William M. Mason, Graduate School of Business, University of Chicago

I have these findings to report about the effects of military service. The data are for men who served in the United States armed forces after World War II, but before the Viet Nam War.

First, and in general, military service makes a <u>small</u> contribution to veterans' social standing

Second, this contribution appears to be greatest in providing or stimulating additional years of formal schooling.

Third, military service contributes to further attainment through military occupation, and through sheer length of service. That is, the higher the military occupation, the more additional school obtained. And, the longer a man serves, the more additional school he gets.

Fourth, the higher a man's military occupation, then the higher his civilian occupation as a veteran. However, length of military service is unrelated to civilian occupational status.

Fifth, neither military occupation nor length of service has anything to contribute to the income of veterans.

Sixth, I have found scant evidence to support the contention that the military has its greatest effects in raising the post-service social standing of veterans from poor backgrounds.

Data

The data used in this study are from the sample used in the May, 1964 Current Population Survey, and include all males then between the ages of 18 and 34. This means that the sample includes veterans who served after World War II and before Viet Nam. Furthermore, these veterans would have to be described as noncareer men, since the overwhelming majority of them served no more than four years.

For the purposes of analysis of the impact of service experiences, it is probably important that most of these veterans served in the peacetime military. If most had served during the Korean War, or during World War II, then an additional 10 per cent or so of them would have been in combat occupations, and this concentration in fighting specialties would have reduced the usefulness of the sample for studying crossovers between the civilian and military sectors. That is the chief advantage of a primarily peace-time sample--it maximizes the percentage of individuals in occupations which are not purely military. Furthermore, it is almost always with reference to a peace-time military force that policy discussions are carried on concerning the viability of the draft, opportunities for a second chance, and so on.

The conclusions I have already presented to you are based on a subsample of the veterans, who were 21 years of age or older at the time of the survey, who were also full-time employed members of the civilian labor force, and for whom relatively complete additional information was also available.

Method

To describe the effects of military service on veterans' social standing, multiple regressions were used with the subsample of veterans as the data set. These equations are identical in conception to those used by Blau and Duncan in their American Occupational Structure. That is, the equations taken together comprise a recursive system, in which the endogenous variables are identified as such by their choronological ordering. The present work may be thought of as adding an intervening step in the Blau and Duncan model of the process of social attainment. For present purposes, however, I am reporting the findings of only the last equations in the model, since the earlier equations do not bear on the effects of military service.

The variables for which the effects of military service were ascertained are: first, education during or after service. The data do not permit distinction between men who continued their education during service, and those men who continued their schooling only after service. The second variable for which the effects of military service were ascertained is occupational status -- as measured by the Duncan occupational SES index. This variable is treated as endogenous with respect to educationregardless of whether the education was gained before, during, or after service. The third variable for which the effects of service were ascertained is occupational income. Finally, an alternative representation of income was also taken as endogenous -- although, not with respect to occupational income. This variable is total income expected for the year, and differs from occupational income in that it includes other sources of income than the job held by the respondent at the time of the interview. Both of the income variables are taken to be endogenous with regard to educational attainment and occupational status.

Thus, the conclusions reported in this paper are based on four multiple regression equations. With respect to all that goes on in his life before a man is inducted into the armed forces, each of the equations contains the same regressors. The recursiveness comes simply from adding education during or after service into the equation for estimating occupational status after service, and then adding both of these variables into the equations for estimating

occupational and total expected income.

The equations provide estimates of the effects of military service having also taken into account the effects of (1) father's occupation, (2) father's education, (3) the region the veteran grew up in, (4) the kind of place the veteran grew up in--for example, whether a large city, medium-size city, etc., (5) race--whether the respondent is white or Negro, (6) years of school completed before entering military service, (7) age, (8) score on the Armed Forces Qualification Test (AFQT), (9) whether the veteran had a full-time job before entering military service, and (10) the length of time since the veteran left military service.

This is a reasonably complete catalogue of variables the omission of which might bias the coefficients estimating the effects of military service.

The variables used to indicate the effects of service are (1) the length of time the man spent in service, and (2) the socioeconomic standing of his primary military occupation. The index of socioeconomic standing of military occupations is a scale which attempts to capture characteristics of military occupations. These characteristics are: the level of education found for men in a given military occupation, the paygrades of men in a given military occupation, the length of service school training for men in a given military occupation, the AFQT scores of men in a given military occupation, and the kinds of jobs held before service for men in a given military occupation. The reasoning used to construct the military occupational SES index is similar to the reasoning behind the Duncan occupational SES index for civilian occupations.

