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Richard V.L. Cooper

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PREFACE

The analysis in this report is relevant to one major aspect of the current military compensation system—retired pay. Specifically, the report examines recent data on military retirees' post-service earnings and employment in order to assess (1) the relationship between post-service employment and earnings opportunities and retention behavior by potential retirees, and (2) the degree to which retired pay is needed to compensate retirees' lower post-service earnings prospects.

SUMMARY

The military retirement system has been a major public policy concern for many years, and it is one that is becoming increasingly important and visible. Some revision to the present system is warranted, but any examination of this system and the possible alternatives to it must include consideration of many different issues. This report examines one of these issues—military retirees' post-service earnings and employment.

For at least two reasons, this issue is a particularly important part of the larger public policy debate about military compensation. First, military careers are generally shorter than careers in the civilian sector, so military retirees must typically look for post-service employment. Thus, the prospect of attractive post-service employment and earnings is a potentially important determinant of retention behavior. Second, the welfare of the military retired population is a serious concern, since it is often alleged that generous retired pay is needed to offset retirees' lower earnings prospects.

However, the results presented here, which are based largely on data collected from the 1977 DoD retiree survey (1977 DRS), indicate that military retirees fare much better in their post-service earnings and employment than had previously been thought. A primary reason for the difference between these findings and those of previous studies is that most previous studies have been based on data that represent disproportionately large numbers of *recent* retirees, who do not in fact fare as well as individuals who have weathered the transition from military to civilian life.

The present study indicates that retired military officers as a whole earn about 25 percent less than comparably aged and educated nonretired veterans, while enlisted retirees earn about 20 percent less than their nonretired peers. However, this earnings differential is almost entirely accounted for by the fact that military retirees work less than their nonretired counterparts. Those military retirees who work full-time, year-round earn *about as much*, on the average, as similarly employed nonretired veterans.

Except in the case of recent retirees, who appear to be at a genuine disadvantage relative to their nonretired peers, the decision to work fewer hours and/or weeks appears to be largely voluntary. This is to be expected, though, given the large nonwage income that military retirees receive. In fact, military retirees voluntarily do a number of things that lower their nominal post-service earnings, but not neces-

sarily their real standard of living: Many retirees choose to settle in lower-cost-of-living areas (about 80 percent of all retirees live in the South or the West) or in locations that are near a military base, and many take jobs that have lower wages than could be obtained elsewhere but pleasant working conditions.

Controlling for the above factors, we find that military retirees working full-time, year-round actually earn somewhat *more*, on the average, than comparably aged and educated nonretired veterans. The combination of post-service earnings and retired pay puts retired officers into the upper 10 percent in terms of income for comparably aged and educated nonretired veterans. Similarly, enlisted retirees' total income places them in the upper 25 percent of their peers. In short, retirees generally fare quite well in their post-service careers.

Recent retirees, however—even those who are employed full-time, year-round—go through about a five-year period when they earn considerably less than their nonretired peers. Although this appears in part to be the result of voluntary behavior by retirees, such as the decision to return to school, it is also largely a result of factors beyond the individual retiree's control.

As would be expected, retirees serving shorter military careers generally fare better in terms of post-service earnings than do those serving longer careers; those employed in civilian occupations that are similar to their military occupations do better than those who are in dissimilar fields. In fact, almost all the results are what one would predict from theory.

The results also indicate why so many individuals leave the military shortly after their 20th anniversary. Except for those who expect to be promoted, military personnel have no clear financial incentive to remain in the service much beyond 20 years. The system should be altered to provide more financial incentive to do so.

Although these findings do not form a sufficient basis for prescribing a specific military retirement system, they do yield valuable insights regarding possible future changes to the present system. For example, one direction of change would be to modify the time path of payment of retirement benefits. Our results suggest that, relative to the current schedule of benefit payments, it may be beneficial to pay higher benefits during the initial years of transition to civilian life. This would help compensate retirees for the somewhat lower civilian earnings they receive during these years. Later, after the transition, the level of military retirement benefits might be reduced. Indeed, our results on the relatively high incomes of retirees versus nonretired veterans raise doubt about the "need" for as large a retirement annuity as is presently provided beyond the transition period (and before "old age").

