

Preliminary and Incomplete

**Veterans' Labor Force Participation:
What Role Does the VA's Disability Compensation Program Play?**

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Military engagements since the early 2000s have brought renewed public interest to issues involving U.S. active duty armed services members and veterans. Yet the stark differences in the labor market experiences of veterans and non-veterans have as yet received fairly little attention. In 2013, the labor force participation rate for male veterans age 18 and above was 49.9 percent, far lower than the 76.0 percent rate for non-veteran males of the same age (Bureau of Labor Statistics, 2014). Veterans' labor force participation has also been declining steadily over time – in 2006, it was 54.8 percent.

A number of factors may contribute to low and declining rates of employment among veterans. The veteran population may be older or less educated than the non-veteran population, and perhaps becoming more so over time. Veterans may be more sensitive to economic conditions if they are concentrated in cyclical industries or have shorter job tenure, and thus may have been disproportionately affected by the recent recession. Military service also carries a risk of incurring physical or mental health problems that may make employment more difficult.

An additional factor particularly worthy of consideration is the U.S Department of Veterans' Affairs Disability Compensation (DC) program. This program pays benefits to veterans with medical conditions that were caused by or aggravated during their military service. Since 2001, the DC program has experienced rapid growth, due at least in part to liberalization of the medical eligibility criteria (Duggan et. al., 2010). The number of DC beneficiaries rose from 2.3 million in 2000 to 3.7 million in 2013, while DC expenditures grew even faster, from \$20 Billion to \$54 Billion (CBO, 2014; Veterans Benefits Administration, 2013).

While a large body of literature has investigated the effect of the Social Security Disability Insurance (SSDI) program on labor supply, there are very few studies of the DC program. One exception is Autor et. al. (2014), who use an expansion in DC eligibility that

affected only those Vietnam-era veterans with “boots-on-the-ground” (BOG) in Vietnam or surrounding countries; they find that DC enrollment subsequently surged and labor force participation fell among BOG veterans relative to their non-BOG counterparts. Further research on the DC program, especially work that includes veterans serving since the Vietnam era, is clearly warranted, given the program’s size. The DC program is roughly 40 percent as large as the SSDI program in both beneficiaries and expenditures, though only one-tenth of the adult population is potentially eligible for DC benefits.

In this paper, we explore trends over time in the labor force participation of veterans as compared to non-veterans, investigating whether there are patterns that may be consistent with an increasingly important role for the DC program. We also examine whether veterans are more responsive to economic shocks than non-veterans, and whether this relationship has strengthened as the DC program has grown. To conduct this analysis, we estimate labor force participation regressions using 35 years of data from the March CPS. We have two primary findings. First, we find that the labor force participation of veterans has been declining over time in a way that coincides closely with the growth of the DC program. Second, we find that veterans were more sensitive to economic shocks than non-veterans in recent years, when the DC program was growing rapidly, but were not more sensitive in an earlier period when enrollments were lower and relatively stable.

I. The DC Program: Background and Trends

Any honorably discharged veteran may apply for DC benefits. A Department of Veterans’ Affairs (VA) rating board evaluates whether the veteran’s claimed disabilities are service-connected, and if it determines that they are, rates their severity in 10 percentage point

increments from 10% to 100%. The DC benefit amount is an increasing function of the recipient's combined disability rating (CDR), which is an increasing function of the severity ratings for different conditions, with higher values reflecting more severe disability. In 2014, monthly benefits ranged from \$131 for a CDR of 10% to \$2,858 per month for a CDR of 100%. Benefits are tax-free and continue until death. DC beneficiaries are not prohibited from working and may collect other disability benefits, such as SSDI, simultaneously with the DC benefit.¹

The DC program is a potentially compelling candidate to explain declining labor force participation among veterans because it has grown rapidly in recent years, as shown in Figure 1. In 1950, five years after the end of World War II, 10.5 percent of veterans were enrolled in the program. Over the next half century, this figure dipped as low as 7.5 percent and stood at 8.9 percent in 2001, with 2.3 million beneficiaries on the program. Since 2001, DC enrollment has increased substantially, to 3.9 million beneficiaries in 2014, or 18.0 percent of military veterans.

