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The Relationship Between Training Program Participation and Gainful Civilian Employment of Gulf War-Era II Veterans

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Abstract

The GI Bill of Rights has helped millions of veterans with their transition into civilian employment through education and training programs. In addition to higher education benefits, the GI Bill provides educational assistance for vocational training, entrepreneurship courses, apprenticeships, on-the-job training, and remedial courses. Compared to previous studies, this study is unique in three aspects. First, this study focuses on skill development through training programs completed by veterans rather than higher education or educational attainment. Second, the training categories are constructed based on job-specific versus general properties of human capital theory. Finally, the study captures all training programs completed by veterans regardless of provider or sponsoring organization by using the National Longitudinal Survey of Youth 1997 (NLSY97). Generalized linear mixed models are used to determine the relationship between the type of training program and gainful employment. Pre-employment training programs were found to be positively related to the gainful employment of Gulf War-Era II veterans.

Keywords: human capital, veterans, training

Introduction

According to Drucker (2016), the creation and societal response to the GI Bill of Rights was the transforming event that "signaled the shift to a knowledge society" (p. 119). Transforming events only occur every few hundred years. As a transforming event of the United States, the GI Bill of Rights is credited for changing the worldview, values, social and political structures, arts, and institutions.

The main purpose of the GI Bill of Rights is to provide veterans a transition to civilian life through veteran programs. The most popular benefits are the various educational assistance programs. By 1984, the previous versions of the GI Bills helped 8.5 million veterans attend college (Dortch, 2016). Table 1 provides a comparison of the numbers of participants by educational program. Today, the Post-9/11 GI Bill provides veterans with enhanced educational benefits used by nearly 800,000 students each year (Dortch, 2017). The Gulf War-Era II veterans that qualify for benefits under the Post-9/11 GI Bill are the focus of this study.

Upon leaving military service, information on the higher education benefits available through the GI Bill is provided to servicemen and women in multiple ways. Completion of the Transition Assistance Program (TAP) Benefits I and II courses held by the U.S. Department of Veterans Affair (VA) is a mandatory part of military separation. Career counselors and the VA website also provide information on educational assistance programs. Nearly all educational assistance information provided to veterans is aimed towards higher education. Once enrolled in college, government agencies, non-profit organizations, and institutions of higher education actively monitor the demographics, experiences, and outcomes of student veterans and student veteran alumni (GAO, 2015). Academia has also studied the experiences and returns to higher education under the various GI Bills (Angrist, 1993; Kleykamp, 2013; Steele, Buryk, & McGovern, 2018; Olsen et al., 2018).

Problem statement

Yet, higher education is not the ideal path for everyone. Thirty-six percent of the non-veteran population (>25 years) have earned a bachelor's degree or higher. Likewise, 38% of Gulf War Era-II veterans (serving September 2001 forward) over 25 years of age possess at least a bachelor's degree

(Bureau of Labor Statistics, 2018). Frequently, the career paths of veterans do not require degrees. The top three civilian occupations with the highest veteran overrepresentation are protective service, installation/maintenance/repair, and transportation (Schulker, 2017). In addition to higher education, the GI Bill of Rights provides educational assistance for skill development through vocational training, entrepreneurship courses, apprenticeships, on-the-job training, and remedial courses. Unlike the academic programs, the VA does not actively promote these programs or measure outcomes (GAO, 2015; Cumberland, 2017). Further, no academic studies were found that measured the returns to skill development through training for Gulf War-Era II veterans. At the same time, the Workforce Innovation and Opportunity Act (WIOA) requires performance measures and evidence-based practices for training programs. Specifically, the primary indicators of performance include employment rates and earnings. Veterans receive priority of service for all job training programs funded by the Department of Labor, including WIOA training programs.

Although no studies were found on the returns to training, many articles emphasize the importance of addressing challenges veterans face. One of the largest challenges is the transition to civilian employment. In response, a special issue of *Advances in Developing Human Resources* was published in 2017 devoted to "veterans in career transition and employment." Topics include skills transfer, organizational behavior, coaching, talent management, career development, disabilities, entrepreneurship programs, and training transfer. No articles were dedicated to the evaluation of training programs.

