

## **Does Veterans' Disability Compensation Benefit Receipt Affect the Use of Disability and Social Security Programs?**

Courtney Coile  
Wellesley College and NBER

Mark Duggan  
Stanford University and NBER

Audrey Guo  
Santa Clara University

September 17, 2019

**Keywords:** veterans, social security, disability insurance, VADC, SSDI, SSI

### **Abstract:**

The Veterans' Disability Compensation (VADC) program has grown rapidly in recent years, with one in four veterans now receiving benefits. Receipt of VADC benefits may make individuals more or less likely to receive other disability benefits, including Social Security Disability Insurance (SSDI) and Supplemental Security Income (SSI), and also may also influence the timing of Social Security claiming. We explore the links between VADC receipt and use of these other benefit programs using county-level administrative data and data from the Current Population Survey and Survey of Income and Program Participation. We find that VADC receipt is associated with greater participation in SSDI and that this relationship has strengthened as the VADC program has grown, particularly for the military service cohorts most affected by the program's growth. By contrast, VADC receipt is not related to use of the SSI program. There is weaker evidence that VADC receipt is associated with early claiming of Social Security retired worker benefits for Vietnam-era veterans.

### **Acknowledgements:**

This research was supported by the U.S. Social Security Administration through grant #5 DRC12000002-06 to the National Bureau of Economic Research as part of the SSA Disability Research Consortium. The findings and conclusions expressed are solely those of the author(s) and do not represent the views of SSA, any agency of the Federal Government, or the NBER.

## I. Introduction

The federal government provides disability insurance through three main programs: Social Security Disability Insurance (SSDI), Supplemental Security Income (SSI), and Veterans' Disability Compensation (VADC). While SSDI is the largest of the three, with 8.6 million disabled worker beneficiaries receiving annual benefits of \$124 Billion in 2018 (SSA, 2018), the VADC program has experienced the most rapid growth in recent years. From 2001 to 2018, the share of military veterans receiving VADC benefits climbed from 9 percent to 24 percent (Figure 1), while real annual program expenditures more than tripled, from \$23 to \$77 Billion (VBA, 2001 and 2018). The numbers of VADC and non-elderly adult SSI beneficiaries are now similar, at 4.7 million each, though SSI costs are lower at \$35 Billion (SSA, 2018). The fraction of the population receiving benefits from SSDI and SSI has also generally increased over time, with policy-induced expansions in medical eligibility criteria an important driver of growth for all three programs.

Previous research suggests that enrollment in one disability insurance program can influence enrollment in other disability insurance programs or other safety net programs (Duggan et al., 2016). These program interactions may occur due to income or substitution effects or to the acquisition of knowledge that reduces the cost of applying to other programs, among other possible mechanisms. Yet these program interactions are not well understood due to a relative paucity of research. Rupp et al. (2008) and Rupp and Riley (2011) examine links between SSI and SSDI, while Muller et al. (2014) is the only study (of which we are aware) to explore links between VADC and SSDI.

In this project, we investigate the link between the receipt of VADC and the use of other disability and social security programs. A key motivation for our project is the VADC

program's recent dramatic growth. To the extent that receiving VADC benefits increases a veteran's propensity to apply for SSDI or changes the timing of claiming Social Security retired worker benefits, the growth in the VADC program could have an important effect on social security finances. Additionally, if these program interactions are significant, then changes over time in the fraction of individuals who are veterans could have notable implications for social security finances as well.

To explore this relationship, we utilize aggregate county-level data as well as survey data from the Current Population Survey (CPS) and Survey of Income and Program Participation (SIPP). We first examine whether counties with higher levels or growth in VADC receipt have higher levels or growth in SSDI receipt. Next, we explore whether the receipt of VADC benefits is associated with an increased probability of SSDI receipt at the individual level as well as whether this relationship has strengthened over time as the VADC program has grown. As VADC program growth has occurred disproportionately among veterans of certain military service eras, we exploit differences in program growth by service era to draw stronger inferences about the role of VADC growth on SSDI enrollment. We similarly examine the relationship between VADC receipt and SSI receipt, as well as early take-up of Social Security retired worker benefits.

We have several main findings. First, we find that counties with higher levels or faster growth in VADC receipt in recent years have higher levels or growth in SSDI receipt. Taken at face value, our coefficients suggest that one-third of new VADC recipients enroll in SSDI. Second, we find that veterans who are receiving VADC benefits are more likely to be receiving SSDI. We also find that this relationship has strengthened over time for those military cohorts who have experienced rapid growth in VADC enrollment – Vietnam-era

veterans and veterans of the Gulf war era – but not for veterans who served in the “peacetime” era between these wars. The magnitude of these coefficients suggests that in recent years, VADC receipt has been associated with a 14 percentage point increase in the probability of receiving SSDI for Vietnam Era veterans and a 4 percentage point increase for Gulf War Era veterans, effects several times the mean rate of SSDI receipt in these groups. Finally, we find some evidence that VADC receipt is related to early Social Security claiming for Vietnam-era veterans, but these results are less robust. We find no evidence that VADC receipt is related to use of the SSI program in a way that lines up with the growth in the VADC program.

The remainder of the paper proceeds as follows. We begin with some background on the three disability programs and a discussion of relevant literature. We then discuss our data and empirical strategy. After presenting our results, we conclude with a discussion of the implication of our findings and suggestions for future research.

## **II. Background and Literature Review**

While VADC, SSDI, and SSI all offer disability insurance, there are important differences between the programs. The VADC program pays benefits to veterans with service-connected disabilities. Veterans apply by filing a claim citing one or more conditions to a Veterans Benefit Administration (VBA) regional office, which collects information about the veteran’s military service and health care utilization. A rating board determines whether each condition is service-connected, and if so, assigns it a disability

rating between 0 and 100 percent using established guidelines.<sup>1</sup> The ratings for approved conditions are essentially added to obtain the combined disability rating (CDR).<sup>2</sup> Monthly benefits rise roughly linearly with CDR, from \$140 in 2019 for a 10 percent rating to \$1,834 for a 90 percent rating, then jump to \$3,057 for those with a 100 percent rating; a veteran with a CDR between 60 and 90 percent whose disabilities preclude substantial gainful employment may receive the 100 percent benefit through the Individual Unemployability (IU) designation.<sup>3</sup> VADC recipients can raise their benefit if they successfully apply for new conditions or appeal for a higher rating for existing conditions.<sup>4</sup> VADC benefits are not taxed, are not means-tested against earnings, SSDI or Social Security benefits, or (in some cases) a military pension, and typically continue until death.<sup>5</sup>

---

<sup>1</sup> Ratings are in 10 percent increments, though the Board is typically deciding between a few ratings (e.g., 0, 30, or 60 percent) for each condition. If a veteran is awarded a 0 percent rating for a service-connected disability, he does not receive cash benefits but does qualify for prioritized VHA medical care, like other beneficiaries. Receiving a 0 percent rating for multiple conditions can result in a 10 percent payment (Economic Systems Inc., 2004).

<sup>2</sup> If two conditions are approved, then the rating is equal to  $R_1 + (R_2 * (1 - R_1))$ , where  $R_1$  and  $R_2$  are the ratings for conditions 1 and 2, and the CDR is rounded to the closest 10 percent. When there are three or more ratings, the CDR is defined similarly, with the rating for the third condition multiplied by  $1 - (R_1 + (R_2 * (1 - R_1)))$ .

<sup>3</sup> Benefits for recipients with families are modestly higher – a veteran with a 60 percent CDR would receive a monthly benefit of \$1,114 if single, \$1,216 if married, and \$1,291 if married with children. 9% of VADC recipients had an IU designation in 2013 (CBO, 2014). To be eligible, the beneficiary must either have one condition rated at 60 percent or more or have a CDR of 70 percent or more and at least one condition rated at 40 percent. See [http://www.benefits.va.gov/COMPENSATION/claims-special-individual\\_unemployability.asp](http://www.benefits.va.gov/COMPENSATION/claims-special-individual_unemployability.asp). Benefits are intended to compensate for average earnings losses, but are not based on own earnings.

<sup>4</sup> Autor et al. (2016) find that average real monthly benefits for Vietnam-era Army veterans who first received benefits in 2000 increased by 77 percent over the next six years, from \$976 to \$1,725. While the VA can require medical reexamination for DC recipients if it “determines there is a need to verify either the continued existence of the current severity of a disability,” in practice the regulations governing reexaminations ensure that benefits are fairly secure for most recipients.

<sup>5</sup> Benefits are reduced against labor earnings for IU beneficiaries. Prior to 2003, retirement pay was essentially reduced dollar-for-dollar against VADC benefits. Since 2003, dual eligibles whose disabilities arose from combat or who retired with 20 or more years of service and a CDR of 50 percent or above have been able to collect both benefits without offset. Of the nation’s 2 million military retirees, 400,000 benefit from these exemptions and 600,000 face an offset (<https://www.cbo.gov/budget-options/2013/44744>).

The SSDI and SSI programs serve both veterans and non-veterans. To be eligible for SSDI, an individual must meet recent and lifetime work requirements and be determined to have a disability, defined as the “inability to engage in substantial gainful activity (SGA) by reason of any medically determinable physical or mental impairment(s) which can be expected to result in death or which has lasted or can be expected to last for a continuous period of not less than 12 months.”<sup>6</sup> Application can be a lengthy process involving multiple levels of appeal, with many awards made on appeal (Maestas et. al., 2013). Benefits are based on the individual’s earnings history and are calculated using (nearly) the same formula as for Social Security benefits; the average benefit in 2018 was about \$1,200 per month (SSA, 2018).<sup>7</sup> Benefits are paid starting five months after disability onset and beneficiaries are eligible for Medicare after two years. Beneficiaries who earn more than the SGA threshold (\$1,220 per month in 2019) lose SSDI eligibility.

The SSI program is a means-tested program for blind or disabled non-elderly adults and children and for individuals age 65 and above. Eligibility for SSI for non-elderly adults is based on the same disability standard as for SSDI, but there is no work requirement. Recipients get cash benefits – \$771 per month for an individual or \$1,157 for a couple in 2019 – and receive Medicaid, but benefits are reduced dollar-for-dollar against earnings and other benefit income and there is also a strict assets test.

Individuals may receive several of these benefits simultaneously. For SSDI and SSI, the definition of disability is the same, but many SSDI recipients have too much income or

---

<sup>6</sup> The number of quarters of coverage required to be insured for SSDI benefits depends on age at disability; see <https://www.ssa.gov/pubs/EN-05-10072.pdf> for more details.