ACKNOWLEDGMENTS

CONTENTS

FIGURES

TABLES

I. INTRODUCTION

The military retirement system has been a major public policy concern for many years, but it has recently become a particularly important issue, primarily because of its costs. Expenditures for military retirement totaled more than $11 billion in 1980. This is 20 times more than the $500 million spent on military retirement in 1956, more than 10 times the $1 billion spent in 1964, and more than twice the $5 billion spent as recently as 1974. In addition to these dramatic cost increases, the effectiveness of military retirement policy as a personnel management tool is being seriously questioned.[1]

It is clear that some revision of the present system is warranted, but any examination of that system, or of the possible alternatives to it, must include consideration of many different issues. This report examines one of these issues, military retirees' post-service earnings and employment.

This issue is an important aspect of the retirement policy problem, for at least two reasons. First, military careers are typically shorter than careers in the civilian sector, so the prospect of attractive post-service employment and earnings is a potentially important determinant of retention behavior.[2] To the extent that military retirees earn less than their nonretiree civilian counterparts—and to the extent that these income differences are correctly perceived—the military must pay more, other things being equal, to attract the requisite numbers and types of personnel. The pay may be in the form of a larger cash wage or in the form of more generous fringe benefits (e.g., retirement).

The second reason concerns the welfare of the retired military population. The welfare of individuals or groups who are unable to provide fully for themselves is a long-standing concern in American society; thus, the difficulties that retirees suffer in securing adequate post-service employment must receive serious consideration.

In the ongoing debate over military retirement, some have argued that generous retired pay is needed to offset military retirees' lack of

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[1] A particularly good critique of the present system is given in the *Report of the President's Commission on Military Compensation*, U.S. Government Printing Office, Washington, D.C., April 1978.

[2] The length of military careers is, of course, an important issue in its own right. While career length is almost certainly determined largely by the combination of incentives provided by the present system, it seems reasonable to assume that military careers will, on the average, always be shorter than the typical civilian career. How much shorter is therefore the real issue.

1

ability to compete in civilian labor markets. However, actual evidence to support or refute such arguments has been limited until recently to isolated references to particular cases. Some information was provided by the 1970 Census, and a data base containing information on 1975 incomes for persons who retired from the military between 1970 and 1974 was compiled by the Internal Revenue Service (IRS), at the request of the Senate Appropriations Committee. The 1976 and 1977 *Current Population Surveys* also provided some relevant data. But the most extensive, up-to-date data base on military retirees was developed by the Department of Defense through its 1977 Survey of Military Retirees.

The findings on retirees' post-service earnings and employment presented in this report are primarily based on the 1977 DoD Survey but they also reflect the other available evidence. Section II reviews the existing data sources, focusing in particular on the data used for the present analysis. A descriptive model of retirees' post-service earnings and employment is developed and estimated in Sec. III. Section IV examines military retirees' total career earnings—i.e., earnings both during and after their military service. Finally, Sec. V discusses the implications of the results presented here for military retirement policy.

II. DATA SOURCES

Prior to 1970, the only systematic data on military retirees' post-service earnings were those collected in the 1966 DoD Survey of Military Retirees. Unfortunately, these data were lost by the DoD, leaving only those results that were reported by the First Quadrennial Review of Military Compensation (QRMC) available for review.

Since that time, however, four data bases on military retirees have become available: (1) the 1970 Census, (2) the data base compiled by the IRS, (3) the 1976 and 1977 Current Population Surveys, and (4) the 1977 DoD Survey of Military Retirees. Because the 1977 DoD Retiree Survey (DRS) provides the most comprehensive and up-to-date data base, it has been used as the basis for most of the results presented in this report.