Minnis (2017) explained a common problem veterans face during the transition process; civilian employers are unfamiliar with military duties and how these past duties translate to civilian job experience. Compounding this lack of awareness, veterans frequently do not understand the hiring process and the expectations of civilian employers. Together, this lack of knowledge creates a cultural divide. Training and apprenticeship programs can be used to transition veterans into civilian employment. The goal of educational assistance programs covered by the GI Bill is gainful employment. In other words, the training and apprenticeship programs are expected to improve the employment status of veterans as well as increase their income.

The purpose of this study is to draw upon human capital theory to examine the relationships between different types of training programs and gainful employment for Gulf War-Era II veterans. Gainful employment is determined by both employment status and income. Through a review of the literature, employment and income models were developed to capture the relationship between types of training programs and gainful employment. The job-specific versus general attributes of human capital theory were taken into consideration to define three training categories—school-based training, pre-employment training, and post-employment training.

Compared to previous studies, this study is unique in three aspects. First, this study focuses on skill development through training programs completed by veterans rather than higher education or educational attainment. Second, the training categories constructed in this study are based on the job-specific and general properties of human capital theory. Finally, the study captures all training programs completed by the veteran regardless of provider or sponsoring organization.

Literature Review

This section is divided into four parts. The first part describes the population of interest—Gulf War-Era II veterans. The second part presents the theoretical foundation of the study—human capital theory. The third part examines reports and studies of the current veterans training programs. Finally, a synthesis is provided

Gulf War-era II veterans

The Bureau of Labor Statistics (2018) estimated the number of veterans who served during Gulf War-Era II (consisting of Afghanistan and Iraq conflicts from September 2001 to present) to be 3.9 million. Compared to other veteran groups, the Gulf War-Era II veteran group is made up of a greater percentage of women (18% versus 4%). Gulf War-Era II veterans are more likely to have a service-connected disability, use health care only provided by the VA, use food stamps, lack health insurance, and have no source of income (VA, 2017). Although veterans have developed marketable skills while serving in the military, they also face unique employment barriers. Some of these employment barriers include non-transferable military skills, inability to successfully communicate relevant military training to civilian employers, potential for mental health disabilities, and reluctance to ask for assistance or support (Switzer, 2016).

Human capital theory

The GI Bill, as well as most education policies, is based on human capital theory. According to Schultz (1961), expenditures on human capital are comprised of both consumption and investment components. To isolate the investment component of human capital expenditure, the change in human capital expenditure is the focus. For example, a calculation of the change in earnings associated with the completion of a training program isolates the investment component of the human capital expenditure. In essence, a change in expenditure allocation—not the total rate—alters the rate of return. Direct expenditures on education, health, internal migration, forgone earnings, and on-the-job training were all viewed by Schultz as investments in human capital.

The essence of human capital theory can be simply stated as investments by individuals in education and training programs that lead to increased income. Becker (2007) distinguishes between general human capital and job-specific human capital. Whereas general human capital is transferable to any organization, job-specific human capital consists of skills unique to the job. The distinction of training in specific skills as a form of human capital extends the investment decision to organizations. Just as individuals invest in general skills to better themselves, organizations invest in training specific skills to increase employee productivity and ultimately profits. Job-specific skills increase an individual's productivity solely for that particular organization. In contrast, an investment in general skills increases an individual's productivity in any organization (Dobbs, Sun, & Roberts, 2008).