<sup>7</sup> While the Social Security benefit is based on the highest 35 years of wage-indexed earnings, the SSDI benefit may use fewer years, depending on the applicant’s age; also, there is no actuarial reduction for early claiming.

assets to receive SSI and many SSI recipients have not met the SSDI work requirements. In 2018, 14 percent of SSDI beneficiaries and 27 percent of SSI beneficiaries were dual beneficiaries (SSA, 2019). In the case of SSDI and VADC benefits, VADC benefits are only available to veterans and the definitions of disability in the two programs differ. However, there is administrative cooperation between the two programs. By law, the VA and SSA must share medical evidence and hospital records, disability determinations, and benefit information (Muller et al., 2014). The SSA also expedites SSDI claims processing for veteran applicants injured after October 2001 and VADC recipients with a 100 percent rating. VADC recipients may also be eligible for SSI, so long as they meet the SSI disability definition and have sufficiently low income and assets.

Previous research has investigated the causes and the consequences of changes in both SSDI and VADC enrollment. Autor and Duggan (2007) and Duggan and Imberman (2011) emphasize the role of the aging of the population along with the increase in the fraction of women insured for the program (due to their rising labor force participation). An arguably even more important factor was a liberalization of the program's medical eligibility criteria that took effect in the mid-1980s. The authors further emphasize the importance of changes in economic conditions, as more individuals apply for SSDI when the unemployment rate rises.

As a result of these changes, the fraction of individuals aged 25-64 receiving SSDI benefits steadily increased from 2.5% in 1984 to 5.0% by 2014. In recent years, this fraction has been declining, due in part to strong economic conditions and also to increases in the stringency of the medical eligibility criteria used by Administrative Law Judges when considering appeals of SSDI decisions at the initial stage (TPAM, 2015).

Recent research has investigated the effect of the SSDI program on employment and health outcomes. Maestas, Mullen, and Strand (2014) use variation across administrative law judges in the stringency of their screening and estimate that about 30 percent of marginal awardees (those whose award decision is influenced by the examiner stringency) would be employed if not receiving SSDI benefits. Consistent with this, French and Song (2015) leverage variation across disability examiners and find similar effects on employment. More recent work has used features of the SSDI benefit formula to estimate the effect of program receipt on mortality. Gelber and Moore (2018) estimate that more generous SSDI benefits significantly reduces mortality among recipients.

Recent research has also explored the factors driving the increase in VADC enrollment, which pays benefits to veterans with medical conditions that were caused or aggravated during their military service. Duggan, Rosenheck, and Singleton (2010) show that a 2001 expansion of the VADC program's medical eligibility criteria for Vietnam-era veterans led to a substantial increase in the program's enrollment. This change allowed veterans who had served in-theater in Cambodia, Laos, or Vietnam during the conflict to collect VADC benefits for diabetes (which research suggested could have been caused by an herbicide used by the US military in Vietnam). Autor, Duggan, Greenberg, and Lyle (2014) further estimate that the policy-induced increase in VADC enrollment induced a reduction of about 20 percent in employment among those newly eligible for benefits. Using this point estimate along with the rise in VADC receipt among all veterans, the growth in this program can explain approximately half of the differential decline in labor force

participation of veteran males relative to non-veteran males after 2000 (Coile, Duggan, and Guo, 2015).<sup>8</sup>

It is plausible that receiving benefits from one of these two programs influences an individual's incentive to apply for the other. If, for example, an individual applies for and is awarded VADC benefits and elects to leave the labor force, this would reduce the costs of applying for SSDI (which requires an individual to not be working). Muller et al. (2014) is the only study of which we are aware to examine interactions between the VADC and SSDI programs. Using linked SSA and VA records for veterans receiving a VADC award with a 100% rating or IU designation between 2000 and 2006, they find that nearly three-quarters of VADC beneficiaries who received a 100 percent rating or IU designation between 2000 and 2006 applied for SSDI; within that group, seventy percent had applied for SSDI when they became VADC beneficiaries and thirty percent filed for SSDI after this point. The present analysis differs from their study in several ways. First, we focus on all VADC recipients, not only those with a 100% rating or IU designation. Second, while their study is based on cross-tabulations and other descriptive statistics, we investigate the connection between benefit receipt for the two programs using regression analysis of both county-level and survey data, as detailed below. In some of our analyses, we focus on differences by military service era to draw stronger inferences about the role of VADC

---

<sup>8</sup> Although less well-researched, there are several more recent changes to the VADC program that may have contributed to rising enrollment. These include the addition of ischemic heart disease, Parkinson's disease, and B-cell leukemia to the set of service-connected conditions for BOG Vietnam-era veterans (see Appendix B of Panangala and Shedd (2014) for a complete list of eligible conditions) and the elimination of the need to document specific events leading to post-traumatic stress disorder for all veterans, both in 2010. The VA has also streamlined the application process, for example by coordinating with the Department of Defense to launch the Integrated Disability Evaluation System in 2007, which called for a single disability review to be used to evaluate both fitness for active duty and eligibility for VADC benefits, and introducing the Quick Start program in 2008, which allowed service members to file for VADC benefits before leaving active duty.

program growth. Finally, we expand the focus beyond SSDI to examine links between the VADC program and both SSI receipt and Social Security benefit claiming.

### **III. Data**

#### *A. Current Population Survey*

The Current Population Survey (CPS) is a monthly survey conducted to collect labor market information along with detailed demographic and economic data. It includes a number of supplemental surveys asking respondents about specific topics, including the Veterans Supplement (VETCPS), which is usually administered in August on an annual or biennial basis and collects detailed information about veterans' military service. Unfortunately, because of the monthly CPS' four-month rotation schedule, the respondents of the VETCPS never participate in the March Annual Social and Economic Supplement (ASEC or March CPS), which collects information about other program and benefit receipt such as Social Security. As this benefit information is central to our analysis, we use the March CPS and combine information on veteran status and year of birth to infer military service era, as described in more detail below.

#### *B. Survey of Income and Program Participation*

The other dataset we utilize for our analysis is the Survey of Income and Program Participation (SIPP), a longitudinal survey representative of the entire population of the United States. The SIPP interviews participants every 4 months, with different topics in each interview wave, and follows them for 3 to 5 years. There are four rotation groups in each wave, where each rotation consists of questions referencing the previous four months.

For example, the 2008 panel interviews participants from September 2008 to August 2013, and its questions reference May 2008 to April 2013. The panels included in our analysis are 1996, 2001, 2004, and 2008, as well as the newly redesigned 2014 SIPP panel.

In addition to the standard demographic and labor market variables, the survey asks respondents about program receipt including Veterans Disability Compensation and Social Security benefits. While in theory the panel nature of the survey could allow us to observe the precise timing of initial VADC (or SSDI) receipt and track the subsequent receipt of other benefits, in practice there seems to be substantial measurement error in the monthly responses, rendering this approach unworkable.

## **IV. Interaction between VADC and SSDI Program Receipt**

### *A. Geographic Analysis*

The first approach we employ to estimate the interaction between the VADC and SSDI programs makes use of geographic variation in benefit receipt. More specifically, we begin by analyzing the cross-sectional relationship between VADC and SSDI receipt using county-level data. We combine SSDI beneficiary data from the SSA<sup>9</sup> and VADC beneficiary data from the VA<sup>10</sup> with county population data from the American Community Survey (ACS) 5-year age estimates to generate county-level rates of benefit receipt. Figure 2 plots the percentage of veterans receiving VADC in 2014, for all counties in the contiguous United States. There is no clear regional pattern of VADC concentration. On the other hand,

---

<sup>9</sup> "OASDI Beneficiaries by State and County, 2014",  
[https://www.ssa.gov/policy/docs/statcomps/oasdi\\_sc/2014/index.html](https://www.ssa.gov/policy/docs/statcomps/oasdi_sc/2014/index.html)

<sup>10</sup> "Compensation and Pension by County", <https://www.va.gov/vetdata/Report.asp>

Figure 3, which plots the percentage of SSDI recipients for the civilian population aged 25-64, shows that SSDI receipt is most concentrated in the Southeastern region of the US.

In order to test for a cross-sectional association between VADC and SSDI receipt, we estimate models of the following form:

$$\begin{aligned} \%SSDI_c = & \beta_0 + \beta_1 \%VADC_c + \delta_1 \% (25 - 34)_c + \delta_2 \% (35 - 44)_c + \delta_3 \% HSDropout_c \\ & + \delta_4 \% HSGrad_c + \delta_5 \% SomeCollege_c + \delta_6 \% Poverty_c + \gamma_s + \varepsilon_c \end{aligned}$$

Here  $c$  indexes county,  $s$  indexes state, and all observations are at the county level for 2014.

$\%SSDI_c$  denotes the proportion of the county population aged 25-64 that are receiving SSDI benefits, and  $\%VADC_c$  is defined as the proportion of the veteran population receiving disability compensation. The remaining controls are defined as the proportion of the population in each age group and education group, as measured in the 2014 ACS 5-year estimates. The excluded age group is 45-64, and the excluded education group is Associate's degree or more. As SSDI receipt is strongly correlated with poverty levels, we also control for the proportion of the adult non-elderly population that is under the poverty line. The regressions are weighted by the county population aged 25-64.

The first two columns of Table 1 present results for the regression above, showing that after controlling for state fixed effects, a 1 percentage point increase in the share of veterans on VADC is associated with a 0.02 percentage point increase in the share of SSDI beneficiaries in the cross section. Although this coefficient is small, it is important to bear in mind that only about 6 percent of adults aged 25-64 are veterans (according to Census Bureau data and including both women and men). Thus, if every new VADC recipient were to also join the SSDI rolls, a 1 percentage point increase in share of veterans on VADC

would be associated with a 0.06 percentage point increase in the share of the population that is SSDI beneficiaries. Seen through this lens, a coefficient of 0.02 is sizeable.

We also test for a relationship between the growth in the VADC program and the growth in SSDI rolls over the period 2009 to 2014. We focus on this period to avoid the increase in SSDI awards that occurred immediately following the Great Recession (Maestas et al., 2018). This approach may be preferred to the cross-sectional analysis as it effectively controls for any unobserved county-level characteristics that are fixed over this time period. Figure 4 plots the change in the percentage of veterans receiving VADC from 2009 to 2014. Consistent with Figure 2, there are no obvious regional patterns in VADC growth. Figure 5 shows that there also does not seem to be any regional patterns in SSDI growth from 2009 to 2014.