Note that my use of the military occupational SES index in the present context is to be distinguished from the analyses of other students of the military who create various scales of transferability between military and civilian occupations. The present index is not designed to measure equivalences between the civilian and military sectors, but simply to gauge the extent of knowledge, mental skills, rewards, and so on, which the military appears to require for each of its occupations.

The hypotheses associated with these variables are first, if military service helps to raise these noncareer military veterans' social standing, then it is reasonable to hypothesize that longer service leads to a greater increase in veterans' social standing. Furthermore, if men gain skills in their primary military occupations which are useful in civilian life, then insofar as these skills are associated with the standing of their military occupations, it follows that the higher their military occupations, the higher their civilian standing as veterans.

Findings

Table 1 and Figures 1 and 2 present the evidence concerning the effects of length of service and military occupational SES on subsequent veterans' attainment.

Table 1 presents a decomposition of the multiple correlation for each of the four equations estimated. This decomposition is, of course, one of many possible. The results, however, are so clear that it hardly matters which decomposition of the explained variance one uses.

Table 1 shows that length of service and military occupational SES are but minor contributors in estimating additional years of school gained during or after service. Together, they account for only 16 per cent of the explained variance. By contrast, education before service, and the AFQT test--which may be treated as an estimate of quality of education, account for nearly half the explained variance.

The second equation estimates veterans' occupational status. This time, military service accounts for only 4 per cent of the variance. By contrast, education, and AFQT score account for over half of the explained variance. Note, however, that schooling obtained during or after service is also a sizable contributor to occupational SES. Hence, military service makes an <u>indirect</u>, as well as a direct, contribution to veterans' occupational standing.

Finally, as Table 1 indicates, the military service variables used here make no direct contribution to income.

Figures 1 and 2 present this information in a different way. They are path diagrams in which the effects of variables preceding military service for simplicity have not been explicitly included. But, the path coefficients -- that is, the standardized multiple regression coefficients, are in fact computed net of the background variables. Figure 2 differs from Figure 1 only in choice of the income measure as the last endogenous variable. A comparison of the two figures indicates that the indirect effects of military service are smaller for expected yearly income than they are for occupational income. This results from the weaker association between education gained during or after service and expected income.

In sum, as measured here, military service affects years of school attained after <u>entering</u> <u>service</u>, and it affects veterans' occupational <u>SES</u>. Its effects on income are entirely indirect. Those who would argue for the military's salutory effects on the occupations and income of its veterans will not find overwhelming support of their hypothesis in this data. It may be that military experiences do indeed lead to higher social positions for veterans, but to the extent that this is so, it occurs because of increased education, more than anything else. The argument may be modified to say that the military contributes more to the social standing of those who start out their lives in a low position. This has been one of the positions taken by various government officials in the recent past. The 1964 veterans data were examined to find support or denial of this hypothesis. In the regression framework, the argument can be tested through the use of an interaction model. This interaction model is a simple operationalization of the hypothesis that men of low social origins get more of a boost from the military than do others.

The computational process is to define a subset of veterans who were of low social origins, and then proceed to determine whether this additional knowledge is useful. More precisely, I defined a dummy variable which takes the value one if the veteran was below the mean on all salient background variables, as well as below the mean in achievement before service, and on the Armed Forces Qualification Test. The variable takes the value zero otherwise. This dummy variable was then allowed to interact with the military variables.

A final variable taken into consideration for this part of the analysis is the product of military occupational status with a dummy variable which distinguishes between men who had a job before service, and those who did not. There are competing hypotheses about the directionality of the coefficient associated with this variable; but for present purposes it matters only that inclusion of this variable allows for a more rigorous specification of the model.

Table 2 presents squared multiple correlations for the equations without the interaction terms, for the corresponding equations with the interactions, and presents the F-ratios associated with the increments in the sums of squares accounted for. The F-ratios under these circumstances have the status of a bench mark, a handy reference point, since the sample and data only begin to approximate the conditions needed for use of the F-distribution. The results are clear: including the interaction terms in the equations has essentially no effect on the sums of squares explained. As shown earlier, military service has its greatest effect on gaining additional years of school. The interactions add nothing to the explanation of this variable. And, although the F-ratio for the increment in the explained variance for occupational SES gets its nose above water, it does no more than that. In sum, the data and method used here do not support the hypothesis that, to reverse a wellknown phrase, the "poor get more" out of service than those of higher social origins.