Liberalization of the program's medical eligibility requirements has contributed to the program's growth. After an Institute of Medicine report found suggestive evidence of a link between exposure to Agent Orange (an herbicide used by the U.S. military to defoliate trees in Vietnam, Cambodia, and Laos during the Vietnam War) and diabetes, the VA made Type II diabetes a presumptively service-connected medical condition (and thus eligible for DC benefits) for veterans who served in the "Vietnam theater" during the war, starting in 2001. As Duggan et al. (2010) show, DC enrollment subsequently increased much more rapidly for Vietnam-era veterans than for veterans who served after that war. In 2010, the VA added ischemic heart disease, Parkinson's disease, and B-cell leukemia to the set of service-connected conditions for Vietnam veterans who served in theater.

¹ About 8 percent of DC recipients receive enhanced benefits through "individual unemployability." For this group, significant earnings would likely cause them to lose their IU designation (Autor et al, 2014).

Other policy changes have affected more recent veterans. Starting in 2010, for veterans who served in Southwest Asia (including Afghanistan and Iraq) between 1990 and the present, presumptive conditions include chronic fatigue, fibromyalgia, and many unexplained illnesses linked to environmental exposure. Another policy change enacted in 2010 is that veterans with a diagnosis of post-traumatic stress disorder (PTSD) no longer needed to document specific events that caused the condition, such as bomb blasts, mortar attacks, or firefights. In 2008, the VA facilitated the application process by implementing the Quick Start program, which allows veterans to apply early for DC benefits in the two months before discharge (whereas previously the requirement was at least 60 days in advance).

The rapid rise in DC enrollment also coincided with a substantial increase in the average, inflation-adjusted monthly DC benefit. As Figure 2 illustrates, the most rapid growth in the DC program over time has been in beneficiaries with a CDR of 70 to 100 percent, as there were about 350,000 such beneficiaries in 2001 and over 1.1 million in 2013. The second fastest growth has been among beneficiaries with a CDR of 50 to 60 percent, while the number with a CDR of 0 to 20 percent has been nearly flat (less than 0.3 percent of DC recipients have a CDR of 0 percent). This shift towards higher CDRs over time occurs both because new beneficiaries are more disabled and because current beneficiaries successfully apply for an increase in their CDR; indeed, Autor et. al. (2014) show that the latter is a common phenomenon. As a result of this shift towards higher CDRs, the average inflation-adjusted monthly benefit grew by 46 percent from 2001 to 2013, from \$747 to \$1,094.

II. Analysis Using the Current Population Survey

The discussion above suggests that the growth of the DC program may have contributed to a decline in veteran’s labor supply over time. We begin our analysis by simply looking at how the labor supply of veterans has compared to that of non-veterans over time. As most veterans are male, we restrict our analysis to men. To explore this and subsequent questions, we use data from the March Supplement to the Current Population Survey (CPS) for the calendar years 1980 through 2014. The March CPS has a number of advantages for our approach. First, the sample size is large enough that we will have a significant number of veterans in the sample, even when we estimate models separately for five-year periods, as described below. It is available over a long time period, spanning both the period of rapid DC program growth (2002 to present) and an earlier period when enrollments were fairly stable. Finally, for our analysis exploring responsiveness to economic conditions, the availability of state and county-level geographic identifiers is useful, as the data may be linked to unemployment rates from the Bureau of Labor Statistics.

For our first analysis, we estimate straightforward linear probability models of the form:

$$INLF_{it} = \beta_0 + \beta_1 Vet_{it} + R_{it} + A_{it} + \lambda_t + \varepsilon_i$$

where $INLF_{it}$ is a dummy variable equal to 1 if individual i in year t is in the labor force and Vet_{it} is a dummy equal to 1 if the individual is a veteran. Initially we use a sample of men age 25 to 64 for the analysis. Our specifications include 40 single year-of-age indicators (A), three indicators of race and Hispanic ethnicity (R), and year indicators (λ).² As we are interested in whether the effect of being a veteran on labor force participation is changing over time, we estimate separate regressions for seven five-year groups, from 1980-1984 through 2010-2014.