The discussion below focuses first on the 1977 DRS and then on a comparison of the 1977 DRS with the other data bases. The purpose of these comparisons is twofold. First, they help to establish the validity of the 1977 DRS. When the sample composition of these earlier data bases is controlled for, their results are very similar to those from the 1977 DRS.

Second, these comparisons demonstrate why most previous studies suggest a larger post-service earnings "loss" than in fact appears to be the case. The earlier data bases on which those studies relied over-represented recent military retirees, whose earnings are lower than those of retirees who have been separated from the military for a greater length of time. Thus, previous studies have based their findings on a sample of retirees who are not in fact representative of the retired population as a whole.

1977 DoD Retiree Survey

The 1977 DRS was designed to compile a demographic profile of the military retired population and to obtain information regarding the employment experiences of military retirees after separating from the service. The survey was jointly sponsored by the Compensation Directorate, Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics) and the Office of Planning and Policy Analysis, Office of the Assistant Secretary of Defense (Health Affairs). The details of the survey are given in the Appendix.

The 1977 DRS contains a wealth of information on retirees' post-

3

service employment, earnings in 1976, migration, and attitudes, as well as background descriptors such as age, education, race, pay grade, military service, length of service, military occupational specialty, and year retired. The actual variables used in the analysis will be described as they are used.

The data base used for the present analysis consisted of 2,951 non-disabled male military retirees aged 37 to 64. Of these, 1,619 were retired officers and 1,332 were retired enlisted members. Details of the actual sample composition are given in the Appendix.

The comparison of military retirees' post-service earnings and employment opportunities with those of nonretirees should, ideally, utilize a data base for nonretired individuals that was collected in the same fashion as the 1977 DRS. Unfortunately, no such data base exists, so we have been forced to turn to another source to obtain comparable information about nonretirees.[1] It turns out, though, that the use of two different data sources—one for retirees and another for nonretirees—does not present significant problems for this study, as will be shown later in this section.

The 1977 Current Population Survey (CPS), which contains information on 1976 earnings, was chosen to serve as the baseline for comparison. The sample selected from the 1977 CPS included all non-retired military veterans between the ages of 37 and 64. Veterans were used as the comparison population, since they had to pass entry screens similar to those the military retirees had to pass to serve in the military. Where possible, the 1977 DRS data were made comparable to the 1977 CPS data, to avoid anomalies arising strictly from editing and coding differences in the two data sources.[2]

The results of the analysis indicate that military retirees fare better in their so-called second careers than previous studies have indicated. As shown in Table 1, for example, retired officers' wage and salary earnings in 1976 averaged $12,168, only about 25 percent below those of nonretiree veterans; enlisted retirees' 1976 average wage and salary earnings averaged $10,142, only about 15 percent below those of comparably aged and educated nonretiree veterans. Moreover, these differences are almost entirely accounted for by the fact that military

[1] There are data bases that contain information on both retirees and nonretirees, but the shortcomings of these sources outweigh the advantage of having the retiree and nonretiree data collected in the same way.

[2] For example, the CPS truncates the earnings distribution such that the maximum income recorded is "$50,000 or above," which, for the purposes of this study, is treated as $50,000. The 1977 DRS, on the other hand, allows for a maximum income of $99,999. To keep the data sets comparable, individuals reporting income over $50,000 on the 1977 DRS were recoded so as to show an income of $50,000. (Note that if two people in a sample of 1,000 had incomes of $100,000, this recoding would lower the average earnings by $1,000.)

Table 1

MILITARY RETIREES' AND NONRETIREES' AVERAGE POST-SERVICE EARNINGS IN 1976

	Military Retirees[a]					Nonretirees[b]	
Sample	Retired 0-3 yrs.	Retired 4-7 yrs.	Retired 8-11 yrs.	Retired 12 yrs.	All	Veterans	Nonveterans
All							
Officer	$9,547	$10,826	$13,262	$13,505	$12,168	$16,179	$14,274
Enlisted	6,919	9,903	11,772	10,660	10,142	12,083	10,892
Full-Time,Year-Round Employed							
Officer	16,220	17,712	18,848	19,820	18,650	18,284	16,513
Enlisted	11,447	12,661	14,427	14,177	13,521	14,300	12,758

[a]SOURCE: 1977 DRS.