Veteran training programs

Training benefits for qualified service members and military veterans who served on active duty after September 10, 2001 (9/11) are established in the Post-9/11 GI Bill. The August 2017–July 2018 payment allowance for tuition and fees for training and education programs that do not lead to a degree is $22,805.34. In addition, veterans are eligible for a housing allowance and $83 per month for books and supplies. Participants in apprenticeships and OTJ training programs receive a housing allowance and the $83 monthly stipend for books and supplies. Students enrolled in flight or correspondence training programs are not eligible for the housing or book allowances, but are eligible to receive the tuition and fees benefit—$13,031.61 for flight training and $11,076.86 for correspondence training (Dortch, 2017). Training programs covered by veteran benefits have varying purposes with varying degrees of job-specific human capital. The programs reviewed in this section are divided into school-based training programs, pre-employment training programs, and post-employment training programs.

School-based training consists of basic instruction to address education and training deficits. Examples of school-based education include remedial courses and General Education Development (GED) preparation. A high school diploma is generally a minimum requirement for enlistment. Prior to 9/11, nearly 100% of enlistees had a high school diploma. National Public Radio (NPR) reported

that the percent of enlistees with a high school diploma dropped to 79% post-9/11 (Inskeep and Bowman, 2008).

For some high school dropouts, ChalleNGe programs are an option. These programs are quasi-military programs run through the National Guard that use positive youth development (PYD). PYD considers youth as positive resources in need of development. The 17-month residential program is designed as a second chance program for youth who have dropped out of high school, are unemployed, currently drug-free, and do not have any serious criminal offenses. There is no military service requirement but approximately 18% of the 772 surveyed program participants ultimately enlisted in the military. Compared to the control group (451 program applicants), participants in a ChalleNGe program were more likely to have greater income, earned a high school diploma or GED, earned college credit, and employed three years after program completion. Older participants (entering the program at 17 or 18) were thought to have benefited greater than their younger counterparts (Millenky, 2016).

The goal of **pre-employment training programs** is the successful transition of individuals into the civilian labor force. Examples of pre-employment training programs include vocational education and job search programs.

According to the *Federal Benefits for Veterans, Dependents and Survivors* booklet (VA, 2018), two pre-employment training-related programs are intended for all transitioning military service members—the Transition Assistance Program (TAP) and the Veterans Opportunity to Work (VOW) to Hire Heroes Act. TAP provides job search and related assistance in a three-day workshop for service members as they enter the civilian workforce. The workshop includes personal appraisal, career exploration, resume writing, job search strategies, mock interviews, job offer evaluation, and VA benefit information. The VOW to Hire Heroes Act of 2011 requires all transitioning service members to complete a TAP workshop. The act extends benefits an additional year for education and training at community colleges and technical schools. The act also provides an additional year of vocational rehabilitation and employment benefits for disabled veterans.

Testimony before the Subcommittee on Economic Opportunity called for improvements in the reporting and monitoring of both programs. Specifically, the Department of Defense lacked accurate federally mandated participation rates of separating service members, did not ensure participants met TAP prescribed timeline completion, failed to comply with all TAP and VOW to Hire Heroes Act of 2011 legislative requirements, and either did not meet internal program criteria or did not establish sufficient program criteria. Without proper monitoring and reporting, the relationships between program participation and employment outcomes cannot be determined (GAO, 2014).

While in the military, service members take part in a variety of military-specific training programs. The topics of training include physical fitness, service member orientation, and specialized technical training. The trainings for specialized work are based on the Military Occupational Specialty used by the Army and Marine Corps, the Specialty Code used by the Air Force, and the Rating used by the Navy. These trainings are unique to a service member's military role and various leadership positions inherent within the structured military organizational hierarchy. The RAND Corporation provides reports on the various types of specialized training available to military service members to build the necessary knowledge, skills, and proficiencies intended for the technology-driven military environment. They also provide a guide for translating nontechnical skills from military courses into civilian employer terms. For example, a "corporal course" in the Marine Corps develops teamwork and team building, critical thinking, and leadership qualities that inspire others to accomplish organizational goals (Hardison, McCausland, Shanley, Saavedra, Martin, Wong, Clague, & Crowley, 2017, p. 49).