We then estimate the following model, in which the dependent variable is now the percentage change in the share receiving SSDI benefits from 2009 to 2014:

$$\begin{aligned}
 \% \Delta SSDI_c &= \beta_0 + \beta_1 \% \Delta VADC_c + \beta_2 \% \Delta Pop(25 - 64)_c + \delta_1 \% (25 - 34)_c \\
 &+ \delta_2 \% (35 - 44)_c + \delta_3 \% HSDropout_c + \delta_4 \% HSGrad_c \\
 &+ \delta_5 \% SomeCollege_c + \delta_6 \% Poverty_c + \gamma_s + \varepsilon_c
 \end{aligned}$$

$\% \Delta VADC_c$  is defined as the percentage change in the share of veterans on DC from 2009 to 2014, and we also include  $\% \Delta Pop(25 - 64)_c$  which controls for the percentage change in the county population aged 25 to 64 from 2009 to 2014.

The last two columns of Table 1 provide the results of this analysis. We estimate that a 1 percentage point increase in the growth rate of VADC receipt is associated with a 0.02 percentage point increase in the growth rate of SSDI receipt, a result very similar to

that from the cross-sectional analysis with state fixed effects. These results as a whole suggest that there is a strong positive correlation between VADC awards and SSDI receipt in recent years. Taken at face value, these coefficients would imply that one-third of new VADC recipients enroll in SSDI.

### *B. Analysis of Survey Data*

Next, we explore the interaction between the VADC and SSDI programs using survey data from the CPS and SIPP. In this analysis, our identification strategy rests on VADC program growth that resulted from both the 2001 policy change which made diabetes a presumptively service-connected disability for veterans of the Vietnam era who served in theater, and policy changes in 2010 that increased access for veterans serving in the Gulf War and later. Using a sample of veterans, we examine whether VADC receipt is associated with an increased probability of SSDI receipt. VADC receipt cannot be taken as exogenous in such a specification – indeed, a positive correlation is expected, as veterans in worse health are more likely to be beneficiaries of both programs and our ability to control for health is limited by the lack of detailed health data in the CPS and SIPP. However, growth in the VADC program after 2001 has been concentrated among veterans of the Vietnam era, due in part to the 2001 policy change, as well as among veterans of the Gulf War and later.<sup>11</sup> This policy-related growth in the program over time is arguably exogenous. We therefore examine whether the relationship between VADC receipt and SSDI receipt has

---

<sup>11</sup> Authors' calculations from VBA (various years) suggest that the growth in VADC recipients from the Vietnam era and the Gulf War/War on Terror between 2001 and 2013 (1.66 million beneficiaries) more than accounted for the total growth in the VADC program over that era (1.42 million beneficiaries). This likely reflects both deaths among veterans of earlier service eras such as Korea and WWII, but also slower program growth for veterans who served in the peacetime era of 1975-1990.

strengthened over time for Vietnam-era veterans. We estimate the same model for veterans of the peacetime era that followed the Vietnam war (1975-1990), effectively treating them as a control group since this cohort did not experience the same dramatic growth in VADC receipt.

In order to conduct the analysis by military service period, we must assign each veteran to a service period, since as noted earlier, we lack data on the veteran's actual service record because the March CPS cannot be linked to the Veterans Supplement. We do this using birth cohort, having first assigned each birth cohort to a military service period based on the service period most frequently reported by members of the cohort in the VETCPS. Using this mechanism, we define Vietnam-era veterans (VEV) to be those born between 1944 and 1953, as over three-quarters of veterans in these cohorts reported Vietnam-era service. Figure 6 illustrates how veterans of various service periods are represented in our CPS sample.

We estimate the relationship between VADC and SSDI receipt over time using models of the following form:

$$SSDI_{it} = \beta_0 + \sum_{k=1996}^{2012} \beta_k (t = k) * VADC_{it} + X'_{it} \delta + \alpha_t + \gamma_s + \varepsilon_{it}$$

Here  $i$  indexes individual,  $t$  indexes year, and  $s$  indexes state, and  $X'_{it}$  is a vector of controls including age fixed effects and dummies for white, black, high school graduate, and self-reported health levels. Both  $SSDI_{it}$  and  $VADC_{it}$  are indicator variables that are equal to one if the respondent had received benefits in the previous year. We interact the VADC indicator with year dummies to allow the relationship between VADC receipt and SSDI receipt to vary over time. The sample is limited to those age 64 and younger, since workers

are only eligible for SSDI benefits before the Social Security full retirement age (historically age 65, though rising to age 67). As the CPS does not distinguish whether benefit income is from SSDI or Social Security until 2001, our sample for earlier years is limited to those age 61 and younger, since most benefit income at those ages comes from SSDI (although some income that we label SSDI could be Social Security survivors benefits received by widowers).

Figure 7 plots the estimated coefficients on the interaction terms between VADC and the year indicators, and also plots the overall share of the Vietnam Era veteran population receiving SSDI and VADC benefits between 1996 and 2012. Our estimates show a rise in both VADC and SSDI receipt among Vietnam era veterans over this time period. Such growth may, of course, reflect several factors, including the aging of this cohort over time and the associated decline in health. Perhaps of greater interest is the finding that the likelihood of receiving SSDI benefits given VADC receipt rises from less than 5% at the start of the period to about 15% by the end. This could reflect a compositional effect, if those entering the VADC program after the 2001 policy change are more likely to be on or join the SSDI rolls than those who became VADC beneficiaries at an earlier age; alternatively, it could be that all VADC beneficiaries have become increasingly likely to be on SSDI over time.

Table 2 provides the empirical estimates that underlie the relationship in Figure 6. In the interaction terms between year indicators and VADC receipt, we now group the years for greater precision (1996-1999, 2000-2003, 2004-2006, 2007-2009, and 2010-2012). The findings reported here confirm those in Figure 7, in that there is an upwards trend over time in the association between VADC receipt and SSDI receipt. The baseline effect (representing the period 2000 to 2003) indicates that VADC receipt is associated

with a 6 percentage point increase in the probability of SSDI receipt. This is a large effect, given that the mean probability of SSDI receipt is 7.7 percent. The effect of VADC receipt grows by roughly 2, 6, and 8 percentage points in the subsequent three periods, and the latter two coefficients are statistically significant. The correlation between VADC receipt and SSDI receipt is significantly lower in 1996-1999 than in the omitted period, indicating a pre-trend, though visual inspection of the coefficients in Figure 7 suggests that this might be driven by a smaller effect in a single year, as the effect is otherwise fairly flat over time.

In Tables 3 and 4, we repeat this analysis for veterans of two other service periods, the peacetime period between 1975 and 1990 and the Gulf War era that began in 1991. As noted above, the former group has experienced less growth in VADC receipt over time than have Vietnam-era veterans and thus can be seen as a kind of control group. By contrast, the Gulf War group has experienced rapid growth in VADC receipt over the past fifteen years and thus their results might be expected to be more like those for the Vietnam-era group.

The results in Table 3 for peacetime veterans show that receiving VADC benefits is associated with a 4 percentage point increase in the probability of receiving SSDI, or roughly 70 percent of the mean SSDI receipt for this group. However, there is no time trend – the coefficients on the VADC receipt-year group interaction terms are positive and rising over time, but not statistically significant. For Gulf War veterans, a much younger cohort, there is no statistically significant relationship between VADC receipt and SSDI receipt until the 2013 to 2016 period, when VADC receipt is associated with a 4 percentage point increase in the probability of receiving SSDI, a large effect compared to the mean SSDI receipt of 1.7 percent in this group.

In Tables 5, 6, and 7, we replicate the analyses of Tables 2, 3, and 4 using data from the SIPP. We combine multiple panels of SIPP data to span the period from 1996 to 2016. For each survey wave, we use just one observation per respondent, and we obtain sample sizes similar to those in the CPS. We control for health by including a dummy for having a work-limiting condition, as self-reported health is not available in the SIPP.

The baseline effect of VADC receipt on SSDI receipt (in the omitted period 2000 to 2003) is smaller and not significant in the SIPP, perhaps reflecting the effect of using a different measure of health. The time trend is also weaker for Vietnam-era veterans in the SIPP as compared to the CPS, as the effect of VADC receipt grows to 4 percentage points by the final period but is not statistically significant. There is no time trend in the association between VADC receipt and SSDI receipt for peacetime veterans. The time trend for Gulf era veterans starts earlier and is characterized by larger coefficients in the SIPP as compared to the CPS.

Overall, the comparison of results for veterans from the three service periods using two different data sets provides suggestive evidence that the growing correlation between VADC and SSDI receipt is driven by policy changes that loosened medical eligibility, given that the strongest relationship between VADC receipt and SSDI receipt is seen for those groups that experienced the biggest increase in VADC receipt, partly as a result of policy changes.

## **V. Interaction Between VADC and SSI Program Receipt**

While the discussion thus far has focused on SSDI, it is also of interest to examine the link between the VADC and SSI programs. We conduct parallel analyses to those just

discussed, now with SSI as the outcome measure, and report the results in the right-hand columns of Tables 2 though 7. In the CPS results, VADC receipt in the omitted period (2000 to 2003) is associated with a decreased probability of SSI receipt for Vietnam-era veterans and there is no significant association for the other two groups. There is no clear and statistically significant time trend in the strength of the association between VADC receipt and SSI receipt, unlike for SSDI. Turning to the SIPP results, the baseline effect of VADC on SSI is not statistically significant (except for Gulf War veterans, for whom the association is negative); there is a trend towards a rising effect of VADC on SSI receipt over time for Gulf war veterans and the opposite trend for Vietnam-era and peacetime veterans.

Overall, there is no consistent evidence that VADC beneficiaries are more likely to be receiving SSI at baseline, nor that this is changing over time in a way that clearly connects to the growth in the VADC program. One explanation that could be consistent with these findings is that SSI is means-tested, so many VADC recipients may earn too much money to receive SSI. The same issue would not arise with SSDI since those benefits are means-tested against earnings but not against VADC income.

## **VI. Interaction between VADC and Early Claiming of Social Security**

Finally, we examine the relationship between the VADC program and Social Security. Receipt of VADC benefits may also influence the time at which an individual claims Social Security retired worker benefits. There is a financial incentive to delay claiming Social Security beyond the early retirement age of 62 in the form of an actuarial adjustment (Shoven and Slavov, 2014). However, an individual with income from the VADC program may be more likely to determine that the reduced level of social security benefits

available at age 62 is sufficient and thus claim earlier as a result, particularly if VADC receipt has induced him to retire earlier, as suggested by Coile et al. (2016).

