Fog of War? The Role of Combat, Selection, and Policy in Veterans' Long-Run Outcomes.[1]

Jesse Bruhn
(Brown University)

Kyle Greenberg
(West Point)

Matthew Gudgeon
(West Point)

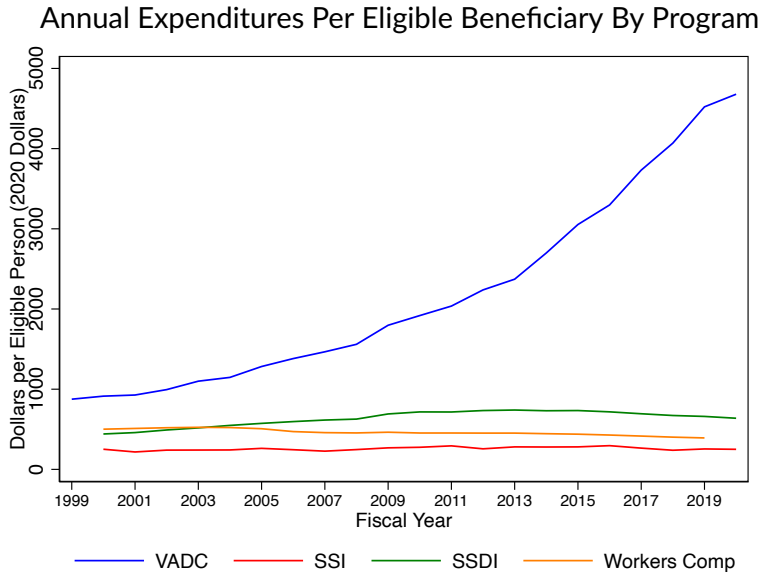
Evan K. Rose
(University of Chicago)

Yotam Shem-Tov
(UCLA)

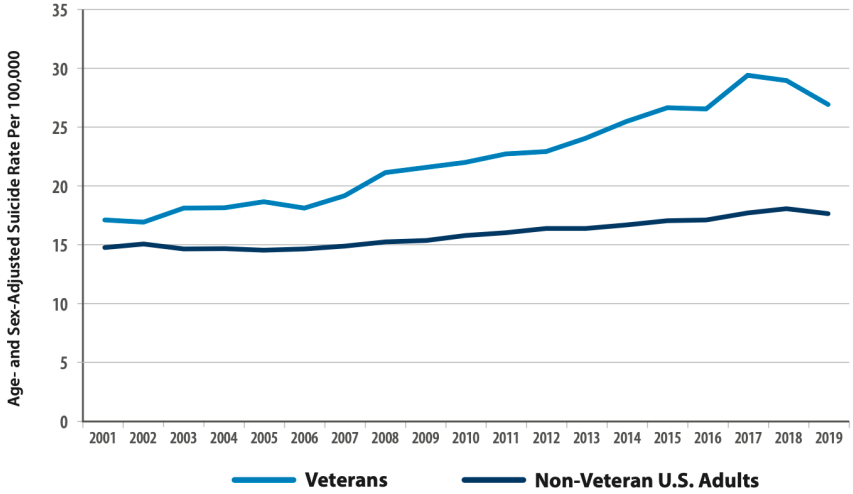
NBER SI Economics of National Security Program, July 2022

VA Disability Compensation: $23 billion in 2000 to $99 billion in 2021

VA Disability Compensation: $23 billion in 2000 to $99 billion in 2021



Over this same time-frame, veteran suicide nearly doubled



Source: “2021 National Veteran Suicide Prevention Annual Report” (VA, 2021)

What has changed over this period?

Wartime deployments to Iraq and Afghanistan

- *"A lot of our veterans and their families have gone through hell—deployment after deployment, months and years away from their families; missed birthdays, anniversaries; empty chairs at holidays; financial struggles; divorces; loss of limbs; traumatic brain injury; posttraumatic stress. We see it in the struggles many have when they come home... The cost of war they will carry with them their whole lives"* – President Joe Biden

What has changed over this period?

Wartime deployments to Iraq and Afghanistan

- *"A lot of our veterans and their families have gone through hell—deployment after deployment, months and years away from their families; missed birthdays, anniversaries; empty chairs at holidays; financial struggles; divorces; loss of limbs; traumatic brain injury; posttraumatic stress. We see it in the struggles many have when they come home... The cost of war they will carry with them their whole lives"* – President Joe Biden

Composition of servicemembers

- Changing test scores and high school graduation rates among new recruits (DoD, 2020)
- From 2005-2008, Army enlisted more recruits with criminal histories (Murphy, 2019)

What has changed over this period?

Wartime deployments to Iraq and Afghanistan

- *"A lot of our veterans and their families have gone through hell—deployment after deployment, months and years away from their families; missed birthdays, anniversaries; empty chairs at holidays; financial struggles; divorces; loss of limbs; traumatic brain injury; posttraumatic stress. We see it in the struggles many have when they come home... The cost of war they will carry with them their whole lives"* – President Joe Biden

Composition of servicemembers

- Changing test scores and high school graduation rates among new recruits (DoD, 2020)
- From 2005-2008, Army enlisted more recruits with criminal histories (Murphy, 2019)

Policies also changed (e.g. 2010 relaxation of standards to receive disability for PTSD)

This paper: assess causal role of deployment in explaining outcomes

1. **Exploit the quasi-random assignment of U.S. Army soldiers to Brigade Combat Teams (BCTs) to isolate the impact of deployments to Iraq and Afghanistan on:**

    - Disability receipt
    - Mortality (incl. deaths of despair and suicide)
    - Other long run outcomes associated with health and well-being

2. **Leverage variation in combat intensity across BCTs to explore whether more violent deployments deal a different blow**

3. **Decompose trends in recent Army veterans' outcomes attributable to combat deployments, compositional changes, and all other factors**

Summary of Key Results

Deployment increases VADC, but has limited effects on deaths outside of combat

- 10-month dep $\Longrightarrow$ \$2602 (42%) $\uparrow$ in annual VADC pay
  $\Longrightarrow$ 0.05pp (4%) $\uparrow$ in noncombat death, but noisy (CI: -24% to 32%)
  $\Longrightarrow$ More precise 0 effects on criminal/credit/education outcomes

Summary of Key Results

Deployment increases VADC, but has limited effects on deaths outside of combat

- 10-month dep $\Longrightarrow$ \$2602 (42%) $\uparrow$ in annual VADC pay
  $\Longrightarrow$ 0.05pp (4%) $\uparrow$ in noncombat death, but noisy (CI: -24% to 32%)
  $\Longrightarrow$ More precise 0 effects on criminal/credit/education outcomes

More dangerous deployments increase trauma and VADC, but not noncombat deaths

- $1\sigma \uparrow$ in peer casualties $\Longrightarrow$ 0.27pp (54%) $\uparrow$ in combat death
  $\Longrightarrow$ \$414 (7%) $\uparrow$ in VADC pay
  $\Longrightarrow$ 0.01pp (1%) $\downarrow$ in noncombat death (CI: -9% to 7% of mean)
  $\Longrightarrow$ 0 effects on criminal, credit, and education outcomes

Summary of Key Results

Deployment increases VADC, but has limited effects on deaths outside of combat

- 10-month dep $\implies$ \$2602 (42%) $\uparrow$ in annual VADC pay
  $\implies$ 0.05pp (4%) $\uparrow$ in noncombat death, but noisy (CI: -24% to 32%)
  $\implies$ More precise 0 effects on criminal/credit/education outcomes

More dangerous deployments increase trauma and VADC, but not noncombat deaths

- $1\sigma \uparrow$ in peer casualties $\implies$ 0.27pp (54%) $\uparrow$ in combat death
  $\implies$ \$414 (7%) $\uparrow$ in VADC pay
  $\implies$ 0.01pp (1%) $\downarrow$ in noncombat death (CI: -9% to 7% of mean)
  $\implies$ 0 effects on criminal, credit, and education outcomes

Deployment does not explain recent growth in VADC or trends in noncombat deaths

- Deployment explains some growth in VADC through 2012, but $\approx$ 0% since 2012
- Selection into service on obs. chars. does not explain growth in VADC
- Selection into service on obs. chars. explains 35% of trend in noncombat deaths

Contribution

Complements research related to

- Military service (Barr, 2019; Wilson and Kizer, 1997; Breznitz, 2005; Borgschulte and Martorell, 2018; Greenberg et al., 2022; Angrist, 1990, 1998; Angrist et al., 2010; Conley and Heerwig, 2012; Loughran and Heaton, 2013; Bingley et al., 2010; Hjalmarsson and Lindquist, 2019)
- Combat deployments specifically (Anderson and Rees, 2015; Cesur et al., 2013, 2016, 2020; Cesur and Sabia, 2016; Gade and Wenger, 2011; Hoge et al., 2006; Lyle, 2006; Negrusa et al., 2014; Rohlfs, 2010; Sabia and Skimmyhorn, 2018; Stiglitz and Bilmes, 2008; Tanielian et al., 2008)
- Exposure to violence and conflict (Bauer et al., 2016, 2018; Blattman and Annan, 2010; Brown et al., 2019; Callen et al., 2014; Jakiela and Ozier, 2019; Lupa and Peisakhin, 2017; Moya, 2018; Voors et al., 2012)
- Federal disability programs (Autor and Duggan, 2003, 2006; Armour, 2018; Black et al., 2002; Bound, 1989; Burkhauser and Daly, 2012; Chen and van der Klaauw, 2003; Deshpande, 2016; Deshpande and Lockwood, 2021; Deshpande and Mueller-Smith, 2022; Duggan and Imberman, 2009; French and Song, 2014; Gelber et al., 2017; Liebman, 2015; Maestas et al., 2013; Mueller et al., 2016; Von Wachter et al., 2011; and many others), with few papers on VADC (Duggan et al., 2010; Autor et al., 2016; Coile et al., 2021; Silver and Zhang, 2022)

