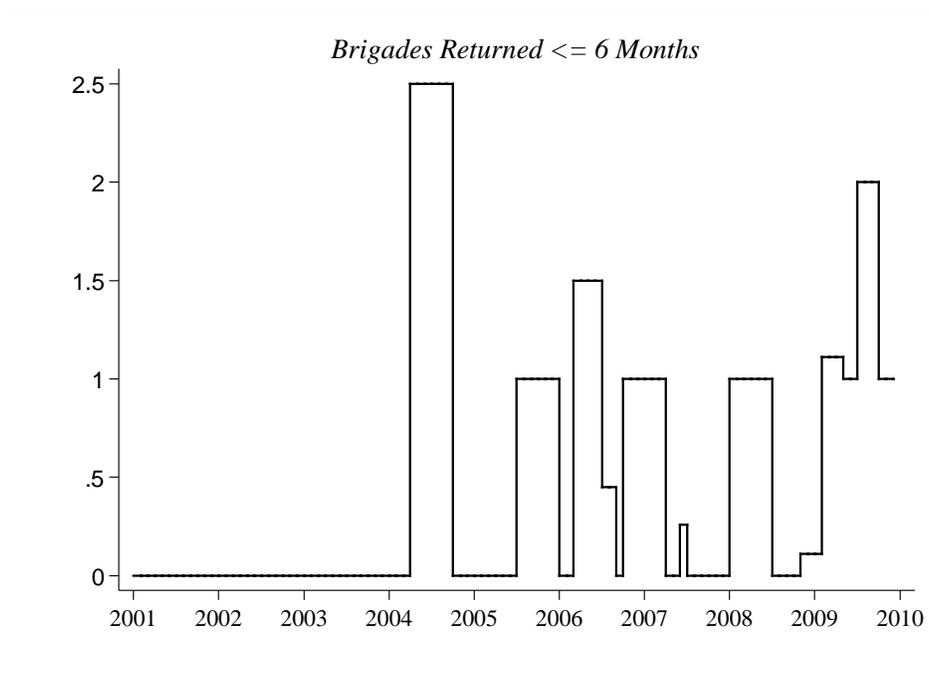
Appendix Figure A1. Variation in *Never-Deployed Brigades*, 2001-2009



Appendix Figure A2. Variation in *Brigades Returned > 6 Months*, 2001-2009



Appendix Figure A3. Variation in *Brigades Returned ≤ 6 Months*, 2001-2009



Appendix Table A1. Descriptive Statistics for Independent Variables

Variable	Mean (SD)	Description
<i>Brigades</i>	.1468 (.5429)	Number of combat brigades at Fort Carson in month t
<i>Never-Deployed Brigades</i>	.0361 (.2741)	Number of combat brigades at Fort Carson that had not been deployed prior to month t
<i>Brigades Returned > 6 Months</i>	.0607 (.2848)	Number of previously deployed combat brigades at Fort Carson that had not returned from overseas in the past 6 months
<i>Brigades Returned \leq 6 Months</i>	.0500 (.2752)	Number of previously deployed combat brigades at Fort Carson that had returned from overseas in the past 6 months
<i>Brigades 0-16 Fatalities</i>	.0509 (.2788)	Number of brigades at Fort Carson that had experienced between 0 and 16 fatalities when they were last deployed
<i>Brigades \geq 17 Fatalities</i>	.0598 (.2854)	Number of brigades at Fort Carson that had experienced 17 or more fatalities when they were last deployed
<i>Once-Deployed Brigades</i>	.0465 (.2912)	Number of brigades at Fort Carson that had been deployed once prior to month t
<i>Twice-Deployed Brigades</i>	.0642 (.3259)	Number of brigades at Fort Carson that had been deployed a total of two or more times prior to month t
<i>Population</i>	10.50 (1.396)	Natural logarithm of agency population
<i>Unemployment</i>	5.257 (1.457)	County unemployment rate

Notes: Sources used to construct the variable *Brigades* are given in Appendix B of Anderson and Rees (2013). Agency-level population data are provided by the NIBRS. Unemployment data come from the Bureau of Labor Statistics and are available at: <http://www.bls.gov/lau/>.