² The race indicators are black and other; white is the omitted group. If an individual reports that he is biracial, a value of 0.5 (rather than 1) is used for each of the two corresponding race variables.

The results of this analysis are shown in Table 1, with only the *Vet* coefficient reported for simplicity. We note that the share of the sample that has served in the military is declining rapidly over time, from 45 percent in 1980-84 to 12 percent in 2010-2014, as birth cohorts with high rates of military service, such as those who served in World War II, age out of our sample.

In the first period, 1980-1984, the labor force participation rate of veterans is 0.97 percentage points higher than that of non-veterans, controlling for any potential differences in the age and racial composition of the veteran and non-veteran populations. We have not controlled for potential differences in education or health, a subject to which we return below. This coefficient is statistically significant at the 1 percent level, as are all of the coefficients displayed on the table. In the following three time periods, 1985-89, 1990-94, and 1995-99, the coefficients remain positive and of a similar magnitude, ranging from 0.64 to 1.19 percentage points. Thus throughout the 1980s and 1990s, veterans are roughly one percentage point more likely to be in the labor force.

Starting with the 2000-04 period, the coefficient turns negative and is of a similar magnitude, indicating that veterans are now nearly 1 percentage point less likely (-0.85) to be in the labor force. This negative effect strengthens over time, to -1.68 in 2005-09 and -4.30 in 2010-2014. From the beginning to the end of our sample period, there is a swing of approximately 5 percentage points in veteran males' labor force participation relative to non-veteran males.

This relative decline in veteran's labor force participation coincides with the rapid growth in the DC program. As shown on Table 1, the share of veterans in the March CPS sample reporting that they receive DC income rises from 5.4 percent in 1990-94 to 12.9% in 2010-2014 (data for earlier periods is not available due to changes in variable definitions over time). While

these figures are somewhat lower than the DC participation rates from administrative data reported above, as might be expected since underreporting of government transfer income in survey data is common (Meyer and Sullivan, 2008), the trends in both are very similar.

Yet we must be cautious in inferring too much from these results, as other factors in the post-2000 period might also have contributed to these findings. To probe this question further, in Table 2 we report the results of estimating these models separately for four age groups, 25-34, 35-54, 55-64, and 65-74 (the latter group was not included in the Table 1 results). The results are somewhat noisier, as sample sizes are smaller than in Table 1, but interesting patterns emerge nonetheless.

In the age 55-64 group, veterans are roughly equally likely to be in the labor force as non-veterans up through the 2000-2004 period, but 2.9 points less likely in 2005-09 and 7.8 points less likely in 2010-14; both coefficients are statistically significant and the 2010-14 effect is nearly twice as large for this age group as for the sample as a whole. A closer analysis of the results strongly suggests a role for the DC program. The sample that is age 55-64 in these two time periods is composed almost entirely of the birth cohorts that served in Vietnam, who gained easier access to DC benefits starting in 2001, as discussed above. In fact, most of the Vietnam cohorts were in the 35-54 age group in 2000-2004, which may help to explain why this group was significantly less likely to work in this period (-1.5 points). From the beginning to the end of the sample period (1980-2014), veterans age 55-64 experience a roughly 8 point drop in their labor force participation, relative to non-veterans, while veterans age 35-54 experience a smaller but highly significant drop of about 3.5 points, from being 2 percentage points more likely to be in the labor force to being 1.5 points less likely.

The results for the youngest and oldest veterans are of interest as well. For veterans age 25-34, there is no consistent effect of veteran status on labor force participation until 2010-14, when veterans are 4.3 points less likely to participate, a highly significant effect. The later timing of the decline for young veterans is consistent with the fact that they were not eligible for the 2001 liberalization of DC eligibility criteria, which only affected Vietnam veterans, but were affected by the 2010 change involving PTSD and other presumptive conditions. For the oldest veterans, the results are a bit less clear, as they are significantly less likely to work in both the earlier and the later periods, but it is perhaps worth noting that the largest and most significant effect is in 2010-14 (-3.6 points).