[b]SOURCE: 1977 CPS.

retirees worked fewer hours and/or weeks than nonretirees. Table 1 also shows that officer and enlisted military retirees working full-time, year-round earned *about the same*, on the average, as their full-time, year-round-employed nonretiree peers. These results will be explored in more detail later.[3]

The overrepresentation of recent retirees in the data bases used by previous studies resulted in significant overestimation of the magnitude *of second-career earnings loss.* As indicated in Table 1, recent retirees generally exhibit much lower earnings than do those who have been out of the military for a longer period of time.

There are two possible reasons for the observed differences in earnings according to length of time since retirement. First, the differences could be a transition phenomenon; it takes a while to make the transition from military to civilian life, whether that transition is voluntary or involuntary. Alternatively, the earnings differences could be the result of differences between the retirees of the 1970s and those who retired earlier. Those who retired in the 1970s could be intrinsically different from earlier retirees (in terms of attributes), or the earnings prospects they faced may have been peculiar to the times.

Fortunately, the 1977 DRS enables us to test, albeit only approximately, whether there are genuine differences between the military retirees of different decades. The survey asked not only about 1976 earnings but also about earnings from each retiree's first post-retirement job. Although recollections of earnings from years ago are likely to be less accurate than recollections of last year's earnings, there is no reason to suspect any systematic bias in these responses. The responses were then adjusted for wage inflation to 1976 dollars, accord-

[3] Table 1 also shows that, as would be expected, veterans earn more, on the average, than nonveterans.

ing to the average weekly earnings of nonsupervisory production workers in manufacturing, a given in the January 1977 *Economic Report of the President*.[4] The results of this procedure, shown in Table 2, do not reveal any systematic differences between recent and earlier military retirees. Indeed, none of these inflation-adjusted first earnings is statistically different from the overall mean. In other words, the little evidence that is available indicates that the differences in retiree earnings according to length of time since retirement do appear to be a transition phenomenon. This conclusion is further supported by evidence that will be presented in Sec. III.

The importance of the above result rests in its implications for interpreting the findings from previous studies. The following discussion of earlier sources will compare their results with approximately the same mix of early and recent retirees from the 1977 DRS as was used in the particular study being examined, i.e., the 1977 DRS sample will also be heavily weighted toward recent retirees.

Table 2

MONTHLY EARNINGS FROM FIRST JOB AFTER RETIREMENT:
MILITARY RETIREES WORKING 27 TO 52 WEEKS[a]

Sample	Year of Retirement					
	1961-65	1966-67	1968-69	1970-71	1972-73	1974-77
Officers						
20-24 yrs. of service	$1,043	$1,211	$1,124	$1,299	$1,103	$1,250
25-29 yrs. of service	1,102	1,214	1,247	1,354	1,206	886
30-35 yrs. of service	774	707	1268	848	950	952
All	1,047	1,147	1,205	1,220	1,079	1,125
Enlisted[b]						
20-24 yrs. of service	820	862	823	888	820	739
All	822	856	817	823	771	686

[a]Retirees' first-job earnings as reported in the 1977 DRS, adjusted for wage inflation according to the average weekly earnings for production and nonsupervisory workers in nonagricultural employment, as reported in the *Economic Report of the President*.

[b]There were too few observations for those serving more than 20-24 years to divide up according to year retired.

1966 DoD Retiree Survey

Because the 1966 DRS was lost by the DoD, information about its sample, administration, and results is, at best, sketchy. However, some simple comparisons between the 1966 DRS and the 1977 DRS are possible. As shown in Table 3, for instance, the results from the earlier effort indicate second-career income differentials of from nothing to as much as 20 or 25 percent, depending on education, for individuals

[4] *Economic Report of the President*, U.S. Government Printing Office, Washington, D.C., January 1979.