Contribution

Complements research related to

- Military service (Barr, 2019; Wilson and Kizer, 1997; Breznitz, 2005; Borgschulte and Martorell, 2018; Greenberg et al., 2022; Angrist, 1990, 1998; Angrist et al., 2010; Conley and Heerwig, 2012; Loughran and Heaton, 2013; Bingley et al., 2010; Hjalmarsson and Lindquist, 2019)
- Combat deployments specifically (Anderson and Rees, 2015; Cesur et al., 2013, 2016, 2020; Cesur and Sabia, 2016; Gade and Wenger, 2011; Hoge et al., 2006; Lyle, 2006; Negrusa et al., 2014; Rohlfs, 2010; Sabia and Skimmyhorn, 2018; Stiglitz and Bilmes, 2008; Tanielian et al., 2008)
- Exposure to violence and conflict (Bauer et al., 2016, 2018; Blattman and Annan, 2010; Brown et al., 2019; Callen et al., 2014; Jakiela and Ozier, 2019; Lupa and Peisakhin, 2017; Moya, 2018; Voors et al., 2012)
- Federal disability programs (Autor and Duggan, 2003, 2006; Armour, 2018; Black et al., 2002; Bound, 1989; Burkhauser and Daly, 2012; Chen and van der Klaauw, 2003; Deshpande, 2016; Deshpande and Lockwood, 2021; Deshpande and Mueller-Smith, 2022; Duggan and Imberman, 2009; French and Song, 2014; Gelber et al., 2017; Liebman, 2015; Maestas et al., 2013; Mueller et al., 2016; Von Wachter et al., 2011; and many others), with few papers on VADC (Duggan et al., 2010; Autor et al., 2016; Coile et al., 2021; Silver and Zhang, 2022)

What do we add?

- Use admin data to study combat's effect on in/post-service outcomes
- Novel identification for estimating causal effect of deployment
- Explore the drivers of recent trends in VADC and veteran mortality

Research design and empirical framework

Sample and data

Instrument validity

The causal effect of deployment

Explaining trends in veteran outcomes

Conclusion

Combat deployments are not random

Combat deployments are not random

Soldiers self-select into occupations with different deployment risk

Changing selection into the Army could confound across-cohort variation in deployment

Combat deployments are not random

Soldiers self-select into occupations with different deployment risk

Changing selection into the Army could confound across-cohort variation in deployment

Even within occupations and cohorts, soldiers are not randomly sent to war:

- Soldiers unable to deploy may be assigned to nondeployable training/support units
- Commanders have some ability to influence who deploys
- While difficult, soldiers can take steps to prevent deployment (e.g. going AWOL)

Combat deployments are not random

Soldiers self-select into occupations with different deployment risk

Changing selection into the Army could confound across-cohort variation in deployment

Even within occupations and cohorts, soldiers are not randomly sent to war:

- Soldiers unable to deploy may be assigned to nondeployable training/support units
- Commanders have some ability to influence who deploys
- While difficult, soldiers can take steps to prevent deployment (e.g. going AWOL)

For these reasons, we still need a source of exogenous variation in deployment propensity

How are soldiers assigned to military units?

Since 2005, Brigade Combat Teams (BCTs) have been the Army's primary fighting force

- 4,000 military personnel
- Brigade $>$ Battalion $>$ Company
- BCTs deploy to combat zones as self-sustaining, interchangeable units

The Army projects job openings at the brigade-by-occupation level

Army Career Managers match soldiers to job vacancies (i.e. "faces-to-spaces") while considering:

- Soldier occupation and qualifications
- Soldier preferences for location (NOT preferences for specific brigades)
- First term soldiers have virtually no influence on their assigned brigade

Isolating exogenous variation in deployment

We want to compare outcomes of first term enlisted soldiers who:

- Are in the same occupation (e.g. Infantry);
- Arrive at the same duty station (e.g. Fort Drum, NY);
- Arrive at around the same time;
- Have the same initial enlistment contract term-length;
- But assigned to different brigades with different near-term deployment probabilities

A stylized example

- PVT Berman and PVT Wright enlist as Water Treatment Specialists
- They complete training in Nov05, and both arrive at Fort Drum, NY in Dec05
- PVT Berman is assigned to 1st BCT which deploys to Iraq from Jan06-Mar07
- PVT Wright is assigned to 2nd BCT, which does not deploy during 1st enlistment

Accounting for other forms of selection into deployment

Rich admin data allow us to account for nonrandom assignment to brigades:

- Exclude soldiers assigned to training or support brigades
- Exclude soldiers with documented assignment considerations
- Exclude women because we cannot observe all cases of pregnancy

Accounting for other forms of selection into deployment

Rich admin data allow us to account for nonrandom assignment to brigades:

- Exclude soldiers assigned to training or support brigades
- Exclude soldiers with documented assignment considerations
- Exclude women because we cannot observe all cases of pregnancy

Instrument for a soldier's own deployment with average deployment lengths of peers

- Fixes bias due to soldier selection into deployment within BCTs
- Fixes survivor bias from surveys or retrospective comparisons

Empirical implementation – two stage least squares

$$Y_i = \delta_{k(i)} + \beta D_i + \epsilon_i \quad (1)$$

$$D_i = \omega_{k(i)} + \pi Z_i + u_i \quad (2)$$

Where:

- Y_i: outcome of soldier i
- D_i: # months i deploys w/in 3 yrs (most common term-length) of arrival at first BCT
- Z_i: Average months deployed among peers in same BCT x Arrival Quarter
- $\delta_{k(i)}$ and $\omega_{k(i)}$: (job)$\times$ (duty-station)$\times$(year of arrival)$\times$(term-length) fixed effects
- β: Causal effect of 1-month deployed (scaled to reflect impact of 10-mo deployment)

Heteroskedasticity-robust standard errors

Exclusion Justification

Sample and data

Sample: First-term enlisted male soldiers assigned to BCTs between 2005 and 2015

- Median age is 21 years; 14% Black; 13% Hispanic Summary Stats Table
- Predominately high school graduates
- Median AFQT is 56th percentile of 18-23 y/o national verbal/math ability
- Disproportionately in combat occupations (e.g. Infantry)
- 63% deployed to Iraq / Afghanistan w/in 3 years (64% w/in 4 years)

Link to outcomes observed during and after service (mostly through 2019)

- VA and SSA disability data
- National Death Index mortality data
- Army and LexisNexis criminal and misconduct outcomes
- Experian® credit data
- National Student Clearinghouse college attendance and completion

Research design and empirical framework

Sample and data

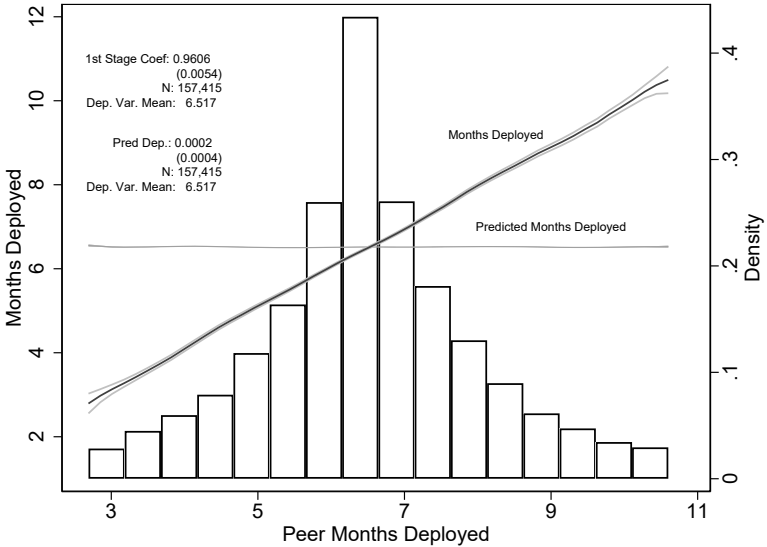
Instrument validity

The causal effect of deployment

Explaining trends in veteran outcomes

Conclusion

First stage: 1mo ↑ in peers' depl. $\Longrightarrow$ 0.96mo ↑ in own depl.



Note: First stage is nearly identical if endog. var. is months deployed in 2yrs, 4yrs, etc. First Stage Over Time

Balance: Instrument is balanced, OLS-equivalent is not

	Black (1)	Hispanic (2)	Other Race (3)	Married (4)	Dep. Children (5)	HSGplus (6)	Init Approx Age (7)	Init AFQSC (8)
				Panel (a): Deployment Instrument Balance Tests				
Deployment Instrument	0.0055	-0.0038	0.0002	0.0013	0.0017	0.0048	0.0822*	-0.2817
	(0.0043)	(0.0046)	(0.0029)	(0.0047)	(0.0027)	(0.0042)	(0.0459)	(0.2232)
Covariate Mean	0.140	0.130	0.052	0.146	0.044	0.868	21.800	58.011
Observations	157415	157415	157415	157415	157415	157415	157415	157415
P-value on Joint Test	0.342							
				Panel (b): Balance Table OLS with FE				
10 Months Deployed	-0.0139***	0.0151***	0.0076***	-0.0140***	-0.0067***	0.0335***	-0.0590***	0.8290***
	(0.0020)	(0.0020)	(0.0013)	(0.0022)	(0.0015)	(0.0022)	(0.0220)	(0.1022)
Covariate Mean	0.140	0.130	0.052	0.146	0.044	0.868	21.800	58.011
Observations	157415	157415	157415	157415	157415	157415	157415	157415
P-value on Joint Test	0.000							