Easier access to the DC program may lead to reduced labor force participation, as we believe is suggested by the results in Tables 1 and 2. But this access may have more subtle effects as well. In the case of SSDI, Autor and Duggan (2003) estimate that the easier access to benefits that followed a 1984 policy change may have made low-skilled workers who lost a job more likely to respond by exiting the labor force and applying for DI. The liberalization of medical eligibility for DC benefits may have had a similar effect, leading the employment of veterans to become more sensitive to economic conditions relative to that of non-veterans.

We explore this hypothesis by estimating regression models of the following form:

$$INLF_{ist} = \beta_0 + \beta_1 Vet_{ist} + \beta_2 Vet_{ist} * URate_{st-1} + R_{ist} + A_{ist} + \lambda_t + \lambda_s * \lambda_t + \varepsilon_{ist}.$$

This is similar to earlier models, where the subscript *s* now refers to state, but adds state by year indicators as well as an interaction term between the state-level unemployment rate (lagged by one year and de-meant) and the veteran dummy. The main effect of unemployment on labor force participation is absorbed in the state by year dummies. One key difference from earlier models is that we now have only two time periods, 1989-2001 and 2002-2014, corresponding to

periods of relative stability and growth for the DC program. For the 2002-2014 period, we estimate a version of the model using the country-level unemployment rate (and county by year dummies), which may correspond more closely to local economic conditions, but we are unable to do so for 1989-2001 due to a lack of county identifiers in the March CPS prior to 1996.

The results of this exercise are shown on Table 3. In the earlier time period, there is no evidence that veterans are more responsive to economic shocks than non-veterans; if anything, they are less responsive, as coefficient on the interaction term is positive and marginally significant for the full sample (age 25-64), though small, at 0.2 points. By contrast, in the later period we find that that the labor force participation of veterans is more cyclically sensitive than that of non-veterans. For the sample as a whole, a one point increase in the unemployment rate lowers labor force participation by 0.4 to 0.5 points more for veterans than for non-veterans. But the effect is much larger for veterans age 25-34 and for veterans 55-64, at 0.8 to 1.0 points. While this is admittedly an indirect test of the effect of the DC program on labor force participation, the fact that veterans' greater cyclically sensitivity emerges only in 2002-2014 as DC eligibility is being liberalized, and that the effect is particularly strong for the age groups that include the GWOT and Vietnam veterans affected by liberalization, suggests that providing easier access to benefits may have affected labor force participation by allowing veterans to respond to economic shocks by withdrawing from the labor market.

III. Discussion and Conclusions

Our results document that the labor force participation of male veterans has fallen over time relative to that of their non-veteran counterparts, by about 5 percentage points since the late 1990s. We provide suggestive evidence that the striking growth in the DC program since 2001

may help to explain this trend, as the timing of the decline lines up well with the growth of the DC program, especially when looking at specific age groups. Our finding that the labor force participation of veterans has become more cyclically sensitive since DC enrollments began to rise sharply is further suggestive of a labor supply effect of the DC program.

To explore what our results might imply about the employment potential of the marginal DC recipient, we conduct the following back-of-the-envelope calculation. We estimate that the (relative) labor force participation rate of veterans has fallen by 5 percentage points over the past fifteen years, while the share of veterans receiving DC benefits has risen by 9 percentage points. Under the strong, and perhaps unlikely, assumption that liberalized DC enrollment is the only factor driving the drop in veterans' labor force participation, this would imply that something like 55 percent (5/9) of new DC recipients (those that would not have enrolled without the recent liberalization of the program) would be working in the absence of the program. This would represent an additional 880,000 working veterans (55 percent of the 1.6 million new enrollees between 2001 and 2014). This figure is higher than similar estimates for SSDI by Maestas et. al. (2013) and French and Song (2014), who estimate that about 28 percent of marginal SSDI recipients could have worked, or Autor et. al. (2014) for the DC program, whose estimate based on the liberalization of DC benefits for BOG Vietnam veterans is 18 percent. But the effect may be higher in our case because the average inflation-adjusted benefits have also grown during this period due to the increase in the average CDR.