To investigate the interaction between VADC receipt and the early claiming of Social Security, we once again turn to the March CPS and the SIPP. In the March CPS our sample period spans 1996 to 2016, and we restrict our sample to veterans aged 62-64 at the time of the survey to focus on those that would be eligible for early claiming. Because the March survey is retrospective, it asks recipients whether they received social security retirement benefits in the previous year. We estimate linear probability models of the form:

$$EarlyClaim_{it} = \beta_0 + \sum_k \beta_k (t = k) * VADC_{it} + X'_{it} \delta + \alpha_t + \gamma_s + \varepsilon_{it}$$

Analogous to the equation above,  $i$  indexes individual,  $t$  indexes year, and  $s$  indexes state, and  $X'_{it}$  is a vector of controls. We once again group the 21 survey years into 6 dummies: 1996-1999, 2000-2003, 2004-2006, 2007-2009, 2010-2012, and 2013-2016, and exclude the 2000-2003 dummy in order to estimate a main effect on  $VADC_{it}$ . Because of the limited ages when early claiming of Social Security benefits can occur, it is not feasible to estimate these models separately by military service cohort; however, in the discussion that follows we look for a pattern of coefficients that would be consistent with a bigger response by Vietnam era veterans.

The results are reported in Tables 8 and 9 for the CPS and SIPP, respectively. In the CPS, at baseline (2000 to 2003) there is a positive but statistically insignificant relationship between VADC receipt and early claiming of social security benefits. The coefficient on the interaction between VADC receipt and the 2004 to 2006 year group indicator is positive and significant. As the first Vietnam-era veterans reached age 62 during these years (see

Figure 5), this result indicates that these veterans, who were affected by the 2001 policy change, claimed earlier than veterans who served in the peacetime era of 1955 to 1964 or the Korean war (and were unaffected by the policy change). The magnitude of the coefficient suggests that veterans reaching ages 62 to 64 during 2004 to 2006 were 12 percentage points more likely to claim Social Security early than were earlier veterans, an economically meaningful effect when compared to the mean early claiming rate of 43 percent. The subsequent VADC-year group indicator interaction terms, which also reflect claiming by Vietnam-era veterans are positive as well, but not statistically significant, and range from 5 to 8 percentage points. This pattern of a stronger association between VADC receipt and earlier claiming for Vietnam-era veterans than for earlier cohorts is interesting when viewed in context of the general time trend of more recent cohorts of workers claiming Social Security benefits later (Munnell and Chen, 2015). A companion set of analyses using the SIPP summarized in Table 9 yields estimates that are qualitatively similar to those from the CPS analysis but not statistically significant.

## **VI. Discussion and Conclusion**

In this project, we investigate the link between the VADC program and the SSDI, SSI, and Social Security programs. Our first set of results show that there is a strong positive relationship between VADC participation and SSDI participation at the county level, both in the level and growth rate of program enrollment during the period immediately following the Great Recession. The magnitude of the coefficients, taken at face value, would suggest that one-third of new VADC recipients also enroll in SSDI.

We also use individual-level data from the Current Population Survey and the Survey of Income and Program Participation for the 1996 through 2016 period to examine the relationship between DC and SSDI enrollment and how this relationship has changed over time. Our results demonstrate that individuals receiving VADC benefits are more likely to receive SSDI benefits. More strikingly, the magnitude of that association for Vietnam-era veterans roughly doubled in the ten years following the 2001 policy change described above, to about 14 percentage points (in our CPS analysis). It has also increased in more recent years for veterans of the Gulf War. As noted earlier, recent changes to VADC medical eligibility have either applied exclusively to veterans of these conflicts or have been more likely to affect them.

Finally, we find that Vietnam-era veterans who are VADC recipients are more likely to claim Social Security early, although these results are not always statistically significant. VADC recipients are no more likely to use SSI, and there is no clear time trend in the relationship between VADC receipt and use of SSI that would line up with the growth of the VADC program.

Taken together, our findings suggest that the receipt of VADC benefits is an important determinant of disability and social security benefit receipt. These results take on additional significance when one considers the rise in VADC benefits – from 9 percent of veterans in 2001 to 24 percent of veterans today – that has occurred during the past twenty years. On the other hand, the fraction of near-elderly individuals who are veterans is much lower today than it was a decade ago, when Vietnam-era veterans were in their fifties and early sixties. Over the same period, the receipt of SSDI benefits has actually started to decline while the propensity to delay claiming social security benefits after age

62 has risen. Our results suggest that the declining fraction of near elderly adults who are veterans may have contributed to these important trends in social security enrollment and expenditures in recent years.

## References

- Angrist, Joshua D. (1998). "Estimating the Labor Market Impact of Voluntary Military Service Using Social Security Data on Military Applicants." *Econometrica*, 66(2), 249-288.
- Autor, David, Mark Duggan, Kyle Greenberg, and David Lyle (2014). "The Impact of Disability Benefits on Labor Supply: Evidence for the VA's Disability Compensation Program," Stanford University mimeo.
- Autor, David H. and Mark G. Duggan (2007). "Distinguishing Income from Substitution Effects in Disability Insurance," *American Economic Review* 97(2):119-124.
- Black, Daniel, Kermit Daniel, and Seth Sanders. "The Impact of Economic Conditions on Participation in Disability Programs: Evidence from the Coal Boom and Bust." *American Economic Review* 92(1) 27-50.
- Bound, John (1989). "The Health and Earnings of Rejected Disability Insurance Applicants." *American Economic Review* 79(3): 482-503.
- Cahill, Kevin E., Michael D. Giandrea, and Joseph F. Quinn (2006). "Retirement Patterns from Career Employment," *The Gerontologist* 46(4):514-523.
- Chen, Susan and Wilbert van der Klauuw (2008). "The Work Disincentive Effects of the Disability Insurance Program in the 1990s." *Journal of Econometrics* 142: 757-784.
- Coile, Courtney C. (2004). "Health Shocks and Couples' Labor Supply Decisions," National Bureau of Economic Research Working Paper 10810.
- Coile, Courtney, Mark Duggan, and Audrey Guo. (2015). "Declining Labor Force Participation among America's Veterans: What Role does the VA's Disability Compensation Program Play?" *American Economic Review Papers and Proceedings* 105 (5): 131-36.
- Coile, Courtney, Mark Duggan, and Audrey Guo. (2015). "To Work for Yourself, For Others, or Not At All? How Disability Benefits Affect the Employment Decisons of Older Veterans," National Bureau of Economic Research Working Paper 23006.
- Congressional Budget Office (2014). "Veterans Disability Compensation: Trends and Policy Options."
- Cullen, Julie Berry and Jonathan Gruber (2000). "Does Unemployment Insurance Crowd Out Spousal Labor Supply?" *Journal of Labor Economics*, 18(3), 546-572.
- Duggan, Mark, Robert Rosenheck and Perry Singleton (2010). "Federal Policy and the Rise in Disability Enrollment: Evidence for the VA's Disability Compensation Program,"

*Journal of Law and Economics* 53:379-398.

Duggan, Mark and Melissa Kearney (2007). "The Impact of Child SSI Enrollment." *Journal of Policy Analysis and Management*, 861-886.

Duggan, Mark, Perry Singleton, and Jae Song (2007). "Aching to Retire? The Rise in the Full Retirement Age and its Impact on the Disability Rolls." *Journal of Public Economics*, 1327-1350.

Duggan, Mark, Melissa Kearney, and Stephanie Rennane (2016). "The Supplemental Security Income Program," in Robert A. Moffitt, ed., *The Economics of Means-Tested Transfer Programs in the United States, Volume 2*. Chicago: University of Chicago Press.

Englehardt, Gary V. and Jonathan Gruber (2006). "Social Security and the Evolution of Elderly Poverty," in Alan Auerbach, David Card, and John Quigley (eds.), *Public Policy and the Income Distribution*. New York: Russell Sage Foundation.

French, Eric and Jae Song (2014). "The Effect of Disability Insurance Receipt on Labor Supply." *American Economic Journal: Economic Policy* 6(2): 291-337.

Gruber, Jonathan (1997). "The Consumption-Smoothing Benefits of Unemployment Insurance," *American Economic Review* 87(1):192-205.

Gruber, Jonathan and David A Wise, eds. (1999). *Social Security and Retirement Around the World*. Chicago: University of Chicago Press.

Hirsch, Barry T. and Stephen L. Mehay (2002). "Evaluating the Labor Market Performance of Veterans Using a Matched Comparison Group Design," *Journal of Human Resources* 38(3):673-700.

Liebman, Jeffrey B. (2015). "Understanding the Increase in Disability Insurance Benefit Receipt in the United States," *Journal of Economic Perspectives* 29(2):123-150.

Lundberg, Shelly. (1985). "The Added Worker Effect," *Journal of Labor Economics* 3(1):11-37.

Maestas, Nicole, Kathleen Mullen, and Alexander Strand (2018). "The Effect of Economic Conditions on the Disability Insurance Program: Evidence from the Great Recession," NBER Working Paper 25338.

Maestas, Nicole, Kathleen Mullen, and Alexander Strand (2013). "Does Disability Insurance Receipt Discourage Work? Using Examiner Assignment to Estimate Causal Effects of SSDI Receipt." *American Economic Review* 103(5): 1797-1829.

Meyer, Bruce D. and James X. Sullivan (2008). "Changes in Consumption, Income, and the Well-Being of Single Mother Headed Families," *American Economic Review* 98(5):2221-2241.

Munnell, Alicia H. and Anqi Chen (2015). "Trends in Social Security Claiming," Center for Retirement Research Issue Brief #15-8, May.

Parsons, Donald (1980). "The Decline in Male Labor Force Participation." *Journal of Political Economy* 88(1): 117-134.

Rupp, Kalman, Paul S. Davies, and Alexander Strand (2008). "Disability Benefit Coverage and Program Interactions in the Working-Age Population," *Social Security Bulletin* 68:1-30.

Rupp, Kalman and Gerald F. Riley (2011). "Longitudinal Patterns of Participation in the Social Security Disability Insurance and Supplement Security Income Programs for People with Disabilities," *Social Security Bulletin* 71:25-51.

Shoven, John B., and Sita Nataraj Slavov. 2014. "[Recent Changes in the Gains from Delaying Social Security](#)." *Journal of Financial Planning* 27 (3): 32-41.

Siminski, Peter (2013). "Employment Effects of Army Service and Veterans Compensation: Evidence from the Australian Vietnam-Era Conscription Lotteries." *Review of Economics and Statistics* 95(1): 87-97.