Research design and empirical framework

Sample and data

Instrument validity

The causal effect of deployment

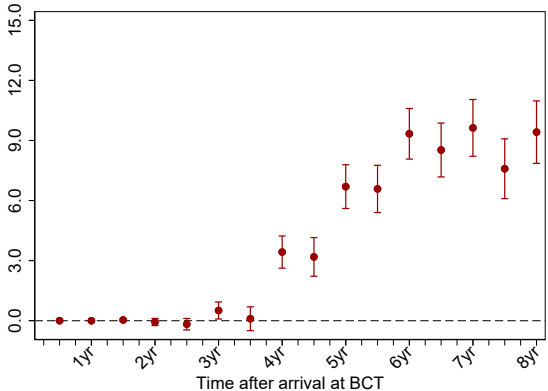
Explaining trends in veteran outcomes

Conclusion

Within 8 years, depl ↑ any VADC (9.5pp) & annual VADC pay ($2600)

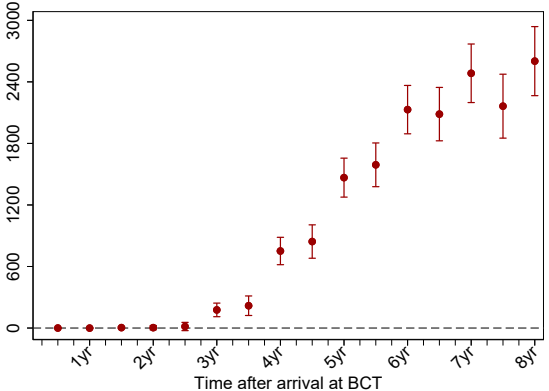
Any VADC Receipt (x100)

Mean at 8yrs: 37.4%



Annual VADC Payments

Mean at 8yrs: $6129



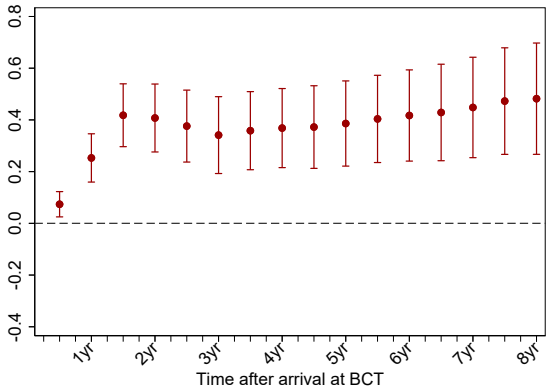
Deployment ↑ separation from Army by 2.6pp (3% of mean) within 8 years Separation From Army

VADC+SSDI+SSI Balanced Sample

Deployment increases mortality, but mostly through combat deaths

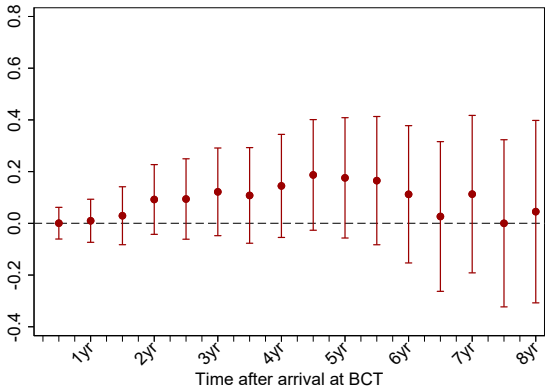
Combat Death (x100)

Mean at 8yrs: 0.50%



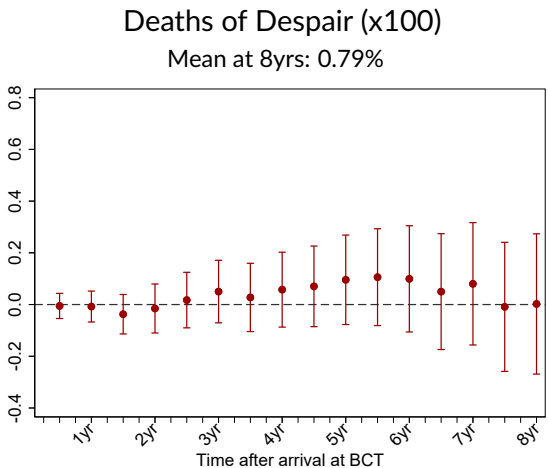
Noncombat Death (x100)

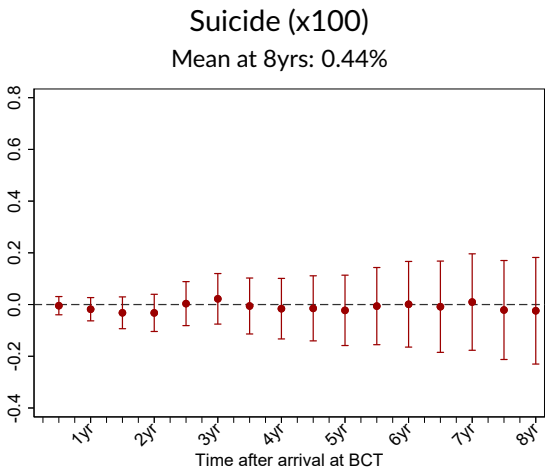
Mean at 8yrs: 1.25%



W/in 8 years, deployment ↑ all-cause mortality by 0.53pp (30%)—combat deaths explain 90% of overall effect

Limited evidence deployment causes deaths of despair (incl. suicide)





The challenge with effects on noncombat mortality

Mortality is rare—imprecision makes it difficult to rule out moderate effect sizes:

- Upper bound of 95% CI for non-combat death is 32% of the mean

The challenge with effects on noncombat mortality

Mortality is rare—imprecision makes it difficult to rule out moderate effect sizes:

- Upper bound of 95% CI for non-combat death is 32% of the mean

Address this challenge through two additional analyses:

1. We find precise null effects on several other measures of well-being
2. Explore whether more dangerous deployments produce different outcomes

Deployment does not impact misconduct, credit, education outcomes

Outcome	Effect of 10 Mths Deployed (at 8yrs)	95% CI as % of Mean	Mean (8yrs)
	Panel (a): Misconduct		
Separated for Misconduct (x100)	-1.02	[-10%, 1%]	25.05
	(0.70)		
Ever Incarcerated (x100)	0.10	[-16%, 24%]	2.41
	(0.25)		
	Panel (b): Credit Scores		
Credit Score in 2020 (Vantage)	1.32	[-0%, 1%]	656
	(1.58)		
	Panel (c): College Enroll/Grad		
College Enrollment (x100)	1.09	[-1%, 5%]	55.70
	(0.81)		
Associate's Deg+ (x100)	0.66	[-3%, 18%]	8.69
	(0.47)		

Note: Separated for Misconduct includes being barred from reenlistment

We find similar effects on other misconduct/criminal, credit, and education outcomes Crimes Credit Education

Deployment does not impact misconduct, credit, education outcomes

Outcome	Effect of 10 Mths Deployed (at 8yrs)	95% CI as % of Mean	Mean (8yrs)
	Panel (a): Misconduct		
Separated for Misconduct (x100)	-1.02 (0.70)	[-10%, 1%]	25.05
Ever Incarcerated (x100)	0.10 (0.25)	[-16%, 24%]	2.41
	Panel (b): Credit Scores		
Credit Score in 2020 (Vantage)	1.32 (1.58)	[-0%, 1%]	656
	Panel (c): College Enroll/Grad		
College Enrollment (x100)	1.09 (0.81)	[-1%, 5%]	55.70
Associate's Deg+ (x100)	0.66 (0.47)	[-3%, 18%]	8.69

Note: Separated for Misconduct includes being barred from reenlistment

We find similar effects on other misconduct/criminal, credit, and education outcomes Crimes Credit Education

Deployment does not impact misconduct, credit, education outcomes

Outcome	Effect of 10 Mths Deployed (at 8yrs)	95% CI as % of Mean	Mean (8yrs)
	Panel (a): Misconduct		
Separated for Misconduct (x100)	-1.02	[-10%, 1%]	25.05
	(0.70)		
Ever Incarcerated (x100)	0.10	[-16%, 24%]	2.41
	(0.25)		
	Panel (b): Credit Scores		
Credit Score in 2020 (Vantage)	1.32	[-0%, 1%]	656
	(1.58)		
	Panel (c): College Enroll/Grad		
College Enrollment (x100)	1.09	[-1%, 5%]	55.70
	(0.81)		
Associate's Deg+ (x100)	0.66	[-3%, 18%]	8.69
	(0.47)		

Note: Separated for Misconduct includes being barred from reenlistment

We find similar effects on other misconduct/criminal, credit, and education outcomes Crimes Credit Education

Deployment does not impact misconduct, credit, education outcomes

Outcome	Effect of 10 Mths Deployed (at 8yrs)	95% CI as % of Mean	Mean (8yrs)
	Panel (a): Misconduct		
Separated for Misconduct (x100)	-1.02	[-10%, 1%]	25.05
	(0.70)		
Ever Incarcerated (x100)	0.10	[-16%, 24%]	2.41
	(0.25)		
	Panel (b): Credit Scores		
Credit Score in 2020 (Vantage)	1.32	[-0%, 1%]	656
	(1.58)		
	Panel (c): College Enroll/Grad		
College Enrollment (x100)	1.09	[-1%, 5%]	55.70
	(0.81)		
Associate's Deg+ (x100)	0.66	[-3%, 18%]	8.69
	(0.47)		

Note: Separated for Misconduct includes being barred from reenlistment

We find similar effects on other misconduct/criminal, credit, and education outcomes Crimes Credit Education