Syracuse University's Institute for Veterans and Military Families examined the relationship between military-specific training programs and employment outcomes (Maury, Stone, Bradbard, Armstrong, & Haynie, 2016). They found that veterans earned significantly more in jobs that matched their preferred career path and aligned with their military occupational training. For an enlisted service member with a bachelor's degree or higher, the average salary is reported as $55,488, with jobs that are both in his or her preferred field and aligned with military training versus $44,046 with jobs that are non-preferred and unaligned. For enlisted service members holding less than a bachelor's degree, the average salary is reported as $46,649, with jobs that are preferred and aligned with military training versus $31,279 with jobs that are non-preferred and unaligned.

Post-employment training programs are designed for current employees to develop or enhance the skills needed to perform job duties. Examples of post-employment training programs include on-the-job training and employer-sponsored training programs. According to the *Federal Benefits for Veterans, Dependents and Survivors* booklet, post-employment training-related programs include Vocational Rehabilitation and Employment (VR&E), On the Job Training (OJT), Non-Paid Work Experience (NPWE), and Special Employer Incentive (SEI) (VA, 2018).

The VR&E helps service members and veterans with service-connected disabilities prepare, find, and maintain employment. Participants are eligible for 12 years after separating from active service or notifying the VA of the service-connected disability. The VR&E works in conjunction with federal, state, and private agencies to transition the service member or veteran into a civilian career.

The OJT program offers employers an incentive to hire veterans by providing wage supplements as well as necessary tools. The employer is responsible for paying the veteran a rate equivalent to the apprentice wage and the VR&E supplements the veteran's wage up to the journeyman wage rate. As the veteran progresses through the apprenticeship, the employer is required to pay an increasing proportion of the wages. The NPWE program is sponsored by federal, state, or local government agencies to provide veterans with hands-on experience. Finally, the SEI provides employers up to six months of reimbursements for as much as 50% of the veteran's salary. Veterans are hired directly by participating employers and are expected to successfully complete the program.

Synthesis

The general versus job-specific attributes of human capital influence the hiring and compensation decisions of employers. Employers value job-specific skills over general skills (Becker, 2007), translating to a greater likelihood of employment and higher incomes for individuals with specific skillsets. This aspect is taken into consideration by constructing categories of different training types.

School-based training programs focus on the development of general skills that are less valued by employers. Given the low employer demand for general skills, school-based training is not expected to increase the likelihood of employment or increase income.

HYPOTHESIS 1: *Completion of school-based training programs is not related to the gainful employment of veterans.* Pre-employment training programs provide participants both general skills to address educational deficits and employer-demanded specific skills to enhance an individual's employability. As such, pre-employment training programs are expected to increase both the likelihood of employment and income due to enhancing job-specific skills.

HYPOTHESIS 2: *Completion of pre-employment training programs is positively related to the gainful employment of veterans.* Finally, post-employment training is predominantly supplied by the employer to develop highly valued, specific skills directly related to the organization. The investment in job-

specific human capital is expected to improve the likelihood of employment as well as increase the training participant's income.

HYPOTHESIS 3: *Completion of post-employment training programs is positively related to the gainful employment of veterans.*

Research Design

A review of the literature found that the ideal data sources are longitudinal studies. The preferred statistical techniques include a fixed effects component, which allows individuals to act as their own control. This section describes the data source, operational definitions, data cleaning process, and statistical methods used in this study. All regression analysis was performed in SAS 9.3. In addition, the statistical tests and results relating to the assumptions of regression are available in SAS, Stata, and SPSS (Flatt, 2019).

Data source and sample description

This study used the publicly available data set, NLSY97, which documents the transition from school to work of the population born between 1980 and 1984. The survey originally consisted of 8,984 individuals interviewed each year between 1997 and 2013 for a total of 16 rounds to date (Bureau of Labor Statistics, 2017). The subset of Gulf War-Era II veterans between 2001 and 2011 is 360 veterans with a total of 2,075 observations. Table 2 (below) provides the number of observations by year for each training category. Table 3 (next page) shows the number of cumulative training programs completed by the veterans. Approximately 53% (192 out of 360) of veterans participated in at least one type of training program.