I would like to stress that the data I have been working with do not include many of the men falling in the lowest mental groups, as defined on the distribution of the AFQT scores. The armed forces, and primarily the Army, are currently carrying out a program to induct and train men who in the past would have been rejected by the services because of their low AFQT scores. This program, called PROJECT 100,000 may yet prove more successful than any extrapolation from the finding reported here might indicate. Furthermore, it must be pointed out that men likely to fall under the aegis of PROJECT 100,000 are only marginally in the labor force. A major contribution for the services for these men might be simply to enable them to find and keep jobs, low status though these jobs might be. I have been unable to test this potential effect of military service with the present data because of insufficient observations.

Other Points

I would like to turn now to a brief consideration of additional information, pertaining to the armed forces and education. One interesting question is, when does a serviceman go back to school, if he does at all? And, given that he goes back to school, at what point in the education distribution is he likely to be located? Without attempting anything like a comprehensive answer to these questions, Table 3 presents the distributions for education before service, and current total education, for enlisted men who were in the armed forces in 1964. at the same time that the veteran and nonveteran data were collected. The table shows that 21 per cent of the men in one distribution would have to be redistributed in order to make the two distributions identical. Very clearly, much of the effect of service on education takes place within service, and not afterwards.

A second point to be gleaned from this table is that the principal impact of the services on educational attainment is in helping men to complete high school.

Finally, I have carried out a simple comparison between veterans and nonveterans. This comparison is done by means of indirect standardization, which requires no scaling or other assumptions about the variables or relationships. What I have done is to compare veterans and nonveterans by their occupational distributions. For the veterans, I have defined four groups, as determined by the cross-classification of whether a man completed his education before service or not, and whether the man entered the labor force before service or not.

Table 4 presents the occupation distributions for each of these groups of veterans, as well as all groups aggregated, and for nonveterans. The table indicates considerable differences in occupation distributions for the groups: veterans who went back to school are more likely to be white collar than nonveterans, or veterans who did not go back to school. In particular, about 36 per cent of nonveterans are white collar workers, as compared with about 35 per cent white collar for veterans who did not go back to school during or after service, and as compared with about 58 per cent white collar for veterans who <u>did</u> go back to school during or after service.

Using the combined veterans and nonveterans sample as the population base, the occupation distributions were indirectly standardized for age and education. The results, which are presented in Table 5, indicate that age and education account for much of the differences observed in the unstandardized distributions. As a result of the age and education standardization, per cent white collar for any of the veterans groups and nonveterans range within 5 per cent of each other. Taking entire distributions into account, rather than simply per cent white collar, provides the same finding. Table 6 presents indices of dissimilarity between the various distributions. Unstandardized, these indices are rather large; standardized, they drop considerably, particularly when comparing nonveterans with the veterans groups.

The standardizations indicate, then, that much of the differences in occupational attainment between veterans and nonveterans can be explained by age and education. And this is wholly consistent with the findings I started out with--military service appears to make its greatest contribution via additional years of school.

I should like to indicate my awareness that this simple comparison of veterans and nonveterans hardly exhausts the subject. I expect in the near future to carry out more detailed comparisons of veterans and nonveterans.

These results are of interest because they help to delineate the way in which a major institution of this country intervenes in the life cycle. The results also bear on policy discussions which require information about the consequences of service. They may also be taken as the preliminary skirmishes for a human capital analysis of the net value of military service for the men who serve.

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Percentage of Explained Variance Due to Some Aspects of Military Service, and Certain Other Variables, in Regression Equations Estimating Selected Characteristics of Veterans' Social Positions^a

Tu lan and 17 - 1 - 1 -	Dependent Variable					
Independent Variable	Additional Years of School During or After Service	Log Current Occupational SES	Log Current Occupational Income	Log Expected Total Yearly Income		
Years of school completed before entering service, and Armed Forces Qualification Test score	44%	53%	21%	13%		
Socioeconomic status of military occupational specialty	4	4	0	l		
Length of active duty military service	12	0	0	0		
Additional years of school during or after service		17	7	1		
Log of socioeconomic status of current occupation		•••	23	25		
All other variables in equation ^b	40	26	49	60		
Total ^c	100%	100%	10 0%	100%		

^aData source is a veterans' subsample (N = 1450) of a 1964 Current Population Survey of civilian men between the ages of 18 and 34.

^bIncludes the socioeconomic status of father's occupation, father's education, region the veteran grew up in, kind of place the veteran grew up in, race, whether the veteran had a full-time job before entering military service, the length of time since the veteran left military service.