As noted in the introduction, there are other factors that may have contributed to the decline in veterans' labor force participation over time, and these factors merit further research.³

³ In work that is not shown here due to space constraints, we find that controlling for education has little effect on the results, suggesting that changes in the composition of veterans – at least in this one regard – are not driving the decline in veterans' labor force participation that we document. We further find that veterans report themselves to

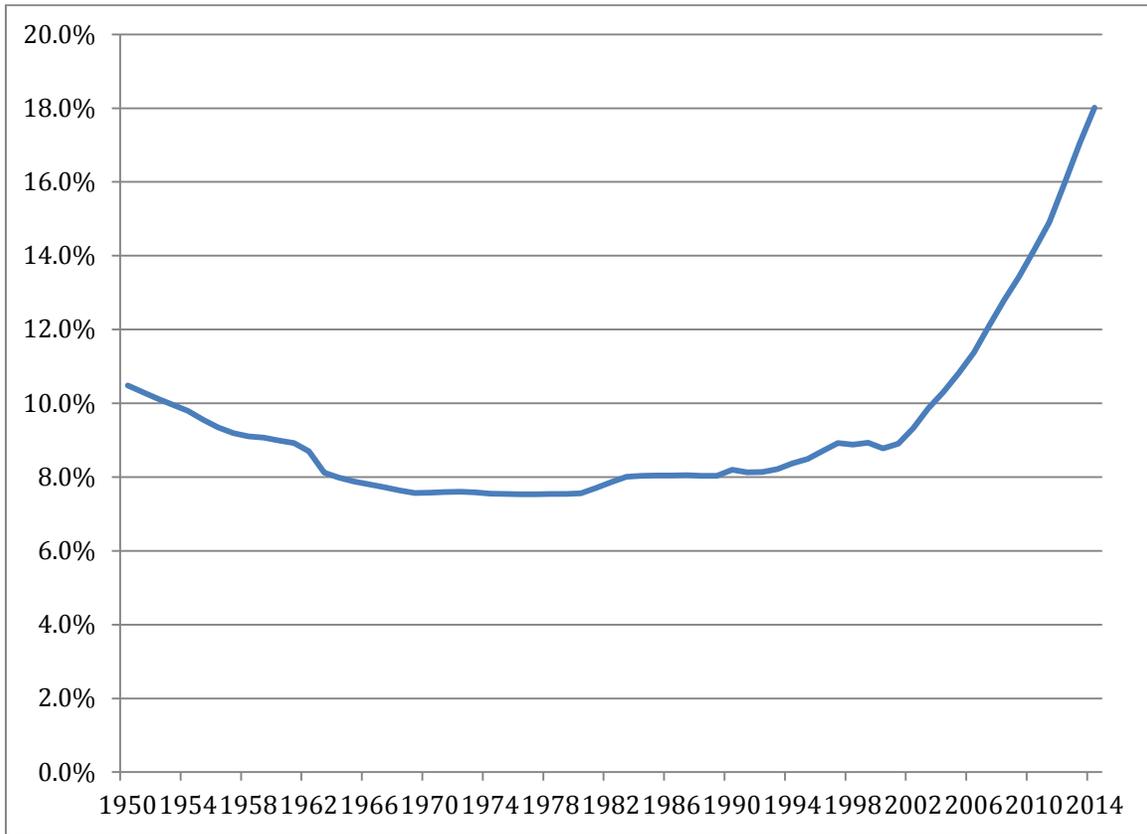
Our discussion has focused on the liberalization of eligibility criteria as an explanation for the growth in the DC program. But it is important to acknowledge that the program may be growing for the right reasons if veterans are increasingly disabled over time, due to injuries sustained in GWOT conflicts or to effects of Vietnam service that are only now emerging or perhaps were present all along even if the veteran was not eligible for DC benefits. To the extent that this is the case and reflects a high disutility of work among veterans, the decline in labor force participation that has accompanied the growth of the DC program may be efficient. While the evidence presented here and in Autor et. al. (2014) may cast some doubt on this more optimistic view of the program's growth, ultimately much more research is needed on this program that is both critical to the well-being of many veterans and absorbing an ever-larger share of federal tax revenues.