Table 2

Training observations by year

Training	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	TOTAL
School-Based Training												
0	6	27	67	103	165	208	243	274	294	316	337	2,040
1		1	1	1	3	1	5	2	4	4	6	28
2					2		1	1				4
Pre-Employment Training												
0	4	23	59	91	156	199	222	256	274	299	335	1,918
1	2	3	8	11	12	9	21	16	23	18	6	129
2		1	1	2	2	1	5	2		1	2	17
3							1	3	1			5
4										1		1
8										1		1
Post-Employment Training												
0	6	24	59	96	156	193	230	256	281	301	317	1,919
1		4	8	8	12	15	13	15	15	15	22	127
2			1		1		5	5	1	3	4	20
3						1		1	1			3
6					1		1			1		3

Table 3
Cumulative training participation

Number of Trainings	Total School-Based Training		Total Pre-Employment Training		Total Post-Employment Training	
	#	%	#	%	#	%
0	339	94.2	249	69.2	260	72.2
1	12	3.3	65	18.1	60	16.7
2	6	1.7	25	6.9	23	6.4
3	2	0.6	13	3.6	5	1.4
4			5	1.4	4	1.1
5			1	0.3	2	0.6
6			1	0.3	1	0.3
7	1	0.3			3	0.8
8			1	0.3		
9					1	0.3
10						
11					1	0.3
Total	360	100	360	100	360	100

Operational definitions and data cleaning

Gainful civilian employment. There were two employment outcomes considered independently in this study that encompass gainful civilian employment—the number of weeks employed and the income associated with civilian employment. Employment is defined as the state of being formally employed part-time or full-time. It includes both self-employment and employment association with an employer. Employment status for each week from the first week of 1997 through the 29th week of 2014 is found in the NLSY97 EMP_STATUS field.

Total gross annual income from the previous year is captured in question YINC-1700 in survey years 1997 through 2013. The income variable includes wages, salary, commissions, or tips from all jobs during the previous year.

Training categories. The training categories are based on question YTRN-3600. The question is repeated until all attended trainings by the survey participant during the survey year have been captured. Depending on the year, the number of individual training programs attended ranged from four in 1997 to ten in 2009. In other words, there are ten separate responses to question YTRN-3600 (YTRN-3600.01–YTRN-3600.10) in 2009. In addition, all questions pertaining to characteristics about the training program have ten separate responses in 2009.

Prior to constructing the training categories, each training program was adjusted for incompletion. After adjusting for incompletion, each training measurement was weighted to reflect the length of the training program using start and end dates. Once each training program was weighted, variables representing the three types were constructed (see table 4 next page).

Table 4
Categorization of training programs

Training Categories		
School-based (General education)	***Pre-employment Civilian*** (Combination of general education and job-specific knowledge)	***Post-employment Civilian*** (Job-specific knowledge)
Nursing school Adult Basic Education (pre-GED) GED program Community or junior college School based / Includes ROTC	Business or secretarial Vocational, technical, or trade Vocational rehabilitation center Online or correspondence course Seminar or training outside of work Government training other than military, vocational rehabilitation, and veteran Job search or job placement training	Apprenticeship program Formal company training run by employer Seminar or training program at work run by someone other than employer

Categorization of training programs reported in the NLSY97 into school-based training, pre-employment training, and post-employment training was assisted by four veterans. The veterans were provided operational definitions of the training categories and the list of NLSY97 training programs. They were asked to assign each individual training program to a training category. The intra-class correlation of the two-way random effects model with absolute agreement is .50 (fair). The average rating—the correlation of this team's mean rating with another team of raters—is .80.

Statistical method

Linear mixed models (LMM) are statistical models that can be applied to continuous outcome variables characterized by normally distributed residuals that might be dependent or have non-constant variances. In particular, LMM is an appropriate choice for study designs using longitudinal data sets since measurements of the same individual over time are likely to be correlated (Dobson, 2002). Generalized linear mixed model (GLMM) is an extension of LMM that can accommodate models suspected to have non-linear relationships or residuals with other distributions such as binomial or gamma distributions.