Deployment does not impact misconduct, credit, education outcomes

Outcome	Effect of 10 Mths Deployed (at 8yrs)	95% CI as % of Mean	Mean (8yrs)
	Panel (a): Misconduct		
Separated for Misconduct (x100)	-1.02	[-10%, 1%]	25.05
	(0.70)		
Ever Incarcerated (x100)	0.10	[-16%, 24%]	2.41
	(0.25)		
	Panel (b): Credit Scores		
Credit Score in 2020 (Vantage)	1.32	[-0%, 1%]	656
	(1.58)		
	Panel (c): College Enroll/Grad		
College Enrollment (x100)	1.09	[-1%, 5%]	55.70
	(0.81)		
Associate's Deg+ (x100)	0.66	[-3%, 18%]	8.69
	(0.47)		

Note: Separated for Misconduct includes being barred from reenlistment

We find similar effects on other misconduct/criminal, credit, and education outcomes Crimes Credit Education

More violent deployments slightly ↑ VADC, but not other outcomes

	10 Months Deployed	(10 Mths Dep) ×(1σ Peer Cas)	Dep×Cas CI as % of Mean	Mean (8yrs)
		Panel (a): Combat Death and VADC		
Combat Death (x100)	0.01	0.27***	[37%, 71%]	0.50
	(0.12)	(0.04)		
Annual Amt VADC	1876***	414***	[5%, 8%]	6129
	(190)	(48)		
		Panel (b): Non-Combat Mortality		
Noncombat Death (x100)	0.07	-0.01	[-9%, 7%]	1.25
	(0.20)	(0.05)		
Death of Despair (x100)	0.10	-0.06	[-18%, 3%]	0.79
	(0.16)	(0.04)		
		Panel (c): Misconduct, Credit, Education		
Separated for Misconduct (x100)	-0.90	-0.07	[-2%, 1%]	25.05
	(0.77)	(0.18)		
Ever Incarcerated (x100)	-0.07	0.10	[-1%, 9%]	2.41
	(0.28)	(0.07)		
Credit Score in 2020 (Vantage)	1.34	-0.01	[-0%, 0%]	656
	(1.74)	(0.41)		
Associate's Deg+ (x100)	0.41	0.14	[-1%, 4%]	8.69
	(0.52)	(0.12)		

We find similar results when exploring heterogeneity by combat/noncombat occupations Combat/Noncombat

More violent deployments slightly ↑ VADC, but not other outcomes

	10 Months Deployed	(10 Mths Dep) ×(1σ Peer Cas)	Dep×Cas CI as % of Mean	Mean (8yrs)
		Panel (a): Combat Death and VADC		
Combat Death (x100)	0.01	0.27***	[37%, 71%]	0.50
	(0.12)	(0.04)		
Annual Amt VADC	1876***	414***	[5%, 8%]	6129
	(190)	(48)		
		Panel (b): Non-Combat Mortality		
Noncombat Death (x100)	0.07	-0.01	[-9%, 7%]	1.25
	(0.20)	(0.05)		
Death of Despair (x100)	0.10	-0.06	[-18%, 3%]	0.79
	(0.16)	(0.04)		
		Panel (c): Misconduct, Credit, Education		
Separated for Misconduct (x100)	-0.90	-0.07	[-2%, 1%]	25.05
	(0.77)	(0.18)		
Ever Incarcerated (x100)	-0.07	0.10	[-1%, 9%]	2.41
	(0.28)	(0.07)		
Credit Score in 2020 (Vantage)	1.34	-0.01	[-0%, 0%]	656
	(1.74)	(0.41)		
Associate's Deg+ (x100)	0.41	0.14	[-1%, 4%]	8.69
	(0.52)	(0.12)		

We find similar results when exploring heterogeneity by combat/noncombat occupations Combat/Noncombat

More violent deployments slightly ↑ VADC, but not other outcomes

	10 Months Deployed	(10 Mths Dep) ×(1σ Peer Cas)	Dep×Cas CI as % of Mean	Mean (8yrs)
		Panel (a): Combat Death and VADC		
Combat Death (x100)	0.01	0.27***	[37%, 71%]	0.50
	(0.12)	(0.04)		
Annual Amt VADC	1876***	414***	[5%, 8%]	6129
	(190)	(48)		
		Panel (b): Non-Combat Mortality		
Noncombat Death (x100)	0.07	-0.01	[-9%, 7%]	1.25
	(0.20)	(0.05)		
Death of Despair (x100)	0.10	-0.06	[-18%, 3%]	0.79
	(0.16)	(0.04)		
		Panel (c): Misconduct, Credit, Education		
Separated for Misconduct (x100)	-0.90	-0.07	[-2%, 1%]	25.05
	(0.77)	(0.18)		
Ever Incarcerated (x100)	-0.07	0.10	[-1%, 9%]	2.41
	(0.28)	(0.07)		
Credit Score in 2020 (Vantage)	1.34	-0.01	[-0%, 0%]	656
	(1.74)	(0.41)		
Associate's Deg+ (x100)	0.41	0.14	[-1%, 4%]	8.69
	(0.52)	(0.12)		

We find similar results when exploring heterogeneity by combat/noncombat occupations Combat/Noncombat

More violent deployments slightly ↑ VADC, but not other outcomes

	10 Months Deployed	(10 Mths Dep) ×(1σ Peer Cas)	Dep×Cas CI as % of Mean	Mean (8yrs)
Panel (a): Combat Death and VADC				
Combat Death (x100)	0.01	0.27***	[37%, 71%]	0.50
	(0.12)	(0.04)		
Annual Amt VADC	1876***	414***	[5%, 8%]	6129
	(190)	(48)		
Panel (b): Non-Combat Mortality				
Noncombat Death (x100)	0.07	-0.01	[-9%, 7%]	1.25
	(0.20)	(0.05)		
Death of Despair (x100)	0.10	-0.06	[-18%, 3%]	0.79
	(0.16)	(0.04)		
Panel (c): Misconduct, Credit, Education				
Separated for Misconduct (x100)	-0.90	-0.07	[-2%, 1%]	25.05
	(0.77)	(0.18)		
Ever Incarcerated (x100)	-0.07	0.10	[-1%, 9%]	2.41
	(0.28)	(0.07)		
Credit Score in 2020 (Vantage)	1.34	-0.01	[-0%, 0%]	656
	(1.74)	(0.41)		
Associate's Deg+ (x100)	0.41	0.14	[-1%, 4%]	8.69
	(0.52)	(0.12)		

We find similar results when exploring heterogeneity by combat/noncombat occupations Combat/Noncombat

More violent deployments slightly ↑ VADC, but not other outcomes

	10 Months Deployed	(10 Mths Dep) ×(1σ Peer Cas)	Dep×Cas CI as % of Mean	Mean (8yrs)
		Panel (a): Combat Death and VADC		
Combat Death (x100)	0.01	0.27***	[37%, 71%]	0.50
	(0.12)	(0.04)		
Annual Amt VADC	1876***	414***	[5%, 8%]	6129
	(190)	(48)		
		Panel (b): Non-Combat Mortality		
Noncombat Death (x100)	0.07	-0.01	[-9%, 7%]	1.25
	(0.20)	(0.05)		
Death of Despair (x100)	0.10	-0.06	[-18%, 3%]	0.79
	(0.16)	(0.04)		
		Panel (c): Misconduct, Credit, Education		
Separated for Misconduct (x100)	-0.90	-0.07	[-2%, 1%]	25.05
	(0.77)	(0.18)		
Ever Incarcerated (x100)	-0.07	0.10	[-1%, 9%]	2.41
	(0.28)	(0.07)		
Credit Score in 2020 (Vantage)	1.34	-0.01	[-0%, 0%]	656
	(1.74)	(0.41)		
Associate's Deg+ (x100)	0.41	0.14	[-1%, 4%]	8.69
	(0.52)	(0.12)		

We find similar results when exploring heterogeneity by combat/noncombat occupations Combat/Noncombat

More violent deployments slightly ↑ VADC, but not other outcomes

	10 Months Deployed	(10 Mths Dep) ×(1σ Peer Cas)	Dep×Cas CI as % of Mean	Mean (8yrs)
		Panel (a): Combat Death and VADC		
Combat Death (x100)	0.01	0.27***	[37%, 71%]	0.50
	(0.12)	(0.04)		
Annual Amt VADC	1876***	414***	[5%, 8%]	6129
	(190)	(48)		
		Panel (b): Non-Combat Mortality		
Noncombat Death (x100)	0.07	-0.01	[-9%, 7%]	1.25
	(0.20)	(0.05)		
Death of Despair (x100)	0.10	-0.06	[-18%, 3%]	0.79
	(0.16)	(0.04)		
		Panel (c): Misconduct, Credit, Education		
Separated for Misconduct (x100)	-0.90	-0.07	[-2%, 1%]	25.05
	(0.77)	(0.18)		
Ever Incarcerated (x100)	-0.07	0.10	[-1%, 9%]	2.41
	(0.28)	(0.07)		
Credit Score in 2020 (Vantage)	1.34	-0.01	[-0%, 0%]	656
	(1.74)	(0.41)		
Associate's Deg+ (x100)	0.41	0.14	[-1%, 4%]	8.69
	(0.52)	(0.12)		

We find similar results when exploring heterogeneity by combat/noncombat occupations Combat/Noncombat