be in worse health over time and that controlling for self-reported health weakens but does not eliminate the estimates discussed here.

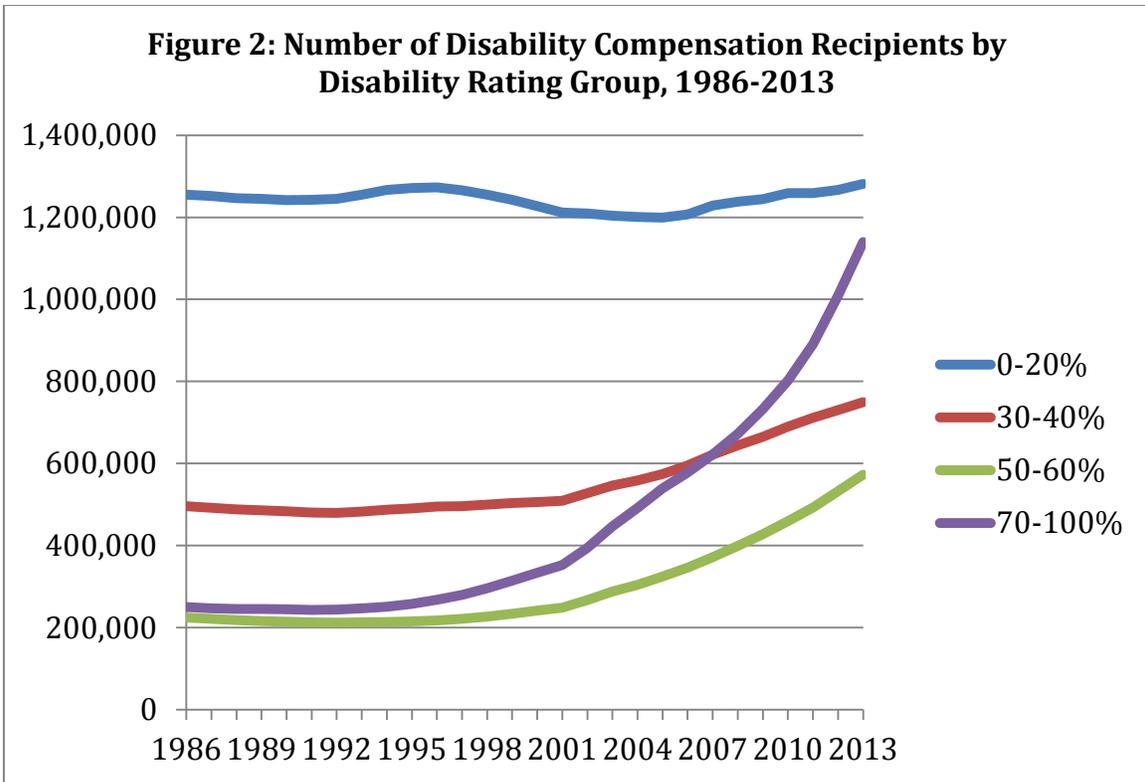
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Figure 1: Share of Veterans Receiving Disability Compensation Benefits, 1950-2014



Source: Authors' calculation from *Statistical Abstract of the United States*, 1950-2014.



Source: Department of Veterans Affairs, Veterans Benefits Administration; 1985-1998: *COIN CP-127 Reports*; 1999-2013: *Annual Benefits Reports*
 Prepared by the National Center for Veterans Analysis and Statistics.