For this study, there were two GLMM models. Model 1 examined the relationship between weeks employed and training with a logistic link function and binomial distribution. This employment model consisted of eleven covariates, three independent variables, and random effects.

Model 1: Employment

$$\text{logit}(\text{WeeksEmployed}_{it}/\ \text{WeeksLaborForce}_{it}) = \beta^{*}\ X_{it} + \beta_{11}\ ^{*}\ (\text{CUMULATIVE SCHOOL-BASED TRAINING}_{t}) + \beta_{12}\ ^{*}\ (\text{CUMULATIVE PRE-EMPLOYMENT TRAINING}_{t}) + \beta_{13}\ ^{*}\ (\text{CUMULATIVE POST-EMPLOYMENT TRAINING}_{t}) + Z_{it}\ \gamma_{i}$$

The second model analyzed the relationship between income and training with a log link function and a gamma distribution. Model 2 included 13 covariates, three independent variables, and random effects.

Model 2: Income

$$\log(\text{INCOME}_{it}) = \beta^{*}\ X_{it} + \beta_{21}\ ^{*}\ (\text{CUMULATIVE SCHOOL-BASED TRAINING}_{t}) + \beta_{22}\ ^{*}\ (\text{CUMULATIVE PRE-EMPLOYMENT TRAINING}_{t}) + \beta_{23}\ ^{*}\ (\text{CUMULATIVE POST-EMPLOYMENT TRAINING}_{t}) + Z_{it}\ \gamma_{i}$$

Table 5 (see appendix) presents the descriptive data for the variables included in the models. The maximum net worth of $600,000 is the cap reported in the survey responses. Any responses over $600,000 were changed to $600,000. Likewise, income is capped at the average of the top 2% of all survey participants. All training variables are positively skewed and leptokurtic.

Results

Model selection

Maximum Likelihood (ML) was chosen as the estimation method with an unstructured covariance. With unstructured covariance, no constraints are imposed on the values. The first step in determining the appropriate GLMM is to test if the random effects associated with the intercept for each veteran can be omitted from the model. Based on the results of the likelihood ratio (LR) test of the random intercept model versus a nested model, the random intercept was included in model 1.

The second step in the process is to test the significance of the random effects of age. The LR test calculated from a comparison of the random effects model and the random intercept-only model from ML estimation found the random effects of age should be retained in the model.

Finally, the model is reduced by removing nonsignificant fixed effects one at a time and examining the results. In particular, the Akaike Information Criterion (AIC) is a measurement of the quality of a statistical model and used in model selection. Elimination of non-significant variables based on an alpha of 0.05 resulted in a minimal change in the AIC. Based on theory and the AIC results, all variables were retained in the model (table 6 in appendix).

The statistical analysis for model 2 followed the same systematic process. In contrast to model 1, the following model focused on the relationship between income and training programs. In addition to the covariates found in the employment model, the income model included work experience and work experience squared as control variables (table 7 in appendix).

Accept Hypothesis 1: School-based training programs are not related to gainful employment. Participation in school-based training was not statistically significant in either model. As previously mentioned, a high school diploma is generally a minimum requirement for enlistment. Very few veterans in the sample participated in school-based training programs. Due to the lack of

data, no conclusion can be reached on the relationship between school-based training programs and gainful employment for Gulf War-Era II veterans.

Accept Hypothesis 2: Pre-employment training programs are positively related to gainful employment. Pre-employment training programs were positively related to both employment and income. Holding all other variables equal, completion of pre-employment training increased the odds of securing employment by $100*(e^{.3348} - 1)$ =39.8% and increased income by $100*(e^{.06412} - 1)$ =6.6%. Based on these results, pre-employment training programs are positively related to gainful employment for veterans.

Accept Hypothesis 3: Post-employment training programs are not positively related to gainful employment. Finally, post-employment training was not statistically significant in either model. Based on the lack of statistical significance, there is no relationship between post-employment training programs and gainful employment for Gulf War-Era II veterans.