Table 3

RATIO OF RETIREE/NONRETIREE VETERANS' POST-SERVICE EARNINGS
FOR INDIVIDUALS WORKING FULL-TIME, YEAR-ROUND:
COMPARISON OF 1966 AND 1977 DOD RETIREE SURVEYS

| Data Source | Education | | | | |
	Some High School	High School Graduate	Some College	College Graduate	Post-Graduate[a]
1966 DRS/CPS[b]	0.98	0.92	0.87	0.77	0.92
1977 DRS/CPS[c]	1.01	0.89	0.86	0.79	0.88

[a]Five or more years of college.

[b]Represents a weighted average of the age-specific retiree/nonretiree earnings ratios reported in Raduchel et al., where the weights reflect the distribution of retirees in the 1977 DRS.

[c]Represents a simple average of retirees retired 0 to 5 years and those retired 6 to 10 years.

employed full-time, year-round. This seemingly contradicts the results presented in Table 1, which indicate that military retirees working full-time, year-round earn, on the average, about as much as their nonretired counterparts.

In comparing the results from the 1966 DRS with those from the 1977 DRS, however, it should be noted that about half those on the military retired rolls in 1966 had retired after 1960, while another 40 percent had retired after 1955. In other words, about half the 1966 DRS respondents were likely to have been retired for five years or less at the time of the survey (presuming that the distribution of respondents was about the same as the distribution of the retired population). Another 40 percent or so of the respondents were likely to have been retired for 5 to 10 years at the time of the survey. For purposes of comparison, therefore, we must adjust the 1977 DRS sample so that the distribution of respondents according to years retired is approximately the same as for the 1966 DRS—i.e., 50 percent retired zero to 5 years, and 40 to 50 percent retired 5 to 10 years.[5] This procedure yields retiree-to-nonretiree earnings ratios very much like those reported in the 1966 DRS—in fact, the education-specific earnings ratios are only one to four percentage points different for each of the five education groups in Table 3.

1970 Census

Using the 1970 Census public use samples, Munch developed a data

[5] As described in note (c) to Table 3, this adjustment consisted of taking a simple average of the 1977 DRS post-service earnings for (1) those retired zero to 5 years and (2) those retired 5 to 10 years. This simple average was then divided by the earnings of nonretired veterans to yield the ratios shown in the second row of Table 3.

base of earnings and other information for what she calls "presumptive" retirees.[6] The term "presumptive" is used because the Census did not identify whether an individual was a military retiree, or how long he served in the military. Rather, it contains information pertaining to whether individuals were on active duty in 1969 and whether they had served at various times in the past (primarily in different wars). Munch's list of retirees comprised individuals who were not on active duty in 1969 but who had served in (1) either or both World War II and Korea and (2) either or both 1965 and Vietnam. Rough consistency checks indicate that this procedure captured a reasonably representative sample of individuals who retired from the military between 1964 and 1969.

The main advantage of the Census data base is that it has comparable information on both retirees and nonretiree veterans. Most of the other data bases (particularly the DoD surveys and the Senate-IRS data base) have had to go to a second source to get information on nonretiree veterans, thus making comparisons between retirees and nonretirees somewhat more difficult.

At the same time, the Census data base has several disadvantages.[7] First, though probably least important, is the problem of properly identifying military retirees from the sample. Far more important, the data are somewhat out of date, as they refer to retirees in 1969. Moreover, the data base includes only a limited subset of the retiree population, i.e., those retiring between 1964 and 1969, and the data contain virtually no information about retirees' in-service experience, such as length of service, rank, or occupational specialty. In addition, the Census data base provides no mechanism for screening out disabled military retirees, so the retiree/nonretiree wage ratios derived from it probably overstate the second-career earnings loss for recent retirees.