More violent deployments slightly ↑ VADC, but not other outcomes

	10 Months Deployed	(10 Mths Dep) ×(1σ Peer Cas)	Dep×Cas CI as % of Mean	Mean (8yrs)
		Panel (a): Combat Death and VADC		
Combat Death (x100)	0.01	0.27***	[37%, 71%]	0.50
	(0.12)	(0.04)		
Annual Amt VADC	1876***	414***	[5%, 8%]	6129
	(190)	(48)		
		Panel (b): Non-Combat Mortality		
Noncombat Death (x100)	0.07	-0.01	[-9%, 7%]	1.25
	(0.20)	(0.05)		
Death of Despair (x100)	0.10	-0.06	[-18%, 3%]	0.79
	(0.16)	(0.04)		
		Panel (c): Misconduct, Credit, Education		
Separated for Misconduct (x100)	-0.90	-0.07	[-2%, 1%]	25.05
	(0.77)	(0.18)		
Ever Incarcerated (x100)	-0.07	0.10	[-1%, 9%]	2.41
	(0.28)	(0.07)		
Credit Score in 2020 (Vantage)	1.34	-0.01	[-0%, 0%]	656
	(1.74)	(0.41)		
Associate's Deg+ (x100)	0.41	0.14	[-1%, 4%]	8.69
	(0.52)	(0.12)		

We find similar results when exploring heterogeneity by combat/noncombat occupations Combat/Noncombat

More violent deployments slightly ↑ VADC, but not other outcomes

	10 Months Deployed	(10 Mths Dep) ×(1σ Peer Cas)	Dep×Cas CI as % of Mean	Mean (8yrs)
		Panel (a): Combat Death and VADC		
Combat Death (x100)	0.01	0.27***	[37%, 71%]	0.50
	(0.12)	(0.04)		
Annual Amt VADC	1876***	414***	[5%, 8%]	6129
	(190)	(48)		
		Panel (b): Non-Combat Mortality		
Noncombat Death (x100)	0.07	-0.01	[-9%, 7%]	1.25
	(0.20)	(0.05)		
Death of Despair (x100)	0.10	-0.06	[-18%, 3%]	0.79
	(0.16)	(0.04)		
		Panel (c): Misconduct, Credit, Education		
Separated for Misconduct (x100)	-0.90	-0.07	[-2%, 1%]	25.05
	(0.77)	(0.18)		
Ever Incarcerated (x100)	-0.07	0.10	[-1%, 9%]	2.41
	(0.28)	(0.07)		
Credit Score in 2020 (Vantage)	1.34	-0.01	[-0%, 0%]	656
	(1.74)	(0.41)		
Associate's Deg+ (x100)	0.41	0.14	[-1%, 4%]	8.69
	(0.52)	(0.12)		

We find similar results when exploring heterogeneity by combat/noncombat occupations Combat/Noncombat

More violent deployments slightly ↑ VADC, but not other outcomes

	10 Months Deployed	(10 Mths Dep) ×(1σ Peer Cas)	Dep×Cas CI as % of Mean	Mean (8yrs)
		Panel (a): Combat Death and VADC		
Combat Death (x100)	0.01	0.27***	[37%, 71%]	0.50
	(0.12)	(0.04)		
Annual Amt VADC	1876***	414***	[5%, 8%]	6129
	(190)	(48)		
		Panel (b): Non-Combat Mortality		
Noncombat Death (x100)	0.07	-0.01	[-9%, 7%]	1.25
	(0.20)	(0.05)		
Death of Despair (x100)	0.10	-0.06	[-18%, 3%]	0.79
	(0.16)	(0.04)		
		Panel (c): Misconduct, Credit, Education		
Separated for Misconduct (x100)	-0.90	-0.07	[-2%, 1%]	25.05
	(0.77)	(0.18)		
Ever Incarcerated (x100)	-0.07	0.10	[-1%, 9%]	2.41
	(0.28)	(0.07)		
Credit Score in 2020 (Vantage)	1.34	-0.01	[-0%, 0%]	656
	(1.74)	(0.41)		
Associate's Deg+ (x100)	0.41	0.14	[-1%, 4%]	8.69
	(0.52)	(0.12)		

We find similar results when exploring heterogeneity by combat/noncombat occupations Combat/Noncombat

More violent deployments slightly ↑ VADC, but not other outcomes

	10 Months Deployed	(10 Mths Dep) ×(1σ Peer Cas)	Dep×Cas CI as % of Mean	Mean (8yrs)
		Panel (a): Combat Death and VADC		
Combat Death (x100)	0.01	0.27***	[37%, 71%]	0.50
	(0.12)	(0.04)		
Annual Amt VADC	1876***	414***	[5%, 8%]	6129
	(190)	(48)		
		Panel (b): Non-Combat Mortality		
Noncombat Death (x100)	0.07	-0.01	[-9%, 7%]	1.25
	(0.20)	(0.05)		
Death of Despair (x100)	0.10	-0.06	[-18%, 3%]	0.79
	(0.16)	(0.04)		
		Panel (c): Misconduct, Credit, Education		
Separated for Misconduct (x100)	-0.90	-0.07	[-2%, 1%]	25.05
	(0.77)	(0.18)		
Ever Incarcerated (x100)	-0.07	0.10	[-1%, 9%]	2.41
	(0.28)	(0.07)		
Credit Score in 2020 (Vantage)	1.34	-0.01	[-0%, 0%]	656
	(1.74)	(0.41)		
Associate's Deg+ (x100)	0.41	0.14	[-1%, 4%]	8.69
	(0.52)	(0.12)		

We find similar results when exploring heterogeneity by combat/noncombat occupations Combat/Noncombat

Research design and empirical framework

Sample and data

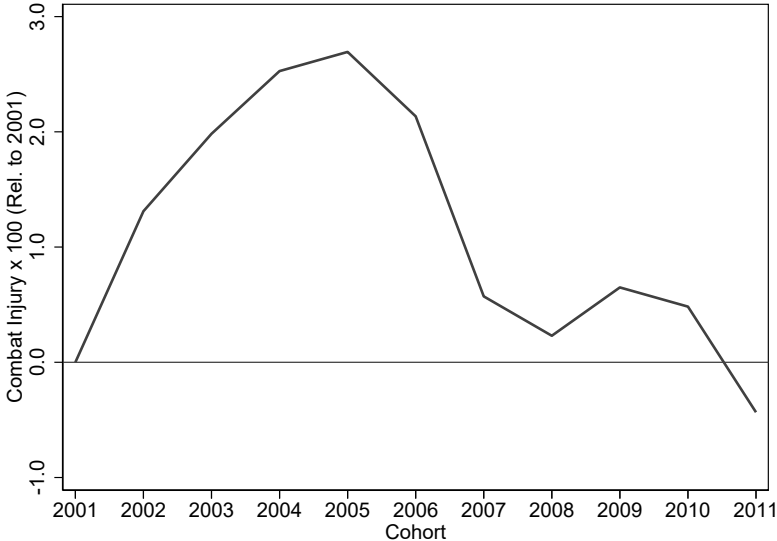
Instrument validity

The causal effect of deployment

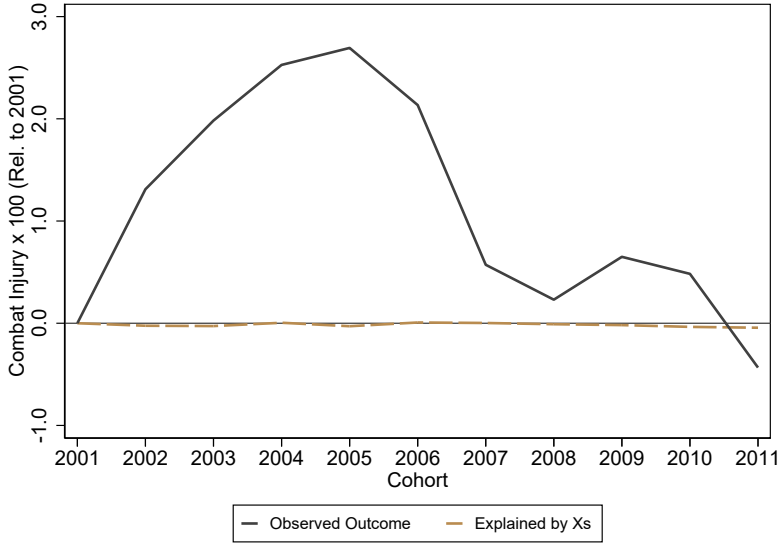
Explaining trends in veteran outcomes

Conclusion

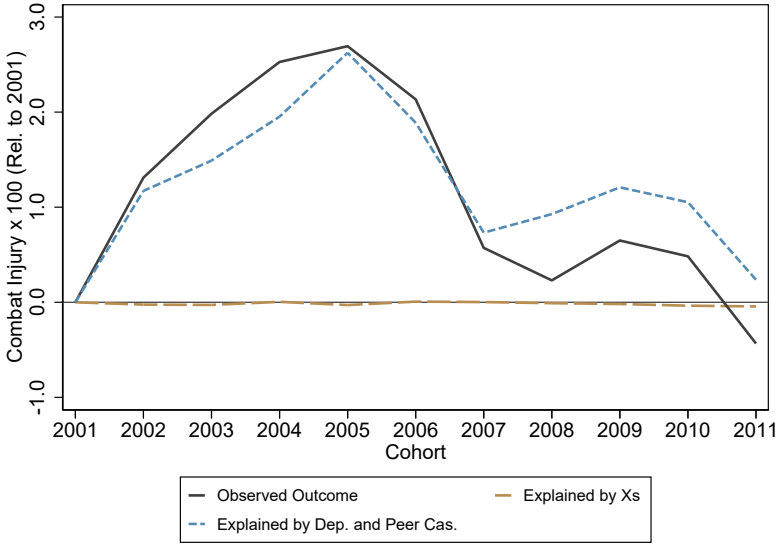
Validation Exercise: Decompose trends in combat injuries (8 yrs out)



Validation Exercise: Decompose trends in combat injuries (8 yrs out)