Singleton, Perry (2009). "The Effect of Disability Insurance on Health Investment: Evidence from the VA's Disability Compensation Program." *Journal of Human Resources* 44(4): 998-1022.

Social Security Administration (2018). Monthly Statistical Snapshot, September 2018, [https://www.ssa.gov/policy/docs/quickfacts/stat\\_snapshot/2018-09.html](https://www.ssa.gov/policy/docs/quickfacts/stat_snapshot/2018-09.html)

Social Security Administration (2019). Fast Facts and Figures about Social Security, 2018, SSA Publication 13-11875, August 2019, [https://www.ssa.gov/policy/docs/chartbooks/fast\\_facts/2019/fast\\_facts19.pdf](https://www.ssa.gov/policy/docs/chartbooks/fast_facts/2019/fast_facts19.pdf)

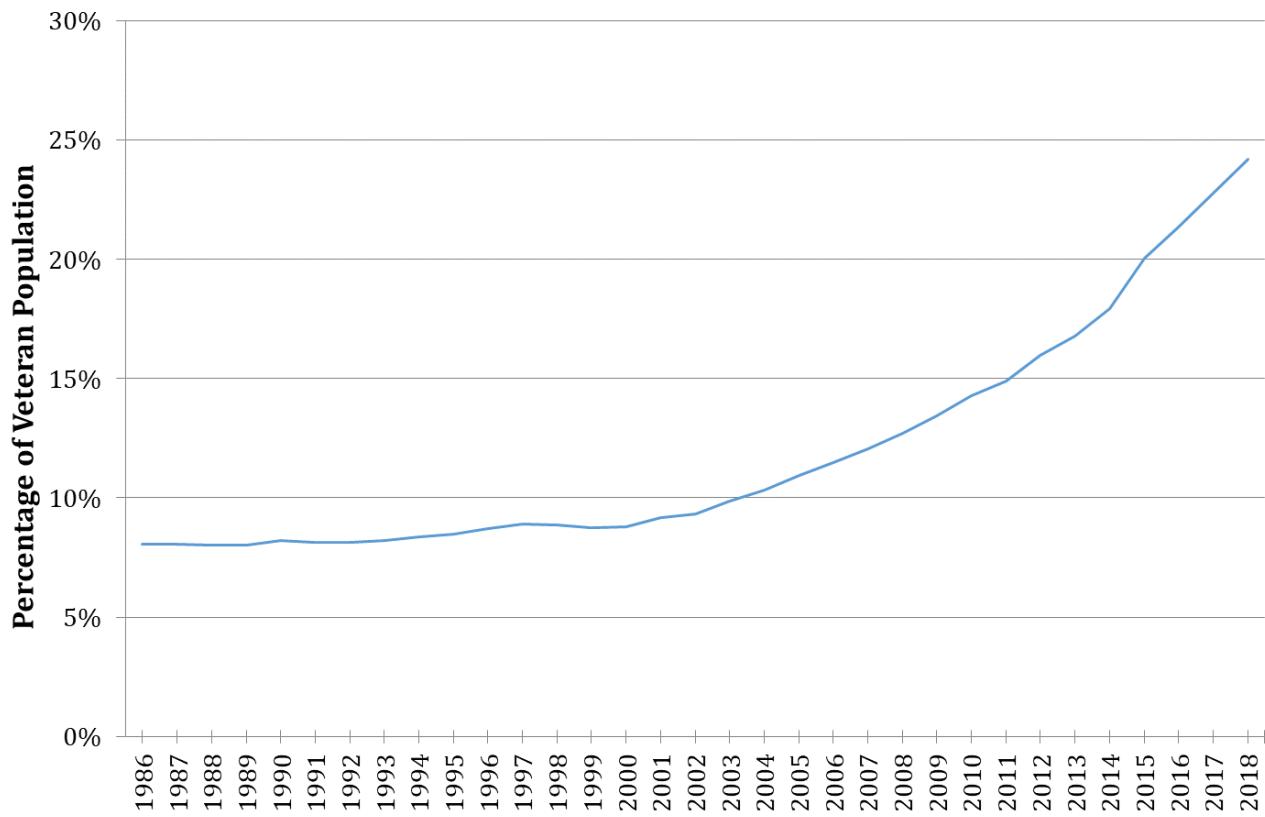
Snyder, Stephen E., and William N. Evans (2006). "The Effect of Income on Mortality: Evidence from the Social Security Notch." *The Review of Economics and Statistics* 88(3): 482-495.

U.S. Bureau of Labor Statistics (2013). "Labor Force Projections to 2022: Labor Force Participation Continues to Fall." *Monthly Labor Review*, December.

Veterans Benefits Administration (various years). *Annual Benefits Report*. Washington, D.C.: U.S. Department of Veterans Affairs.

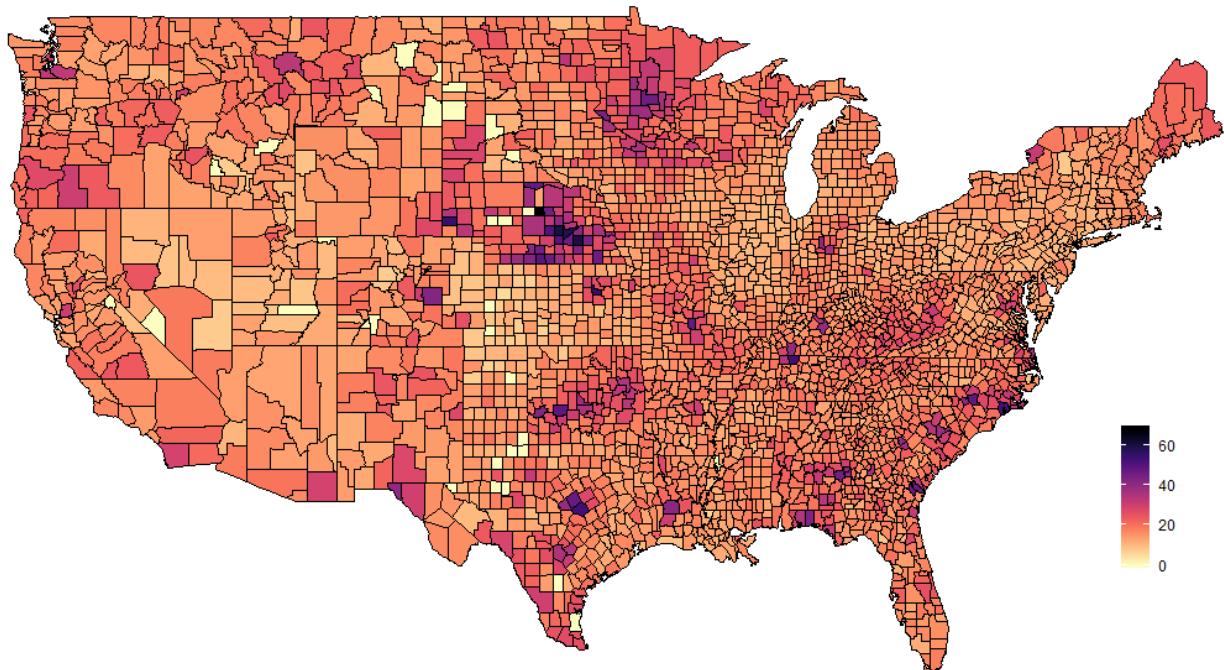
Von Wachter, Till, Jae Song, and Joyce Manchester (2010). "Trends in Employment and Earnings of Allowed and Rejected Applicants to the SSDI Program" *American Economic Review* 101(7): 3308-3329.

**Figure 1: Growth in DC Recipients over Time, 1986-2018**



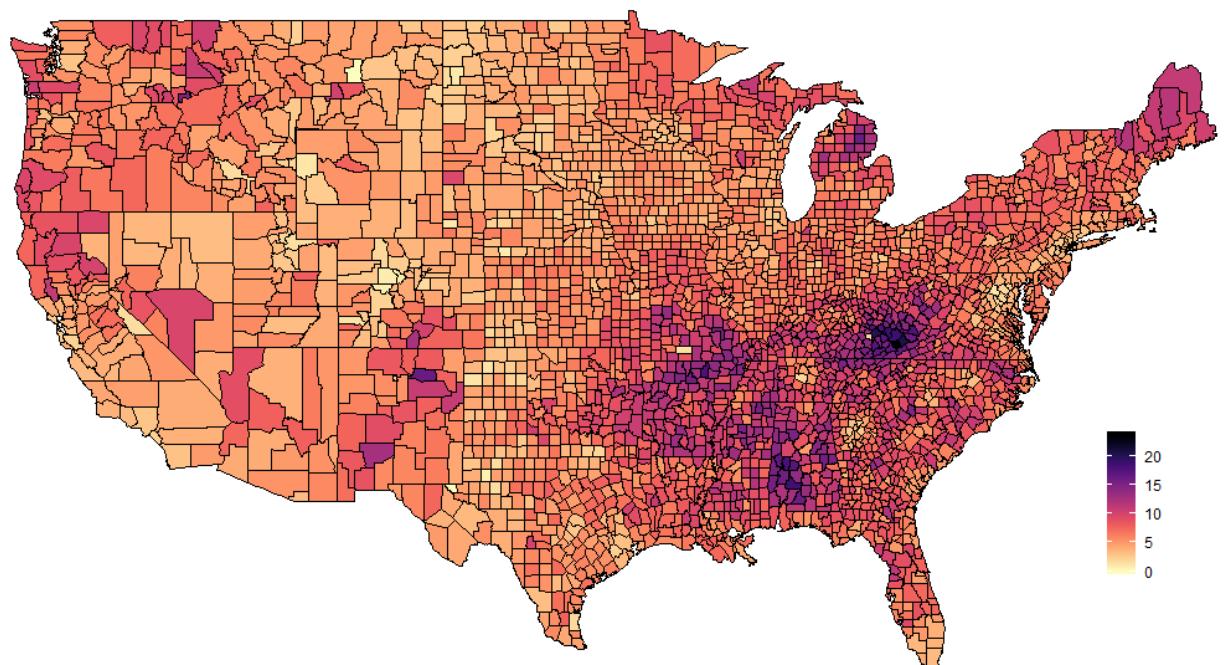
Source: Statistical Abstracts of the U.S. (1986-1999), VetPop Models 2014 and 2016, and VBA Annual Benefits Reports (1999-2018)