Nevertheless, it is useful to compare the Census results with those obtained from an appropriately constructed subset of the 1977 DRS, as shown in Table 4.[8] The two data sets yield very similar results. Indeed, the overall retiree/nonretiree earnings ratio from the Census

[6] Patricia Munch Danzon, *Civilian Earnings of Military Retirees*, The Rand Corporation, R-2353-MRAL, March 1980.

[7] It should be noted, however, that at the time it was initially assembled, the Census data base provided the only source of detailed information for investigating the determinants of retirees' post-service earnings. The 1966 DRS had already been destroyed, and only the simple cross-tabulations reported in the First QRMC were left.

[8] To make the 1977 DRS sample comparable to that reflected in Munch's estimates from the 1970 Census, the 1977 DRS data in Table 4 were limited to retirees not enrolled in school, who worked 27 to 52 weeks, and who had retired within six years of the survey (Munch's "presumptive" retirees had to have retired within six years of the 1970 Census to be included in the sample).

Table 4

RATIO OF RETIREE/NONRETIREE VETERANS' POST-SERVICE EARNINGS
FOR INDIVIDUALS RETIRED 6 YEARS OR LESS. AGES 37-60,
AND WORKING 27-52 WEEKS: COMPARISON OF 1970 CENSUS
AND 1977 DOD RETIREE SURVEY

| Data Sources | Education | | | | |
	Some High School	High School Graduate	Some College	College Graduate	All
1970 Census[a]	0.92	0.84	0.83	0.85	0.85
1977 DRS/CPS[b]	0.98	0.87	0.79	0.82	0.86

[a]The Census results presented according to age and education in Munch, op. cit.,
were aggregated as shown here by using the cell sizes from the 1977 DRS.

[b]Ratio of retirees' post-service earnings from 1977 DRS to non-retirees' earnings
from 1977 CPS.

data base is within one percentage point of that from the 1977 DRS.
Moreover, the difference is in the expected direction, since the inclu-
sion of disabled retirees in the Census data base should make its
retiree/nonretiree wage ratio a bit lower than that of the 1977 DRS.

Senate-IRS Data Base

In response to a request from the Senate Appropriations Commit-
tee, the IRS, in conjunction with the Defense Manpower Data Center
(DMDC), constructed a data base containing 1975 income data for
persons who retired from the military between 1970 and 1974. These
data were later analyzed by Raduchel et al. for the President's Com-
mission on Military Compensation (PCMC).[9] The following discussion
is based on the Raduchel analysis.

The IRS data base consists of adjusted gross income as reported on
individuals' 1975 tax returns. These data were merged with files main-
tained by the DMDC that included such factors as rank, age, educa-
tion, certain military attributes (e.g., wars served in), and military
pension. For privacy reasons, however, it was not possible to construct
a data base of individuals. Rather, various cells were constructed on
the basis of rank, military service, and place of residence in 1975.
There were originally 2,712 such cells, but those with less than 25
individuals were deleted to ensure that confidentiality would not be
violated. The result was an 1,100-cell file, with cell averages for the
different variables representing the data entries.

[9] William J. Raduchel, et al., "Post-Retirement Income and Earnings of Military
Personnel Who Retired from 1970 to 1974," in *Supplementary Papers of the President's
Commission on Military Compensation*, U.S. Government Printing Office, Washington,
D.C., 1978.

Raduchel et al. chose the National Longitudinal Survey (NLS)—the so-called Parnes File, named for its developer, Herbert Parnes—of males aged 45 to 60 in 1966 as the nonretiree basis for comparison. The pool used in the analysis consisted of all males not receiving pensions who were veterans and who had worked 44 or more weeks during the year in civilian employment.

Raduchel et al. provide two general types of retiree/nonretiree income measures: earnings (adjusted gross income less military retired pay) and adjusted gross income. For nonretirees, the two are, of course, the same.[10] This discussion focuses only on Raduchel's earnings variables, not on his adjusted gross income variables.