^CDecomposition of explained variance computed according to the identity:

$$\log = \left(\frac{\sum_{i=1}^{k} b_{i}^{*} \mathbf{r}_{yi}}{\mathbb{R}^{2}}\right) (100)$$

Squared Multiple Correlations, for Regression Equations Estimating Veterans Social Standing, with and without Variables Distinguishing Veterans With Low Background Standing from Other Veterans^a

Dependent Variable	R ² without Interactions	R ² with Interactions ^b	F for increment in R ²
Additional years of school after service	0.165	0.168	1.3
Log of socioeconomic status of current occupation	•295	.302	3.6°
Log of current occupational income	.244	.245	0.4
Log of expected total yearly income	.216	.218	0.9

^aFor description of variables in equations without interaction terms, see Table 1.

^bAdditional variables included in these equations are as follows: $z_1 = \underline{1}$, if veteran's father went no further than 8th grade, if veteran's father's occupational SES was no higher than 25, if veteran had no more than 3 years of high school before service, and if veteran's AFQT score was no higher than 50; $z_1 = \underline{0}$ otherwise.

- z_2 = product of z_1 with log military occupational SES.
- $z_3 = product of z_1$ with duration of active military service.

z₄ = product of log military occupational SES with a binary variable which takes the value 1 if veteran had a full-time job before entering service, and takes the value 0 otherwise.

 ${}^{c}F_{0.95} = 2.4$ for (4,1000) degrees of freedom.

Percentage	Distr	ibutior	ns of	Years	of	School	. Att	aine	ed Be:	fore	Ent	ering	Mi	litary	Service,
and	Total	Years	of S	chool .	Atta	ained,	for	a Sa	umple	of	the	Enlis	teđ	Ranks	of
the Armed Forces in 1964 ^a															

	Years of School Completed ^b				
Education Level	Before Service	Total			
Less than eighth grade	2.3	0.8			
Eighth grade	6.0	2.9			
Ninth to eleventh grade	33.2	16.4			
High school graduate	44.3	57.8			
One or two years of college	9.3	15.5			
Two or more years of college, but less than a college B.A	3.9	5.2			
College B.A	0.9	1.1			
Study beyond the college B.A	0.2	0.3			
Total of percentage distribution	100.1	100.0			

^aData for this table are from a 1964 Department of Defense survey of all branches of the military for all ranks up to 0-6. This table is based on a subsample (N = 48, 123) of the total sample.

^bIndex of dissimilarity between the two distributions is 21. The index of dissimilarity is the minimum percentage of either distribution which would have to be redistributed so that both distributions were identical.

Percentage Distribution Over Current Full-Time Occupation, For Non-Veterans, All Veterans, and Four Sub-Groups of Veterans; All Men Aged 18-34, and Sampled in Autumn 1964^a

	Group								
Group	Non- Veterans	Veterans	Veterans Group I	Veterans- Group II	Veterans- Group III	Veterans- Group IV			
Professional, technical, and kindred workers	13.7%	14.5%	9.8%	23.0%	8.3%	31.7%			
Farmers and farm man age rs	2.0	1.2	1.9	^c	1.4	^c			
Managers, officials and proprietors, except farm	6.2	11.0	9.8	13.2	10.4	13.3			
Clerical and kindred workers	7.6	8.4	7.8	9.0	8.8	8.8			
Sales workers	6.3	6.6	4.9	8.6	7.4	8.3			
Craftsmen, fore- men, and kindred workers	16.2	22.4	26.5	20.0	22.1	13.3			
Operatives and kindred workers	26.1	24.6	28.3	17.4	27.1	16.3			
Service workers, except private household	7.5	5.8	5.2	4.6	7•9	4.5			
Farm laborers and foremen	4.0	1.1	1.4	0.2	1.5	^c			
Laborers, except farm and mine	10.3	4.5	4.4	3.9	5.1	3.7			
Total percentages and case bases	99 •9% (3970)	100.1% (2651)	100.0% (1127)	99 •9% (409)	100.0% (740)	99 •9% (375)			

^aSource for this table is the CPS survey conducted in November 1964 for the Department of Defense Study of the Draft.

^bDefined for those men who reported that they were employed full time. The "All Veterans" is decomposed into four sub-groups defined as follows: <u>Group I</u> consists of men whose first full-time job came before service, and who completed their education before entering service. <u>Group II</u> consists of men whose first full-time job came before service, and who completed their education during or after military service. <u>Group III</u> consists of men whose first full-time job came after service, and who completed their education before entering service. <u>Group IV</u> consists of men whose first full-time job came after service, and who completed their education during or after military service.