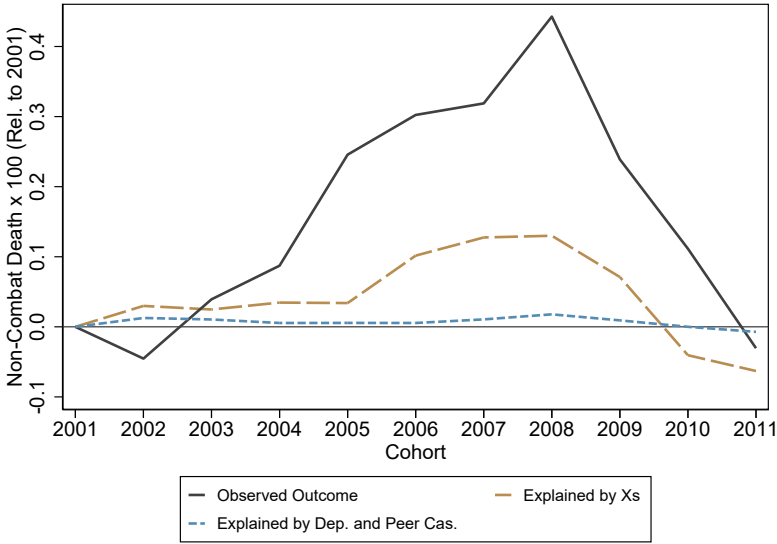


Validation Exercise: Decompose trends in combat injuries (8 yrs out)

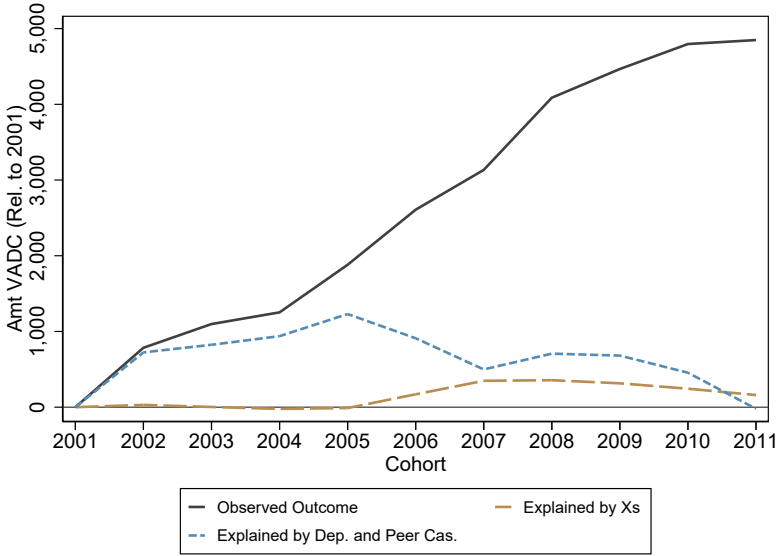


Deployment by Cohort

Selection explains much of the trend in noncombat deaths



Since 2012, policy is the most likely explanation for rising VADC



Research design and empirical framework

Sample and data

Instrument validity

The causal effect of deployment

Explaining trends in veteran outcomes

Conclusion

Summary and key take-aways

Combat deployments ↑ VADC, ↑ deaths due to combat

Summary and key take-aways

Combat deployments ↑ VADC, ↑ deaths due to combat

...but explain little of the rapid growth in VADC over the last decade

Summary and key take-aways

Combat deployments ↑ VADC, ↑ deaths due to combat

...but explain little of the rapid growth in VADC over the last decade

Limited evidence deployment increases noncombat deaths

- No evidence noncombat deaths increase as deployments become more dangerous
- Corroborated by precise null effects on criminal, credit, and education outcomes
- Changes in who was allowed to serve explain much of the trend in noncombat deaths

Summary and key take-aways

Combat deployments ↑ VADC, ↑ deaths due to combat

...but explain little of the rapid growth in VADC over the last decade

Limited evidence deployment increases noncombat deaths

- No evidence noncombat deaths increase as deployments become more dangerous
- Corroborated by precise null effects on criminal, credit, and education outcomes
- Changes in who was allowed to serve explain much of the trend in noncombat deaths

The end of ops in IZ / AF may not resolve concerning trends in veterans' outcomes

Summary and key take-aways

Combat deployments ↑ VADC, ↑ deaths due to combat

...but explain little of the rapid growth in VADC over the last decade

Limited evidence deployment increases noncombat deaths

- No evidence noncombat deaths increase as deployments become more dangerous
- Corroborated by precise null effects on criminal, credit, and education outcomes
- Changes in who was allowed to serve explain much of the trend in noncombat deaths

The end of ops in IZ / AF may not resolve concerning trends in veterans' outcomes

- VADC's rise could have budgetary implications
- VADC could also be a mediating channel contributing to deployments' limited effects on other outcomes (Silver and Zhang, 2022; Trivedi et al., 2022)

Summary and key take-aways

Combat deployments ↑ VADC, ↑ deaths due to combat

...but explain little of the rapid growth in VADC over the last decade

Limited evidence deployment increases noncombat deaths

- No evidence noncombat deaths increase as deployments become more dangerous
- Corroborated by precise null effects on criminal, credit, and education outcomes
- Changes in who was allowed to serve explain much of the trend in noncombat deaths

The end of ops in IZ / AF may not resolve concerning trends in veterans' outcomes

- VADC's rise could have budgetary implications
- VADC could also be a mediating channel contributing to deployments' limited effects on other outcomes (Silver and Zhang, 2022; Trivedi et al., 2022)

Thank you!

Appendix

Peer Casualty Balance Table

	Black (1)	Hispanic (2)	Other Race (3)	Married (4)	Dep. Children (5)	HSGplus (6)	Init Approx Age (7)	Init AFQSC (8)
Deployment Instrument	0.0051	-0.0052	0.0008	0.0005	0.0009	0.0052	0.0746	-0.2793
	(0.0044)	(0.0047)	(0.0030)	(0.0048)	(0.0027)	(0.0042)	(0.0471)	(0.2279)
P-value on Joint Test	0.381							
(DEP INST.) X (Peer Casualties)	0.0005	0.0017	-0.0008	0.0010	0.0010	-0.0005	0.0098	-0.0031
	(0.0011)	(0.0012)	(0.0008)	(0.0013)	(0.0010)	(0.0015)	(0.0133)	(0.0643)
P-value on Joint Test	0.817							
Observations	157415	157415	157415	157415	157415	157415	157415	157415

Return

Education Outcomes

Panel (a): Dynamic Outcomes

	2 yrs	4 yrs	6 yrs	8 yrs	8 yrs mean
Enroll Post-arrival (x100)	-1.48***	0.66	1.59**	1.09	55.70
	(0.40)	(0.58)	(0.73)	(0.81)	
Assc Deg+ Post-arrival (x100)	-0.08	-0.16	0.01	0.66	8.69
	(0.07)	(0.13)	(0.27)	(0.47)	
Bach Deg+ Post-arrival (x100)	-0.02	-0.08	-0.12	-0.05	3.99
	(0.06)	(0.09)	(0.16)	(0.33)	
N	157415	157415	129176	101387	101387

Panel (b): Outcomes by 2017/2020

	Jun 2017	Avg(Y_{2017})	Dec 2020	Avg(Y_{2020})
Enrolled (Post-Arrival) (x100)	1.59**	49.98	1.75***	60.01
	(0.662)		(0.667)	
Associates Deg+ (Post-Arrival) (x100)	0.21	8.99	0.01	15.62
	(0.418)		(0.521)	
Bachelors Deg+ (Post-Arrival) (x100)	0.13	4.66	-0.15	9.18
	(0.312)		(0.421)	

Return

Financial Health Outcomes

	(1) Jun 2017	(2) Avg(Y_{2017})	(3) Dec 2020	(4) Avg(Y_{2020})
		Panel (a): Credit Scores		
Vantage Score	0.520	622.102	1.910	655.201
	(1.322)		(1.329)	
FICO Score			0.792	652.1
			(1.488)	
		Panel (b): Debt Composition		
Total debt	3529.2***	44407.3	4793.0**	83783.1
	(1194.2)		(1862.0)	
Mortage debt	2759.3***	27044.3	3985.0**	61122.7
	(1059.1)		(1699.1)	
Auto debt	488.9**	11059.7	738.5***	13064.5
	(220.9)		(264.3)	
Student debt	-138.7	1435.6	-375.4**	2478.2
	(105.8)		(171.7)	
		Panel (c): Bad Debt		
Derogatory debt	52.48	1105.6	-95.06	663.1
	(90.72)		(75.28)	
Debt in colleciton	33.04	983.9	-69.03	1127.0
	(56.33)		(49.81)	
Any bankruptcy	0.134	1.37	0.346*	1.81
	(0.170)		(0.191)	
		Panel (d): GI Bill Use		
Any post 9/11 GI bill use			3.044***	49.038
			(0.700)	
N	146763		148304	

Return

Crime Outcomes

	(1) 2 yrs	(2) 4 yrs	(3) 6 yrs	(4) 8 yrs	(5) 8 yrs mean
			Panel (a): Criminal Investigations (In Service)		
Ever Non-Violent Felony (x100)	-2.18***	-0.39	-0.39	-0.56	21.10
	(0.43)	(0.51)	(0.57)	(0.66)	
Ever Violent Felony (x100)	-0.31**	-0.14	-0.13	-0.07	2.24
	(0.13)	(0.17)	(0.20)	(0.23)	
Ever Misdemeanor (Non-traffic) (x100)	-2.10***	-1.27***	-1.33***	-1.37**	13.43
	(0.33)	(0.41)	(0.46)	(0.54)	
Ever Other Crime (Meta-category) (x100)	-0.38*	0.10	0.09	-0.03	5.33
	(0.23)	(0.26)	(0.29)	(0.35)	
N	157415	157415	129176	101387	101387
			Panel (b): Administrative Sanctions (In Service)		
Ever Demoted (x100)	-1.99***	0.14	0.20	-0.04	22.20
	(0.44)	(0.52)	(0.58)	(0.68)	
Separated for Misconduct/Barred (x100)	-3.92***	-0.63	-0.52	-1.02	25.05
	(0.38)	(0.53)	(0.60)	(0.70)	
N	157415	157415	129176	101387	101387
			Panel (c): National Outcomes		
Ever Incarcerated (x100)	-0.09	0.05	0.12	0.10	2.41
	(0.07)	(0.14)	(0.19)	(0.25)	
Any Arrest (Lexis-Nexis) (x100)	-0.49**	0.03	0.39	0.46	7.38
	(0.19)	(0.28)	(0.35)	(0.43)	
Any Foreclosure (Lexis-Nexis) (x100)	-0.04	0.25	0.31	0.20	7.51
	(0.22)	(0.29)	(0.35)	(0.42)	
N	156247	156247	128120	100381	100381