Limitations and Future Research

Of particular note, the low inter-rater reliability in categorizing the training programs into different types of training programs is problematic. Low inter-rater reliability may increase the probability of type-II errors. In other words, the lack of agreement between raters could prevent the ability to detect a relationship that actually exists (Hallgren, 2012). Although there is a risk that a single training program is incorrectly categorized, the types of training consist of several different training programs.

The lack of long-term evaluation in veteran programs provides ample research opportunities. In particular, the most recent WIOA legislation mandates the development of performance measures and evidence-based practices. The outcomes under evaluation should not be limited to employment and income, but expanded to include other measurements aligned with the specific veteran program. The workforce development needs of Gulf War-Era II veterans are unique due to their demographics and experiences. Studies on the optimal workforce development programs that meet the specific needs of this population are vital for both veterans and employers.

Conclusion

Until 2009, the NLSY97 asked if each training program was paid for by the military, VA, or other government vocational rehabilitation program. Based on the last year of available information, one-third of the pre-employment training programs in this study were paid through a military or veteran program. Approximately 10% of veterans indicated their school-based or post-employment training programs were funded through a military, VA, or other government vocational rehabilitation program. Over the years, the question (YTRN-3800) has changed, which makes it difficult to use in a longitudinal study. However, at least some of the training programs included in this study were funded by the government through veteran programs. Four implications for public policy emerge from the results of this study.

Pre-employment training programs benefit veterans

Given the lack of outcome studies in this area, the main contribution of this study is to provide a foundation for future outcome studies on skill development through training programs for veterans. Although the VA does not monitor or measure training programs, this study suggests that pre-employment training programs result in the gainful employment of veterans.

Currently, veterans primarily learn about the training benefits offered under the GI Bill through word of mouth (GAO, 2015). The majority of veterans do not hold a bachelor's degree or higher. Training programs are a good way for veterans who are unable to attend an institution of higher education to use benefits provided by the GI Bill. The positive results from this study can be used to publicize and promote underutilized training benefits.

The relationship between different types of training programs and gainful employment is different for different populations

Under human capital theory, an investment in skills results in a return on investment, with job-specific skills valued higher than general skills. However, this relationship is dependent on the population. Not all types of education or training adhere to human capital theory for all populations. For example, the same type of study on formerly incarcerated individuals found that only post-employment training programs are positively related to gainful employment. The results of the study emphasized the important role of employers in addressing the mass incarceration problem. The training investment for formerly incarcerated individuals by employers acted as a signal of a good employee or stamp of approval (Flatt & Jacobs, 2018).

In contrast, the non-overlapping veteran population (i.e., never incarcerated veteran population) does not suffer from the same type or level of stigma as formerly incarcerated individuals. The most beneficial type of training for veterans provides pre-employment skills that speed up the transitioning process from a military career to civilian employment.

A standardized evaluation method is needed for training programs

A component of any training program should include an evaluation. Regardless of training sponsors, training programs for veterans should adhere to the performance measures and evidence-based practices established under WIOA. This would enable scholars and policy makers to compare the results of individual programs as well as different types of programs.

Efforts are needed to improve data quality

In addition to program evaluation, the Department of Education's National Center for Education Statistics has provided funding for statewide longitudinal data systems. The data systems are intended to capture the return on investment of all education and training programs from early childhood through adult education. Training gained through the military and VA should also be included in the statewide longitudinal data systems. A comprehensive longitudinal data system would enable researchers to conduct return on investment studies on the veteran population.