^cNo observations fell into cell.

Percentage Distribution over Current Full-Time Occupation, for Non-Veterans, All Veterans, and Four Sub-Groups of Veterans. All Men Aged 18-34 and Sampled in Autumn 1964--Standardized for Age and Education, Using the Entire Veterans and Non-Veterans Sample as the Base^a

Occupation	Group							
Group	Non- Veterans	All Veterans	Veterans- Group I	Veterans- Group II	Veterans- Group III	Veterans- Group IV		
Professional, technical, and kindred workers	14.9%	12.7%	14.8%	12.7%	8 . 5%	14.8%		
Farmers and farm managers	2.2	1.0	1.3	0.2	1.2	0.4		
Managers, officials and proprietors, except farm	7.9	8.4	8.5	7.6	8.8	8.3		
Clerical and kindred workers	7.7	8.2	8.4	7•3	8.7	7.4		
Sales workers	6 .3	6.7	6.4	6.5	7.7	6.3		
Craftsmen, fore- men, and kindred workers	17.7	20.3	21.6	21.1	19.5	17.3		
Operatives and kindred workers	24.6	27.0	26.2	27.0	27.6	27.9		
Service workers, except private household	6.9	6.8	5.7	6.5	8.6	6.8		
Farm laborers and foremen	3.3	2.1	1.7	2.3	2.4	2.0		
Laborers, except farm and mine	8.7	7.0	5.5	8.7	7.0	8.8		
Total percentages ^b	1 00.2	100.2	100.1	99•9	100.0	100.0		

^aThe technique of standardization used is that of "indirect standardization." The standardizing variables are <u>age</u> (grouped: 18-21, 22-25, 26-29, 30-34) and <u>total</u> <u>education</u> (grouped: eight grade or less, some high school, high school diploma, some college, and college B.A. or more schooling). The standard population used in the analysis is the combined veteran and non-veteran sample appearing in Table I. For a discussion of standardization techniques, see Evelyn M. Kitagawa, "Standardized Comparisons in Population Research," <u>Demography</u>, Vol. 1, No. 1, (1964), pp. 296-315, esp. 312 ff.

^bCase bases for this table are necessarily identical to those for Table I.

Indicies of Dissimilarity between Distributions Listed in Tables 4 and 5^a

Variable	Non- .Veterans	All Veterans	Veterans Group I	Veterans Group II	Veterans Group III	Veterans Group IV
Nonveterans	<u>4.7</u>	12.9	16.2	23.8	13.7	28.3
All veterans	6.4	<u>6.9</u>	8.9	13.4	7.0	21.7
Group I veterans	6.9	4.0	8.9	21.5	7.6	29.8
Group II veterans	6.2	2.9	56	<u>19.7</u>	18.9	8.8
Group III veterans	9.9	4.9	8.4	7.6	4.5	27.3
Group IV veterans	3.9	4.9	6.5	4.3	8.4	<u>25.3</u>

^aEntries above the diagonal are for unstandardized distributions. Entries below the diagonal are for standardized distributions. Entries on the main diagonal are for the same variable in its standardized and unstandardized forms.

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Identification of Variables

Хı	=	length of active duty military service
x2	8	socioeconomic status of primary military occupation
Х _З	=	additional years of school during or after service
x ₄	=	log of socioeconomic status of current occupation
Y	=	log of occupational income
u ₃	=	disturbance term in estimating X3
u ₄	=	disturbance term in estimating $X_{\underline{\mu}}$
uy	=	disturbance term in estimating Y

Fig. 1.--Path diagram illustrating effects of military service on veterans' subsequent social standing using occupational income; extracted from equations indicated in Table 1.



Identification of Variables

 X_1 = length of active duty military service

X₂ = socioeconomic status of primary military occupation

- X_3 = additional years of school during or after service
- X_{L} = log of socioeconomic status of current occupation
- Z = log of total expected yearly income
- $u_3 = disturbance term in estimating X_3$
- u_{μ} = disturbance term in estimating X_{μ}
- u_Z = disturbance term in estimating Z

Fig. 2.--Path diagram illustrating effects of military service on veterans' subsequent social standing using total expected yearly income; extracted from equations indicated in Table 1.



FIG. I REPRESENTING PERSONAL UNCERTAINTY