**Figure 2: Percentage of Veterans on VADC (2014)**



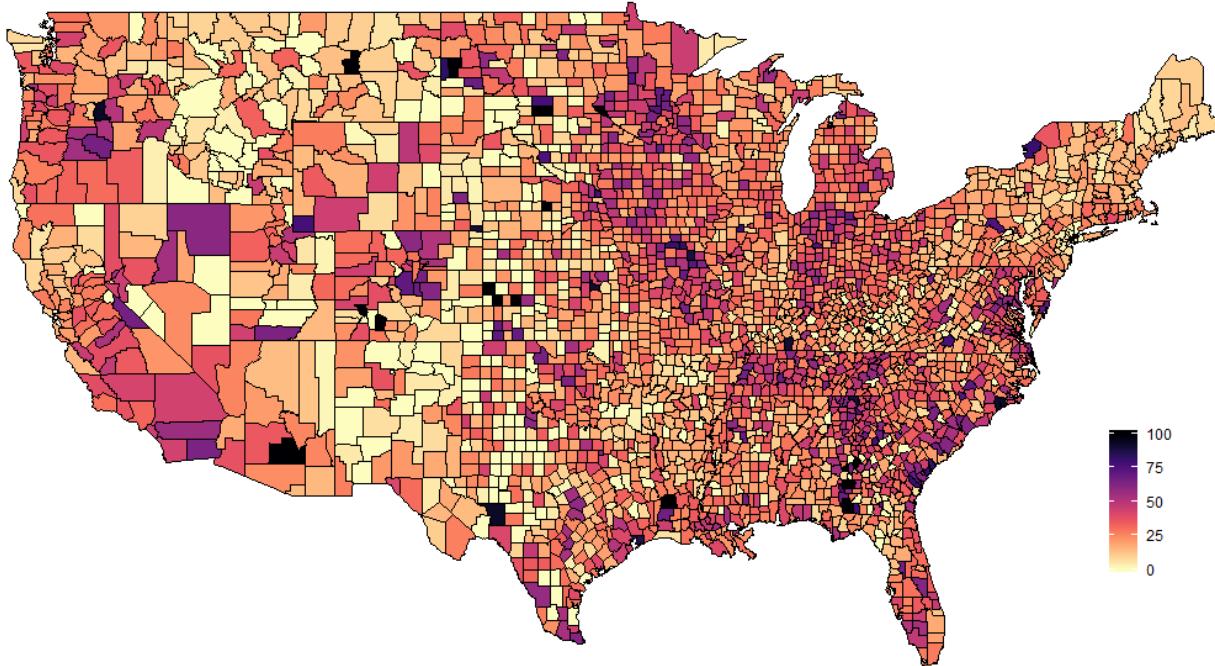
Source: authors' calculation using beneficiary data from the VA and population estimates from the ACS.

**Figure 3: Percentage of Population Ages 25-64 on SSDI (2014)**



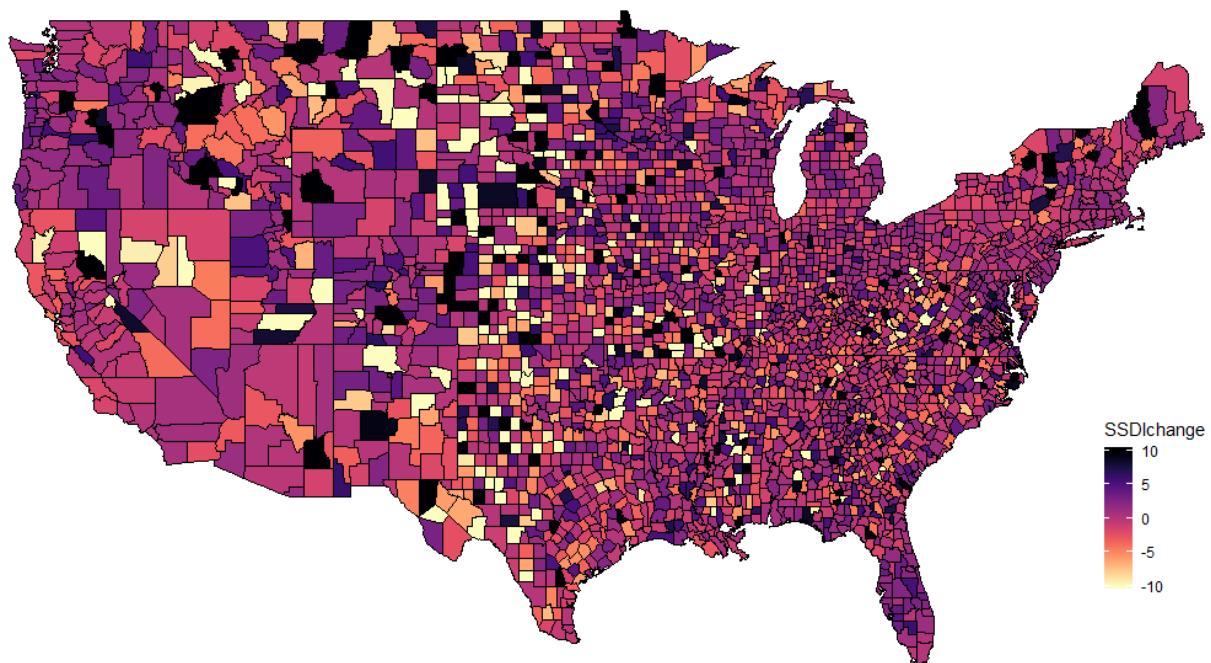
Source: authors' calculation using beneficiary data from the SSA and population estimates from the ACS.

**Figure 4: Change in Veteran Share on VADC from 2009 to 2014 (%)**



Source: authors' calculation using beneficiary data from the VA and population estimates from the ACS.

**Figure 5: Change in Population Ages 25-64 on SSDI from 2009 to 2014 (%)**



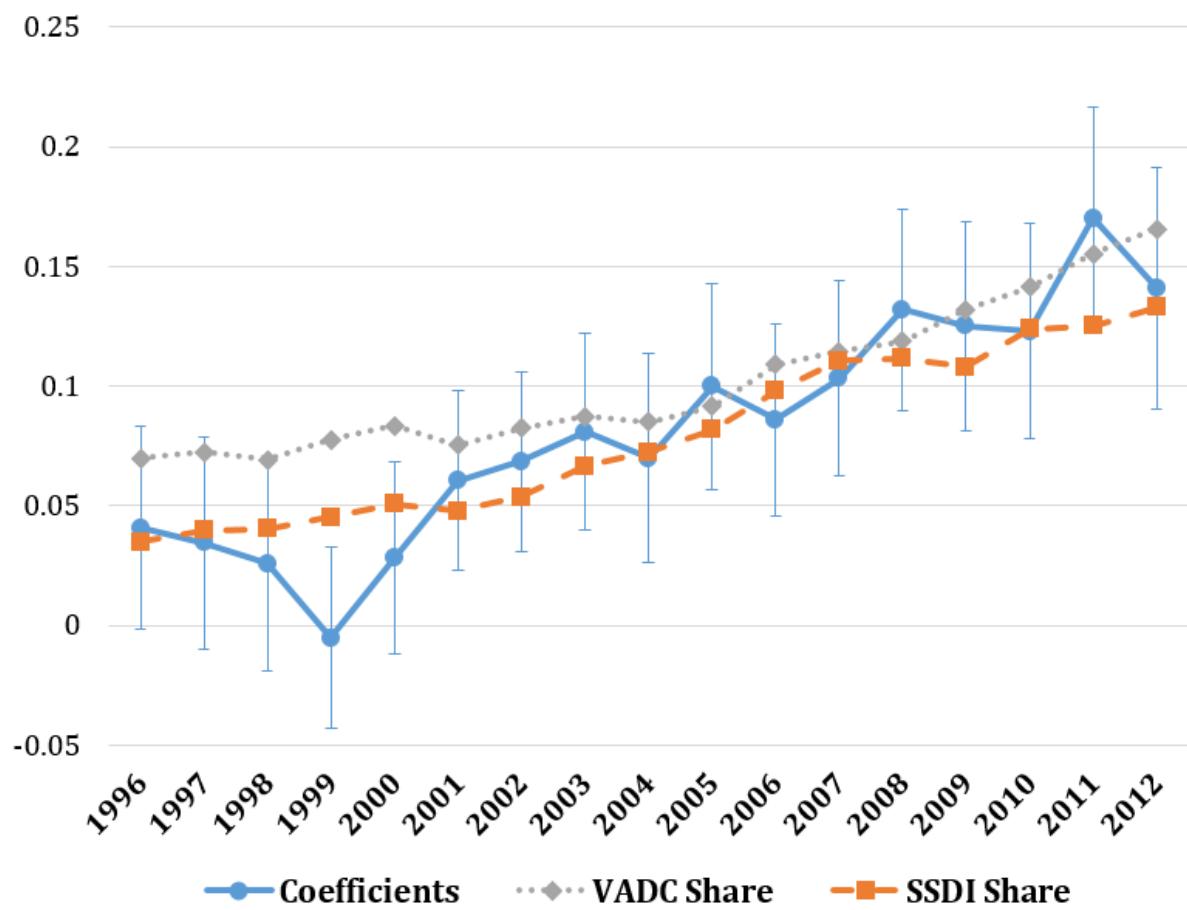
Source: authors' calculation using beneficiary data from the SSA and population estimates from the ACS.  
Percentage changes are censored at -10% and 10%.