The results obtained by Raduchel et al. and those from a comparable portion of the 1977 DRS are compared in Table 5.[11] Raduchel et al. offer comparisons of two different types of earnings, "unadjusted" and "adjusted." The unadjusted comparisons compare all military retirees with comparably aged and educated nonretired veterans working at least 44 weeks.[12] As is evident from Table 5, the Senate-IRS data base results are quite similar to those obtained from the 1977 DRS. For example, Raduchel et al. indicate that retired officers show a 49 percent second-career earnings loss, whereas the 1977 DRS implies a 45 percent loss. Similarly, the Senate-IRS data base shows a 40 percent second-career earnings loss for enlisted retirees, while the 1977 DRS shows 39 percent.

Raduchel et al. of course recognized that much of this loss was due to the fact that retirees work fewer hours and/or weeks than nonretired veterans and that much of this behavior is voluntary. To correct for this in their comparisons, Raduchel et al. attempted to impute what retirees would have earned had they not had a disincentive to work (i.e., their large retirement annuity). The results are shown in Table 5 as "adjusted" earnings. Again, the Senate-IRS data base yields

[10] As recognized by Raduchel et al., this is not really a measure of retirees' post-service earnings, since it also includes income earned by other members of the household and nonwage income. Raduchel's "civilian earnings" variable is the retiree's total family income less military retired pay. Acknowledging this problem with Raduchel's civilian earnings variable, the discussion here nevertheless uses his terminology for the sake of convenience.

[11] For retirees, "comparable portion" refers to the 1976 earnings of those who retired between 1971 and 1975, to compare with Raduchel's 1975 income for those who retired between 1970 and 1974. For nonretirees, the 1977 CPS data base was restricted to veterans working 44 or more weeks, in order to be consistent with Raduchel's 44-week screen.

[12] This is, in fact, not the appropriate comparison to make. Either all retirees ought to be compared with all nonretired veterans, or retirees working 44 to 52 weeks ought to be compared with nonretired veterans working 44 to 52 weeks. Comparing all retirees with only those nonretired veterans working at least 44 weeks overstates the "true" second-career earnings loss.

Table 5

RETIREE AND NONRETIREE VETERAN EARNINGS IN 1975 AND 1976:
COMPARISON OF SENATE-IRS AND 1977 DRS DATA

| | Sample Composition | | |
Data Base	All Retirees, All Veterans	All Retirees, Veterans Employed 44-52 Weeks[a]	Retirees and Veterans Employed 44-52 Weeks[b]
	Officers		
Senate-IRS[c]			
Retirees	(d)	12,807	20,283[e]
Veterans	(d)	24,922	24,922
Ratio	(d)	0.51	0.81
1977 DRS[f]			
Retirees	10,106	10,106	15,425
Veterans	15,333	18,318	18,318
Ratio	0.66	0.55	0.84
	Enlisted Personnel		
Senate-IRS[c]			
Retirees	(d)	11,194	15,904[e]
Veterans	(d)	18,635	18,635
Ratio	(d)	0.60	0.85
1977 DRS[f]			
Retirees	8,582	8,582	11,719
Veterans	12,350	14,077	14,077
Ratio	0.69	0.61	0.83

[a]Raduchel's so-called "adjusted" comparison.

[b]Raduchel's so-called "unadjusted" comparison.

[c]1975 average adjusted gross income less military retirement (1970-74 retirees).

[d]Not calculated by Raduchel et al.

[e]Lacking information on weeks worked by retirees, Raduchel et al. used an alternative measure of labor-force involvement, nonretirement income greater than 60 percent of retirement income or $7,500, to approximate the 44-52 week measure they used for nonretired veterans.

[f]1976 average post-service earnings (1971-75 retirees).

estimates very similar to those from the 1977 DRS, once the latter are corrected to correspond to the sample composition of the former. Raduchel indicates a 19 percent (adjusted) earnings loss for officers, whereas the 1977 DRS indicates a 16 percent loss. For enlisted retirees, Raduchel et al. show a 15 percent loss, while the 1977 DRS shows a 17 percent loss. This similarity, of course, enhances the credibility of both data sets.