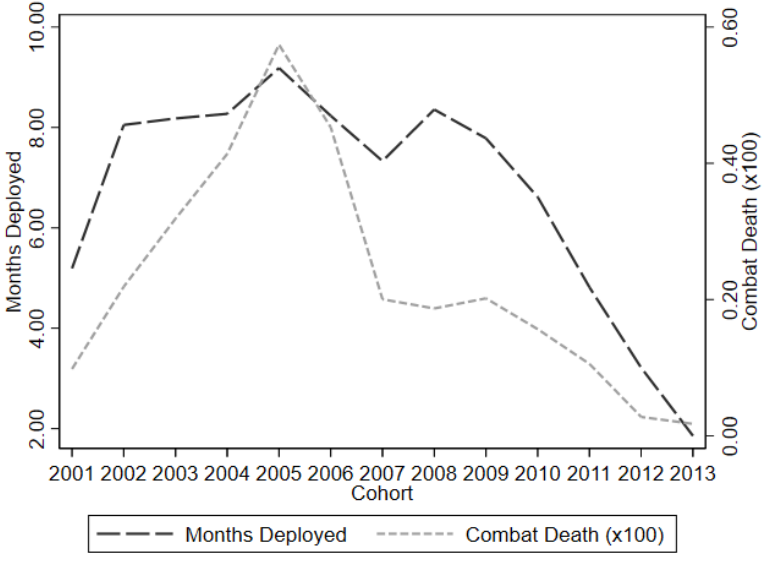
Return

The causal effect of deployment by occupation

	Combat Occupation		Noncombat Occupation		
	Mean	10 Mths Dep	Mean	10 Mths Dep	P-value of diff
		Panel (a): VADC and Trauma of War			
Combat Death (x100)	0.68	0.65***	0.18	0.17	0.0214
		(0.15)		(0.15)	
Annual Amt VADC	6202.92	3033.76***	6001.09	1821.98***	0.0007
		(210.51)		(295.91)	
		Panel (b): Non-combat Mortality Outcomes			
Noncombat Death (x100)	1.41	0.02	0.97	0.09	0.8380
		(0.23)		(0.30)	
Death of Despair (x100)	0.92	-0.05	0.56	0.10	0.5607
		(0.18)		(0.20)	
		Panel (c): Misconduct, Credit, and Education			
Separated for Misconduct/Barred (x100)	24.93	-1.58*	25.27	-0.02	0.2858
		(0.87)		(1.19)	
Ever Incarcerated (x100)	2.45	0.18	2.36	-0.06	0.6445
		(0.30)		(0.44)	
Credit Score in 2020 (Vantage)	657.49	0.40	652.78	3.00	0.4264
		(1.95)		(2.67)	
Assc Deg+ by 2020 (Post-Arrival) (x100)	18.29	-0.59	21.64	1.08	0.2275
		(0.80)		(1.14)	

Return

Deployment and Combat Death Trends by Cohort



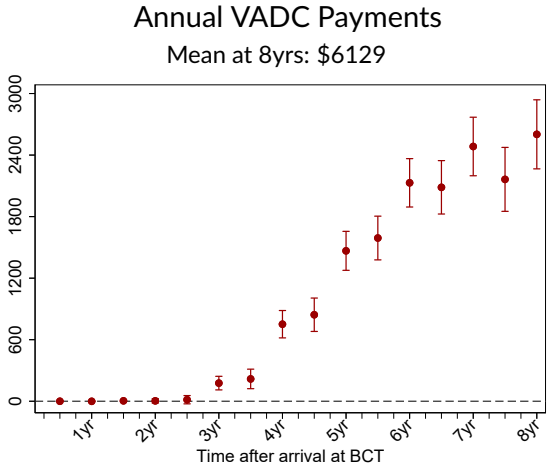
Return

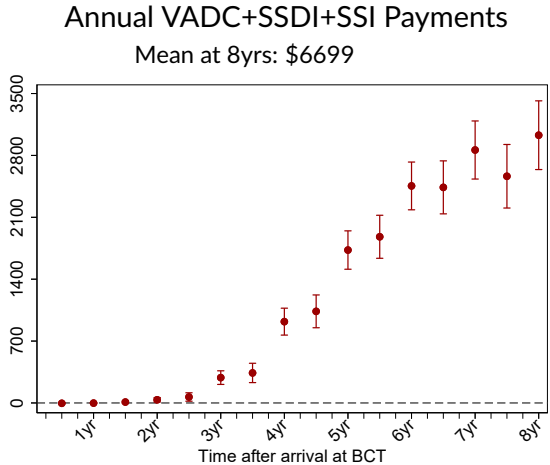
Summary Statistics

	Full Sample (1)	Estimation Sample (2)	Never Deployed (3)	Ever Deployed (4)
		Panel (a): Demographics		
Age	21.86	21.80	21.65	21.88
Black	0.189	0.140	0.181	0.119
Hispanic	0.129	0.130	0.141	0.125
Female	0.152	0.000	0.000	0.000
HS dropout or GED	0.119	0.129	0.087	0.151
Some college+	0.116	0.104	0.098	0.107
AFQT score	58.86	58.01	56.36	58.86
		Panel (b): Service Experience		
Combat occupation	0.366	0.643	0.622	0.654
Mths deployed w/in 3 yrs	5.98	6.52	0.00	9.87
Combat Injury w/in 3 yrs	0.016	0.022	0.000	0.034
Combat death w/in 3 yrs	0.002	0.003	0.000	0.004
N	782,232	157,415	53,381	104,034

Return

Most of deployment's effect on disability is through VADC





Return

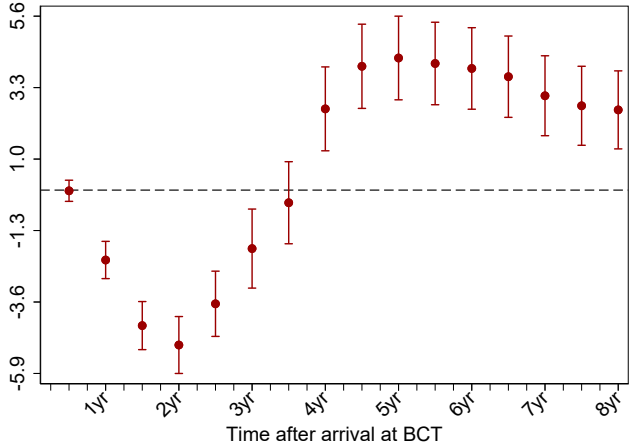
Deployment increases separation from the Army in the long run

Separated from Army (x100)

Mean at 2yrs (24m): 13%

Mean at 4yrs (48m): 57%

Mean at 8yrs: 83%



Return

Exclusion

Exclusion requires potential outcomes to be identical if a soldier deploys for the same length of time but with a different BCT

Many good reasons to think this is a reasonable approximation to reality:

1. The stateside experience of soldiers in BCTs (esp. within duty stations) are similar
2. BCTs are also designed to be “interchangeable” fighting units within a combat theater
3. BCTs were on 2-4 year staggered deployment cycles (training $\Rightarrow$ deployment $\Rightarrow$ rest)
4. We find similar (albeit noisier) results when we directly control for BCT fixed effects

We also develop an argument in the spirit of Kolesar et al. (2015) that allows for violations where potential outcomes are mean independent of BCTs’ deployment propensity (next)

Return

Allowing for exclusion violations

Denote solider i's potential outcomes when deployed for d months with BCT k as $Y_i(d, k)$

The standard exclusion restriction requires that:

$$Y_i(d, k) = Y_i(d, j) \;\; \forall d, k, j$$

Now suppose we have many BCTs, and let $\bar{D}_i$ be the deployment propensity of i's BCT

Likewise, let D_i and B_i be the RVs denoting deployment (binary for simplicity) and the identity of the BCT assigned; we assume that there are many BCTs with the same deployment propensity

Allowing for exclusion violations

Our approach is built up of many comparisons of the type:

$$E[Y_i(D_i, B_i)|\bar{D}_i = z] - E[Y_i(D_i, B_i)|\bar{D}_i = z']$$
$$= E[Y_i(D_i(z), B_i(z))|\bar{D}_i = z] - E[Y_i(D_i(z'), B_i(z'))|\bar{D}_i = z']$$

where now we allow both potential deployment D_i and BCT assignment to be functions of the instruments $\bar{D}_i$

To accommodate exclusion restrictions, we need to enforce independence between how the BCTs affect potential outcomes through deployment and directly

Allowing for exclusion violations

One way to do so is to assume that potential outcomes are mean independent of assigned BCTs' deployment propensity conditional on compliance type, i.e.,

$$E[Y_i(d, B_i)|D_i(z), D_i(z'), \bar{D}_i] = E[Y_i(d, B_i)|D_i(z), D_i(z')]$$

where the expectation is taken over the population of soldiers and BCTs

This assumption means, for example, that the *average* outcomes of soldiers who would deploy whether assigned to BCTs with propensity z or z' (i.e., the always takers) is the same regardless of the instrument, and hence which actual BCTs they are assigned to