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Table 1
Comparison of GI Bills

Eligibility	Post-9/11 GI Bill	Montgomery GI Bill – Active Duty MGIB-AD	Survivors' and Dependents Educational Assistance DEA	Montgomery GI Bill – Selected Reserve MGIB-SR	Reserve Educational Assistance Program REAP	Post-Vietnam Era Veterans Educational Assistance VEAP
Period of Qualifying Service	After 9/10/2001 to present	Active service duty after 6/30/1985	After beginning of the Spanish American War	7/1/1985 to present	9/10/2001 – 11/24/2015	01/1/1977 – 07/01/1985
College or university	Eligible	Eligible	Eligible	Eligible	Eligible	Eligible
High school	Not eligible	Not eligible	Eligible	Not eligible	Not eligible	Eligible
Apprenticeship or on-the-job training	Eligible	Eligible	Eligible	Eligible	Eligible	Eligible
Entrepreneurship training	Eligible	Eligible	Not Eligible	Eligible	Eligible	Eligible
Cooperative training	Eligible	Eligible	Eligible	Eligible	Eligible	Eligible
Number of Participants - 2014	790,408	77,289	90,789	63,745	13,784	17
Obligations (thousands)	10,754,649	530,508	513,633	149,804	56,357	75
Obligation per participant	13,606	6,611	5,657	2,350	4,089	4,412

Adapted from "GI Bills enacted prior to 2008 and related veteran's educational assistance programs: A primer" by C. Dortch, 2016. Retrieved from: https://fas.org/sgp/crs/misc/R42785.pdf

Table 5
Descriptive data of variables

Variable	N	Mean	Standard Deviation	Skewness	Kurtosis	Min	Max
Weeks Employed	2,075	41.383	17.178	-1.476	0.747	0	53
Weeks in Labor Force	1,896	44.558	15.034	-2.042	2.888	0	53
Income	1,347	32,527.09	22,902.114	2.038	6.947	0	146,002
Networth 1997	2,075	67,115.84	110,051.354	2.767	8.944	-60,499	600,000
Work / School Limits 1997	1,816	0.074	0.262	3.248	8.559	0	1
Mother's Highest Grade	1,963	12.673	2.458	-0.078	1.323	4	20
Age	2,075	25.986	2.550	-0.226	-0.516	18	32
Highest Grade	2,067	13.244	1.830	1.121	2.494	8	21
Proportion of year Married/Cohabitating	2,075	0.415	0.465	0.342	-1.788	0	1
Male	2,075	0.780	0.415	-1.351	-0.175	0	1
Work Experience	2,075	4.390	2.748	0.822	0.771	0	17.942
Cumulative School-Based Training	2,075	0.247	0.720	4.945	36.515	0	8
Cumulative Pre-Employment Training	2,075	2.032	1.752	1.228	2.653	0	11
Cumulative Post-Employment Training	2,075	0.838	1.426	2.846	10.780	0	11
Formerly Incarcerated	2,075	0.048	0.213	4.247	16.051	0	1

Table 6
Model 1: Relationships between types of training programs and employment

	Model 1		
Fixed Effect Parameters	***Estimate***	***SE***	***Pr>|t|***
Intercept	184.78	337.38	0.584
Networth 1997	-0.06	0.26	0.823
School/Work Limits 1997	-0.90	1.01	0.376
Male	-0.25	0.66	0.706
Minority	-0.36	0.62	0.558
Age	0.34	0.17	0.042
Highest Grade	0.14	0.04	<0.001
Mother's Highest Grade	0.003	0.11	0.976
Marriage/Cohabitation	-0.03	0.09	<0.001
Year	-0.09	0.17	0.577
Cumulative School-Based Training	0.03	0.20	0.900
Cumulative Pre-Employment Training	0.33	0.73	<.001
Cumulative Post-Employment Training	0.06	0.11	0.585
Formerly Incarcerated	-0.17	0.16	0.300
Covariance Parameters	***Estimate***	***SE***	***Pr>Z***
UN(1,1) = τ_{00}^2	81.23	4.63	<.0001
UN(2,1)= τ_{10}^2	-3.24	0.19	<.0001
UN(2,2)= τ_{11}^2	0.15	0	
Model Information (Subject = ID)			
Likelihood Ratio Test			4,130.29
Critical values alpha=.001			12.81
-2 ML log likelihood			10,471.31
AIC			10,505.31
BIC			10,568.33