**Figure 6: Distribution of Military Service Periods by Age and Year**

Age	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
39	P75-90	Gulf																			
40	P75-90	Gulf																			
41	VEV	P75-90	Gulf																		
42	VEV	VEV	P75-90	Gulf																	
43	VEV	VEV	VEV	P75-90	Gulf																
44	VEV	VEV	VEV	VEV	P75-90	Gulf															
45	VEV	VEV	VEV	VEV	VEV	P75-90	Gulf	Gulf	Gulf												
46	VEV	VEV	VEV	VEV	VEV	VEV	P75-90	Gulf	Gulf	Gulf											
47	VEV	P75-90	Gulf	Gulf																	
48	VEV	P75-90	Gulf																		
49	VEV	P75-90																			
50	VEV	P75-90																			
51	VEV	P75-90																			
52	VEV	P75-90																			
53	VEV	P75-90																			
54	VEV	P75-90																			
55	P55-64	VEV	VEV	VEV	VEV	VEV	VEV	P75-90													
56	P55-64	P55-64	VEV	VEV	VEV	VEV	VEV	P75-90													
57	P55-64	P55-64	P55-64	VEV	VEV	VEV	VEV	P75-90													
58	P55-64	P55-64	P55-64	P55-64	VEV	VEV	VEV	P75-90													
59	P55-64	P55-64	P55-64	P55-64	P55-64	VEV	VEV	P75-90													
60	P55-64	P55-64	P55-64	P55-64	P55-64	P55-64	VEV	P75-90													
61	Korea	P55-64	P55-64	P55-64	P55-64	P55-64	P55-64	VEV	VEV												
62	Korea	Korea	P55-64	P55-64	P55-64	P55-64	P55-64	VEV	VEV												
63	Korea	Korea	Korea	P55-64	P55-64	P55-64	P55-64	P55-64	VEV	VEV											
64	Korea	Korea	Korea	Korea	Korea	P55-64	P55-64	P55-64	P55-64	P55-64	P55-64	VEV	VEV								
65	Korea	Korea	Korea	Korea	Korea	P55-64	P55-64	P55-64	P55-64	P55-64	P55-64	VEV	VEV								

Source: Authors' calculations from 1996 and 2005 Veterans Supplement to the CPS. Each birth cohort is assigned the service period most commonly reported by members of that cohort. The service periods are the Korean war (Korea), the peacetime era between 1955 and 1964 (P55-64), the Vietnam era (VEV), the peacetime era between 1975 and 1990 (P75-90), and the Gulf War era (Gulf). The figure shows the age of members of each military service period in each survey year. Orange-shaded cohorts indicate birth cohorts of significant overlap across service periods and are therefore excluded from the regression analysis samples. For example, a cutoff of 75% was used to assign the 1944-1953 cohorts to the VEV sample.

**Figure 7: March CPS Correlation between VADC and SSDI Receipt for Vietnam Era Veterans**



Male veterans with YOB 1944-1953 and age less than 64, from March CPS surveys 1996-2012. Yearly correlation between VADC and SSDI, after controlling for age, year, and state FEs and dummies for white, black, HS grad, and health status. Error bars denote 95% confidence intervals.

**Table 1: County-Level Relationship between VADC and SSDI Receipt (2014)**

VARIABLES	#SSDI/Pop 25-64		%Δ #SSDI 09 to 14	
	(1)	(2)	(3)	(4)
%Vets on DC in 2014	0.0375*** (0.00420)	0.0208*** (0.00391)		
%Δ #DC from 09 to 14			0.0187*** (0.00357)	0.0190*** (0.00397)
%ΔPop25-64 from 09 to 14			0.0430*** (0.00877)	0.0397*** (0.00985)
%Age 25 to 34	-15.93*** (0.745)	-13.09*** (0.684)	0.241 (1.435)	0.946 (1.553)
%Age 35 to 44	-14.02*** (1.445)	-17.69*** (1.345)	9.199*** (2.975)	14.01*** (3.288)
%HS Dropout	-5.099*** (0.545)	-1.299** (0.590)	-6.127*** (1.046)	-1.958 (1.389)
%HS Grad	14.00*** (0.401)	11.97*** (0.438)	3.139*** (0.767)	0.734 (1.012)
%Some College	0.968 (0.644)	6.156*** (0.766)	4.946*** (1.271)	13.98*** (1.745)
%Below Poverty Line	20.80*** (0.646)	16.37*** (0.607)	-1.481 (1.237)	-1.376 (1.420)
Constant	5.815*** (0.441)	5.866*** (0.432)	-3.676*** (0.914)	-6.886*** (1.045)
Observations	3,136	3,136	3,136	3,136
Mean of Dep Var	5.28	5.28	0.32	0.32
State Fes	No	Yes	No	Yes
R-squared	0.708	0.816	0.070	0.144

Observations at county level. All variables are in percentage points, and regressions are weighted by county population age 25-64. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 2: CPS Regressions of SSDI and SSI Receipt for Vietnam-Era Veterans**

VARIABLES	(1) SSDI	(2) SSDI	(3) SSI	(4) SSI
DC*(1996-1999)	-0.0382** (0.0174)	-0.0387** (0.0174)	0.000253 (0.00642)	4.87e-05 (0.00642)
DC	0.0613*** (0.0121)	0.0620*** (0.0121)	-0.00784* (0.00445)	-0.00792* (0.00445)
DC*(2004-2006)	0.0245 (0.0176)	0.0232 (0.0175)	0.0127* (0.00752)	0.0130* (0.00753)
DC*(2007-2009)	0.0585*** (0.0195)	0.0579*** (0.0195)	0.00836 (0.00726)	0.00849 (0.00725)
DC*(2010-2012)	0.0833*** (0.0211)	0.0827*** (0.0210)	0.0110 (0.00829)	0.0111 (0.00826)
White	-0.00576 (0.00685)	-0.0172** (0.00773)	-0.00601* (0.00342)	-0.00587 (0.00378)
Black	0.00117 (0.00846)	-0.00879 (0.00933)	0.00682 (0.00434)	0.00901* (0.00470)
HS Graduate or More	-0.0503*** (0.00866)	-0.0484*** (0.00864)	-0.0305*** (0.00509)	-0.0309*** (0.00508)
Very Good Health	0.00151 (0.00131)	0.00137 (0.00133)	0.000514 (0.000516)	0.000701 (0.000528)
Good Health	0.0328*** (0.00217)	0.0322*** (0.00218)	0.00688*** (0.000920)	0.00722*** (0.000932)
Fair Health	0.200*** (0.00609)	0.198*** (0.00607)	0.0447*** (0.00291)	0.0449*** (0.00290)
Poor Health	0.426*** (0.0101)	0.423*** (0.0101)	0.0945*** (0.00578)	0.0950*** (0.00579)
Constant	0.0618*** (0.0106)	0.0713*** (0.0111)	0.0367*** (0.00595)	0.0365*** (0.00607)
Observations	52,526	52,526	52,526	52,526
Mean of Dep Var	0.077	0.077	0.016	0.016
State FE's	No	Yes	No	Yes
Month FE's	No	Yes	No	Yes
R-squared	0.224	0.226	0.049	0.051

Male veterans with YOB 1944-1953 and age less than 64, from March CPS surveys 1996-2012. Prior to 2001, SSDI receipt is equal to one if respondent reports Social Security benefits. Omitted race category is Other, and omitted health category is Excellent. Also includes Age and Year FE's. Robust standard errors clustered at person level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 3: CPS Regressions of SSDI and SSI Receipt for Peacetime-Era Veterans**

VARIABLES	(1) SSDI	(2) SSDI	(3) SSI	(4) SSI
DC*(1996-1999)	-0.0232 (0.0236)	-0.0260 (0.0233)	-0.00777 (0.0125)	-0.00720 (0.0126)
DC	0.0360** (0.0146)	0.0384*** (0.0145)	0.00229 (0.00747)	0.00340 (0.00747)
DC*(2004-2006)	-0.00457 (0.0207)	-0.00579 (0.0206)	0.00195 (0.0111)	0.00209 (0.0111)
DC*(2007-2009)	0.0103 (0.0217)	0.00966 (0.0215)	-0.00619 (0.0105)	-0.00622 (0.0104)
DC*(2010-2012)	0.0175 (0.0222)	0.0159 (0.0220)	-0.0201* (0.0103)	-0.0200* (0.0102)
DC*(2013-2016)	0.0284 (0.0213)	0.0264 (0.0211)	0.000145 (0.0104)	0.000779 (0.0104)
White	-0.00105 (0.00631)	-0.00879 (0.00663)	-0.00322 (0.00362)	-0.00244 (0.00393)
Black	0.00391 (0.00719)	-0.00315 (0.00761)	0.00644 (0.00428)	0.00877* (0.00466)
HS Graduate or More	-0.0280*** (0.00894)	-0.0271*** (0.00889)	-0.0466*** (0.00701)	-0.0468*** (0.00699)
Very Good Health	0.00189 (0.00134)	0.00161 (0.00136)	0.000652 (0.000741)	0.000904 (0.000761)
Good Health	0.0255**** (0.00216)	0.0252*** (0.00217)	0.00861*** (0.00124)	0.00879*** (0.00126)
Fair Health	0.173*** (0.00710)	0.171*** (0.00705)	0.0681*** (0.00441)	0.0684*** (0.00442)
Poor Health	0.371*** (0.0133)	0.369*** (0.0132)	0.125*** (0.00884)	0.125*** (0.00883)
Constant	0.0348*** (0.0107)	0.0415*** (0.0108)	0.0502*** (0.00761)	0.0492*** (0.00770)
Observations	37,605	37,605	37,605	37,605
Mean of Dep Var	0.054	0.054	0.019	0.019
State FE's	No	Yes	No	Yes
Month FE's	No	Yes	No	Yes
R-squared	0.179	0.183	0.066	0.069

Male veterans with YOB 1956-1965 from March CPS surveys 1996-2016. Prior to 2001, SSDI receipt is equal to one if respondent reports Social Security benefits. Omitted race category is Other, and omitted health category is Excellent. Also includes Age and Year FE's. Robust standard errors clustered at person level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 4: CPS Regressions of SSDI and SSI Receipt for Gulf-Era Veterans**

VARIABLES	(1) SSDI	(2) SSDI	(3) SSI	(4) SSI
DC*(1996-1999)	-0.0159 (0.0182)	-0.0176 (0.0180)	-0.00812 (0.0150)	-0.00885 (0.0149)
DC	0.00187 (0.0120)	0.00219 (0.0120)	0.00807 (0.00929)	0.00923 (0.00930)
DC*(2004-2006)	0.00344 (0.0180)	0.00345 (0.0180)	-0.00837 (0.0121)	-0.00892 (0.0121)
DC*(2007-2009)	0.0244 (0.0198)	0.0237 (0.0199)	-0.0116 (0.0109)	-0.0125 (0.0110)
DC*(2010-2012)	0.0264 (0.0186)	0.0253 (0.0186)	-0.000506 (0.0118)	-0.00146 (0.0118)
DC*(2013-2016)	0.0403** (0.0179)	0.0406** (0.0178)	-0.00474 (0.0111)	-0.00620 (0.0111)
White	0.00351 (0.00473)	0.00399 (0.00489)	-0.000613 (0.00276)	-0.00101 (0.00301)
Black	0.0134** (0.00609)	0.0148** (0.00618)	0.00444 (0.00351)	0.00382 (0.00378)
HS Graduate or More	0.00530 (0.00848)	0.00501 (0.00857)	-0.0221* (0.0116)	-0.0217* (0.0116)
Very Good Health	0.00283** (0.00112)	0.00288** (0.00114)	0.000777 (0.000661)	0.000769 (0.000667)
Good Health	0.00980*** (0.00200)	0.00949*** (0.00198)	0.00585*** (0.00139)	0.00574*** (0.00138)
Fair Health	0.109*** (0.0103)	0.108*** (0.0103)	0.0364*** (0.00580)	0.0363*** (0.00579)
Poor Health	0.253*** (0.0274)	0.252*** (0.0272)	0.0884*** (0.0178)	0.0879*** (0.0178)
Constant	-0.00872 (0.00950)	-0.00890 (0.00957)	0.0230** (0.0117)	0.0230* (0.0118)
Observations	20,442	20,442	20,442	20,442
Mean of Dep Var	0.017	0.017	0.006	0.006
State FE's	No	Yes	No	Yes
Month FE's	No	Yes	No	Yes
R-squared	0.108	0.114	0.033	0.037