But individual potential outcomes can change because $B_i(z) \neq B_i(z')$ (e.g., due to the fancy ice cream maker in some BCTs), which is a violation of exclusion

One simple way for it to hold is to assume that B_i is independent of $\bar{D}_i$; this is implausible in judge setting, where there is a surjective mapping of judges to $\bar{D}_i$, but not in our setting due to the staggered deployment cycle

Allowing for exclusion violations

With these assumptions in hand, the mean difference on the previous slide becomes:

$$E[Y_i(1, B_i)|D_i(z) > D_i(z')]Pr(D_i(z) > D_i(z')) - E[Y_i(0, B_i)|D_i(z) > D_i(z')]Pr(D_i(z) > D_i(z'))$$

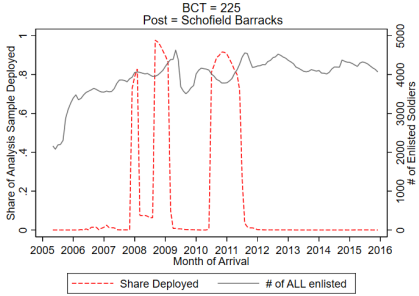
In the standard case, this would collapse to the normal causal effect expression for compliers

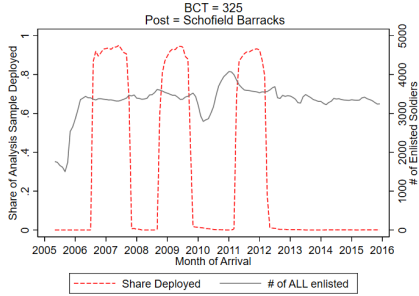
But here can estimate effects of deployment with the “average” BCT for individuals whose deployment status is affected by the instruments (the compliers)

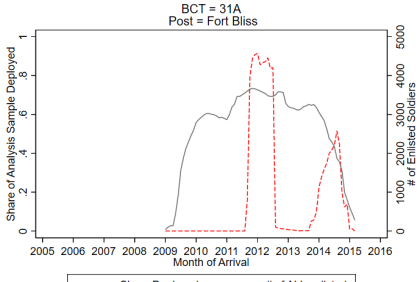
This ensures that effects reflect differences in outcomes due to the manipulation of deployment, not other influences of BCTs

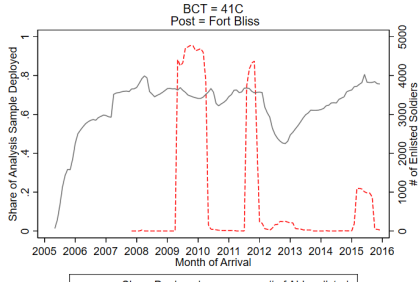
Return

BCT Staggered Deployment Cycles









VADC Payment Amounts

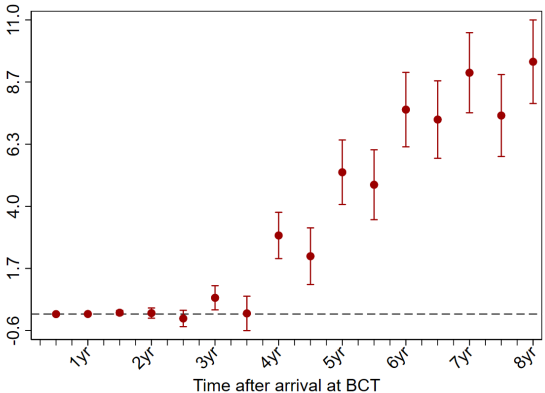
Combat Disability Rating	Monthly Payment	Annual Payment
10%	$152.64	$1,831.68
20%	$301.74	$3,620.88
30%	$563.39	$6,760.68
40%	$801.28	$9,615.36
50%	$1,118.44	$13,421.28
60%	$1,407.03	$16,884.36
70%	$1,754.95	$21,059.40
80%	$2,035.43	$24,425.16
90%	$2,287.52	$27,450.24
100%	$3,653.89	$43,846.68

Payments for Veterans with a spouse and one child

Effects on VADC: Balanced Sample (2005 - 2011 enlistees)

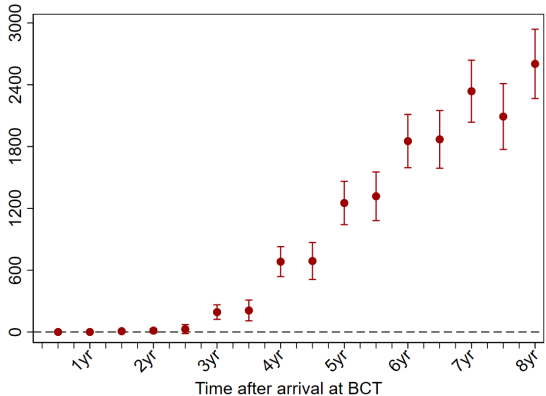
Any VADC Receipt (x100)

Mean at 8yrs: 37.4%



Annual VADC Payments

Mean at 8yrs: $6129

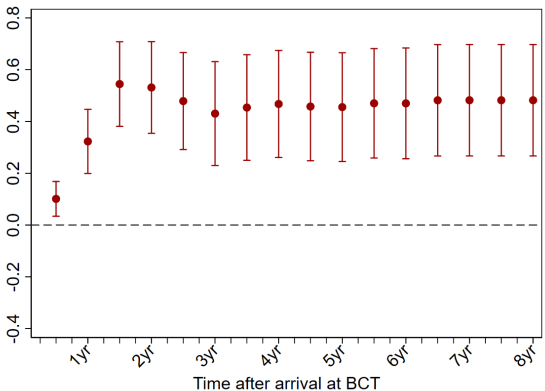


Return

Effects on Mortality: Balanced Sample (2005 - 2011 enlistees)

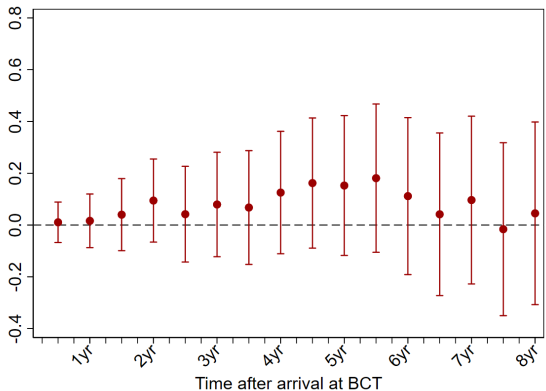
Combat Death (x100)

Mean at 8yrs: 0.50%



Noncombat Death (x100)

Mean at 8yrs: 1.25%

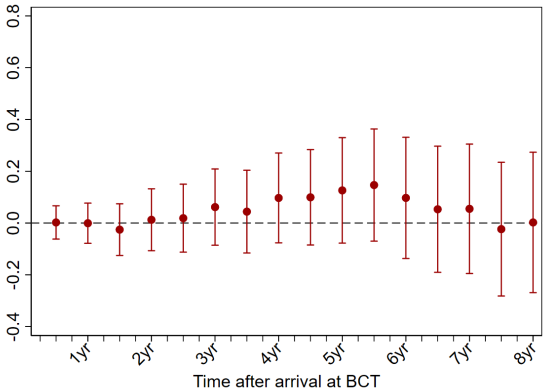


Return

Effects on Mortality: Balanced Sample (2005 - 2011 enlistees)

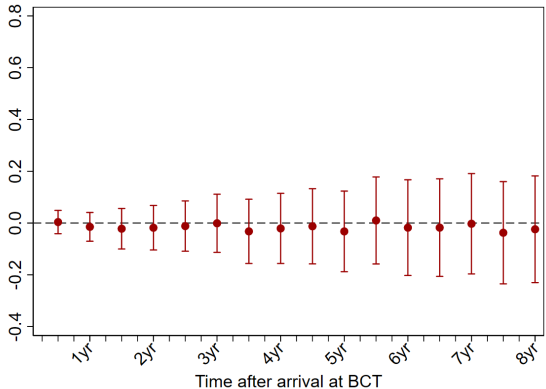
Deaths of Despair (x100)

Mean at 8yrs: 0.79%



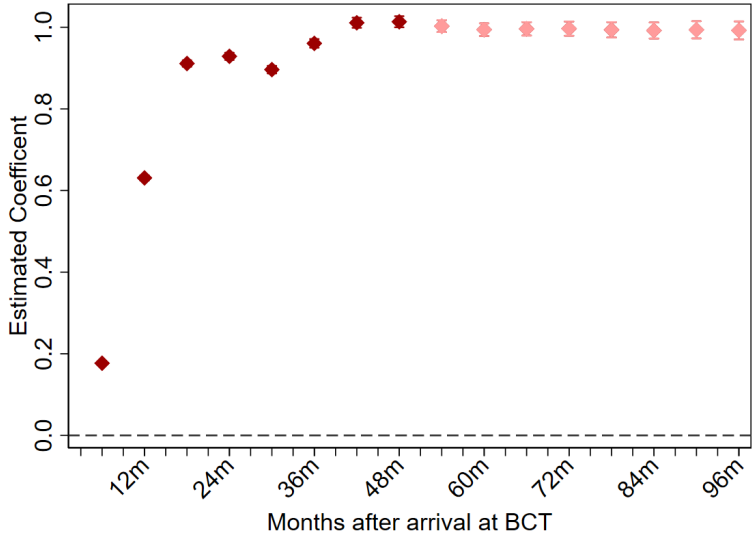
Suicide (x100)

Mean at 8yrs: 0.44%



Return

First stage defined over different time horizons



Return