Table 1: Labor Force Participation Regressions, CPS Men Ages 25-64

	1980-1984	1985-1989	1990-1994	1995-1999	2000-2004	2005-2009	2010-2014
Veteran	0.00967*** (0.00148)	0.00830*** (0.00162)	0.01190*** (0.00172)	0.00643*** (0.00199)	-0.00851*** (0.00189)	-0.01680*** (0.00221)	-0.04300*** (0.00275)
% Vets	45.2%	36.0%	28.4%	23.0%	18.1%	15.0%	12.4%
% of Vets on DC	N/A	N/A	5.4%	6.3%	7.0%	9.4%	12.9%
R-squared	0.138	0.147	0.134	0.114	0.097	0.088	0.076
# of Observations	183,698	174,780	175,772	152,584	206,326	189,421	157,674

Notes: Regressions include single year of age dummies, race (black and other) and Hispanic ethnicity dummies, and year dummies. *** indicates statistical significance at the 1% level.

Table 2: Labor Force Participation Regressions by Age, CPS Men

	1980-1984	1985-1989	1990-1994	1995-1999	2000-2004	2005-2009	2010-2014
Veteran: 25-34	-0.00373* (0.00219)	-0.00289 (0.00289)	0.00253 (0.00345)	0.01770*** (0.00420)	0.00838* (0.00448)	0.000755 (0.00579)	-0.04280*** (0.00713)
Veteran: 35-54	0.01900*** (0.00175)	0.01790*** (0.00182)	0.01200*** (0.00197)	0.00354 (0.00237)	-0.01470*** (0.00227)	-0.01330*** (0.00280)	-0.01380*** (0.00360)
Veteran: 55-64	0.00468 (0.00524)	-0.00719 (0.00560)	0.01850*** (0.00556)	0.00574 (0.00581)	-0.00303 (0.00499)	-0.02920*** (0.00478)	-0.07840*** (0.00544)
Veteran: 65-74	-0.01320** (0.00572)	-0.02190*** (0.00566)	-0.00271 (0.00596)	0.01160* (0.00658)	-0.00668 (0.00607)	-0.01040* (0.00619)	-0.03550*** (0.00621)

Notes: Regressions include single year of age dummies, race (black and other) and Hispanic ethnicity dummies, and year dummies. *** indicates statistical significance at the 1% level.

**Table 3: Labor Force Participation Regressions
with Unemployment by Age, CPS Men**

	1989-2001	2002-2014	
Veteran: 25-64	0.00746*** (0.00222)	-0.02400*** (0.00275)	-0.02350*** (0.00295)
Veteran * UE Rate: 25-64	0.00163* (0.000926)	-0.00411*** (0.00134)	-0.00548*** (0.00114)
Veteran: 25-34	0.00628** (0.00243)	-0.01350** (0.00572)	-0.01190** (0.00550)
Veteran * UE Rate: 25-34	-0.00206 (0.00155)	-0.00833*** (0.00253)	-0.00855*** (0.00248)
Veteran: 35-54	0.00856*** (0.00219)	-0.01320*** (0.00311)	-0.01280*** (0.00328)
Veteran * UE Rate: 35-54	0.00510*** (0.00110)	-0.00147 (0.00121)	-0.00231* (0.00124)
Veteran: 55-64	0.01020* (0.00580)	-0.03860*** (0.00595)	-0.03630*** (0.00561)
Veteran * UE Rate: 55-64	0.00232 (0.00294)	-0.00825*** (0.00189)	-0.01000*** (0.00202)
Veteran: 65-74	0.00994* (0.00517)	-0.02100*** (0.00532)	-0.01690*** (0.00586)
Veteran * UE Rate: 65-74	0.00925*** (0.00317)	-0.00061 (0.00206)	-0.00626*** (0.00228)
Unemployment Rate	State	State	County

Notes: Regressions also include single year of age dummies, race (black and other) and Hispanic ethnicity dummies, year dummies, and state(county) by year dummies. Unemployment Rates are demeaned by national average of 6.42 (1979-2013)

*** indicates statistical significance at the 1% level.