Male veterans with YOB 1968-1977 from March CPS surveys 1996-2016. Prior to 2001, SSDI receipt is equal to one if respondent reports Social Security benefits. Omitted race category is Other, and omitted health category is Excellent. Also includes Age and Year FE's. Robust standard errors clustered at person level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 5: SIPP Regressions of SSDI Receipt for Vietnam-Era Veterans**

VARIABLES	(1) SSDI	(2) SSDI	(3) SSI	(4) SSI
DC*(1996-1999)	0.00104 (0.0263)	-0.000308 (0.0260)	-0.0173* (0.00934)	-0.0162* (0.00911)
DC	0.00687 (0.0171)	0.00690 (0.0169)	-0.00607 (0.00878)	-0.00658 (0.00866)
DC*(2004-2006)	-0.0125 (0.0241)	-0.0129 (0.0239)	-0.00580 (0.0117)	-0.00552 (0.0115)
DC*(2007-2009)	0.0332 (0.0245)	0.0322 (0.0243)	-0.00276 (0.0122)	-0.00223 (0.0119)
DC*(2010-2012)	0.0404 (0.0273)	0.0391 (0.0271)	-0.0229** (0.0115)	-0.0220* (0.0113)
White	-0.00872 (0.0143)	-0.0126 (0.0148)	-0.0234** (0.0102)	-0.0202* (0.0103)
Black	0.00180 (0.0165)	-0.00175 (0.0170)	-0.00957 (0.0116)	-0.00411 (0.0117)
HS Graduate or More	-0.0555*** (0.0157)	-0.0548*** (0.0156)	-0.00548 (0.00773)	-0.00630 (0.00774)
Work-limiting Condition	0.317*** (0.0106)	0.314*** (0.0105)	0.0722*** (0.00595)	0.0722*** (0.00589)
Constant	0.0636*** (0.0204)	0.0672*** (0.0205)	0.0294** (0.0123)	0.0268** (0.0125)
Observations	66,284	66,284	66,284	66,284
Mean of Dep Var	0.066	0.066	0.015	0.015
State FE's	No	Yes	No	Yes
Month FE's	No	Yes	No	Yes
R-squared	0.277	0.282	0.059	0.066

Male veterans with YOB 1944-1953 from SIPP 1996, 2001, 2004, and 2008 panels. Only includes last reference month per wave, and ages 64 and under. Omitted race category is Other. Also includes Age and Year FE's. Robust standard errors clustered at person level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 6: SIPP Regressions of SSDI Receipt for Peacetime-Era Veterans**

VARIABLES	(1) SSDI	(2) SSDI	(3) SSI	(4) SSI
DC*(1996-1999)	-0.0490 (0.0328)	-0.0501 (0.0327)	-0.0110 (0.0121)	-0.00886 (0.0123)
DC	0.00877 (0.0284)	0.00967 (0.0280)	-0.0160 (0.0109)	-0.0164 (0.0111)
DC*(2004-2006)	-0.0292 (0.0363)	-0.0317 (0.0358)	-0.0211 (0.0132)	-0.0201 (0.0134)
DC*(2007-2009)	-0.0271 (0.0340)	-0.0262 (0.0337)	-0.0160 (0.0132)	-0.0154 (0.0134)
DC*(2010-2012)	-0.00310 (0.0368)	-0.00153 (0.0364)	-0.0335** (0.0132)	-0.0325** (0.0133)
DC*(2013-2015)	-0.00425 (0.0361)	-0.00138 (0.0357)	-0.0321** (0.0143)	-0.0321** (0.0145)
White	-0.0319* (0.0173)	-0.0362** (0.0173)	0.00145 (0.0103)	0.00303 (0.0101)
Black	-0.0203 (0.0184)	-0.0260 (0.0190)	0.0190 (0.0118)	0.0219* (0.0117)
HS Graduate or More	-0.00476 (0.0167)	-0.00258 (0.0168)	-0.0130 (0.0114)	-0.0144 (0.0112)
Work-limiting Condition	0.272*** (0.0162)	0.270*** (0.0158)	0.108*** (0.0111)	0.107*** (0.0109)
Constant	0.0364 (0.0240)	0.0387 (0.0242)	0.0139 (0.0144)	0.0135 (0.0142)
Observations	37,035	37,035	37,035	37,035
Mean of Dep Var	0.041	0.041	0.017	0.017
State FE's	No	Yes	No	Yes
Month FE's	No	Yes	No	Yes
R-squared	0.243	0.254	0.092	0.102

Male veterans with YOB 1956-1965 from SIPP 1996, 2001, 2004, 2008, and 2014 panels. Only includes last reference month per wave. Omitted race category is Other. Also includes Age and Year FE's. Robust standard errors clustered at person level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 7: SIPP Regressions of SSDI Receipt for Gulf-Era Veterans**

VARIABLES	(1) SSDI	(2) SSDI	(3) SSI	(4) SSI
DC*(1996-1999)	-0.00325 (0.0165)	-0.00228 (0.0175)	-0.00130 (0.00500)	0.000944 (0.00534)
DC	-0.0305** (0.0123)	-0.0327** (0.0130)	-0.0110** (0.00453)	-0.0119** (0.00514)
DC*(2004-2006)	0.0652* (0.0358)	0.0657* (0.0360)	0.0103 (0.0117)	0.0111 (0.0117)
DC*(2007-2009)	0.0530** (0.0261)	0.0587** (0.0266)	0.00341 (0.00791)	0.00531 (0.00804)
DC*(2010-2012)	0.0603** (0.0301)	0.0638** (0.0301)	0.0166 (0.0118)	0.0185 (0.0120)
DC*(2013-2015)	0.0849*** (0.0277)	0.0875*** (0.0276)	0.0249 (0.0169)	0.0261 (0.0166)
White	0.00281 (0.00546)	0.00386 (0.00585)	0.00139 (0.00269)	0.000106 (0.00270)
Black	0.0137 (0.00877)	0.0136 (0.00932)	0.00190 (0.00299)	0.000417 (0.00312)
HS Graduate or More	0.00578 (0.0124)	0.00272 (0.0118)	-0.000723 (0.00622)	-0.000519 (0.00628)
Work-limiting Condition	0.157*** (0.0260)	0.156*** (0.0253)	0.0496*** (0.0146)	0.0493*** (0.0143)
Constant	-0.00971 (0.0134)	-0.00752 (0.0127)	0.000176 (0.00659)	0.00119 (0.00658)
Observations	21,750	21,750	21,750	21,750
Mean of Dep Var	0.013	0.013	0.004	0.004
State FE's	No	Yes	No	Yes
Month FE's	No	Yes	No	Yes
R-squared	0.155	0.168	0.044	0.052

Male veterans with YOB 1968-1977 from SIPP 1996, 2001, 2004, 2008, and 2014 panels. Only includes last reference month per wave. Omitted race category is Other. Also includes Age and Year FE's. Robust standard errors clustered at person level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 8: March CPS Regressions of Early Retirement Claiming**

VARIABLES	(1) Early Claim	(2) Early Claim
DC*(1996-1999)	0.0112 (0.0639)	0.0244 (0.0632)
DC	0.0685 (0.0452)	0.0616 (0.0451)
DC*(2004-2006)	0.0996* (0.0590)	0.117** (0.0582)
DC*(2007-2009)	0.0356 (0.0554)	0.0494 (0.0555)
DC*(2010-2012)	0.0654 (0.0515)	0.0751 (0.0513)
DC*(2013-2016)	0.0787 (0.0519)	0.0797 (0.0518)
White	0.0497*** (0.0187)	0.0282 (0.0204)
Black	0.0385* (0.0225)	0.0309 (0.0243)
HS Graduate	-0.0623*** (0.0154)	-0.0567*** (0.0153)
Very Good Health	0.0466*** (0.0109)	0.0427*** (0.0109)
Good Health	0.107*** (0.0111)	0.102*** (0.0111)
Fair Health	0.254*** (0.0133)	0.245*** (0.0134)
Poor Health	0.345*** (0.0163)	0.333*** (0.0163)
Constant	0.318*** (0.0246)	0.336*** (0.0256)
Observations	17,358	17,358
Mean of Dep Var	0.43	0.43
State FE	No	Yes
R-squared	0.100	0.112

Sample includes veterans age 62-64 and spans 1996-2016. All regressions include Age and Year FE's. Robust standard errors clustered at person level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table****9: SIPP**

## Regressions of Early Retirement Claiming

VARIABLES	(1) Early Claim	(2) Early Claim
DC*(1996-1999)	-0.103 (0.0876)	-0.0911 (0.0879)
DC	0.0216 (0.0747)	0.0272 (0.0755)
DC*(2004-2006)	0.0448 (0.0909)	0.0539 (0.0926)
DC*(2007-2009)	0.0279 (0.0889)	0.0287 (0.0891)
DC*(2010-2012)	0.0872 (0.0831)	0.0884 (0.0836)
DC*(2013-2015)	0.0335 (0.0846)	0.0388 (0.0851)
White	0.0408 (0.0444)	0.0140 (0.0439)
Black	0.0899* (0.0511)	0.0635 (0.0508)
HS Graduate or More	0.00230 (0.0281)	0.00723 (0.0284)
Work-limiting Condition	-0.0111 (0.0153)	-0.0137 (0.0151)
Constant	0.319*** (0.0518)	0.340*** (0.0513)
Observations	22,391	22,391
Mean of Dep Var	0.37	0.37
State FE's	No	Yes
Month FE's	No	Yes
R-squared	0.057	0.078

Sample includes male veterans age 62-64 and spans 1996-2015. Omitted race category is Other. All regressions include Age and Year FE's. Robust standard errors clustered at person level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1