Raduchel et al. performed a very useful analysis, especially in view of the fact that they had very little time in which to do the work. However, their data base has several major problems. The most obvious of these is that it is limited to individuals retired for a relatively short time. As will be discussed in more detail later, recent retirees appear to face quite different earnings prospects than do those who have been out of the service for a longer time. Because of the limited sample composition in the Raduchel study, therefore, its findings cannot be generalized to the retired population as a whole.

A second problem concerns Raduchel's "unadjusted" earnings comparisons. As noted earlier, the unadjusted earnings do not result in comparisons of like samples. By comparing all retirees with only those nonretirees who had worked at least 44 weeks, Raduchel et al. overstated the amount of second-career earnings losses for the retired population as a whole. Using the 1977 DRS as a basis, Table 5 shows that this overstatement of second-career earnings losses amounts to about 10 percent.[13]

Other, less important problems with the Senate-IRS data base include the measure of income used. Raduchel measured adjusted gross income for the *family*, which not only includes wages and salaries earned by nonretiree members of the family,[14] but also includes non-wage income. To the extent that other members' earnings and/or nonwage income differ for retirees and nonretirees, the Senate-IRS data base cannot really be used to compare retirees' post-service *earnings* with those of nonretirees.

Another shortcoming of the Senate-IRS data base is its failure to include a measure of work experience for retirees, such as weeks or hours worked. Although Raduchel et al. attempted to develop a proxy for retirees' labor-force involvement, and their measure appears reasonable from the results presented in Table 5, the lack of data on labor-force participation puts potentially important constraints on the analysis. Finally, to the extent that post-service earnings and employment are nonlinear functions of some of the variables, having to work with cell averages rather than individuals also constrains the analysis.

Current Population Surveys

The CPS exhibits the same general advantages and disadvantages that the 1970 Census does, with three exceptions. First, the CPS is current; second, the CPS lists *actual retirees*,[15] whereas "presumptive" retirees had to be deduced from the Census data; and third, the CPS probably contains a reasonably good cross-section of retirees. In fact, the CPS and the 1977 DRS are the only data sources that contain a full cross-section of military retirees.

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[13] It should be noted, however, that the "adjusted" earnings comparisons, rather than these "unadjusted" comparisons, served as the primary focus of the Raduchel analysis.

[14] Raduchel et al. report that wives, on the average, account for 12 percent of the family's adjusted gross income in the NLS data. The portion earned by wives in the retiree sample is not known.

[15] Since 1976, the CPS has included a question asking whether the respondent is the recipient of a military pension.

The main advantage of the CPS, like the Census, is that it contains both retiree and nonretiree data, so direct comparisons can be made between the two groups. The main disadvantage—and it is an important one—is that the CPS contains no information about individuals' retired status (e.g., whether disabled, when retired, etc.) or their in-service experience. This makes it impossible to examine many of the determinants of post-service earnings and employment.

Despite these problems, the 1977 CPS provides a valuable check on the general validity of the 1977 DRS.[16] As can be seen from Table 6, the two data sources yield estimates that are quite similar, except for individuals having no high-school education.[17] In fact, the overall sample averages from the two sources are within 3 percent of one another. As with the Census/1977 DRS comparisons, the 1977 DRS results show somewhat larger post-service earnings than do the CPS results, but this is to be expected, both because the CPS does not permit the exclusion of disabled retirees and because the 1977 CPS was explicitly designed to oversample somewhat poorer persons and families.

Table 6

MILITARY RETIREES' AVERAGE 1976 POST-SERVICE EARNINGS:
COMPARISON OF 1977 CPS AND 1977 DRS DATA

Sample	Education					
	No High School	Some High School	High School Graduate	Some College	College Graduate	All[a]
All retirees						
1977 CPS	$ 5,358	$ 8,778	$10,221	$10,698	$12,324	$10,377
1977 DRS	7,581	9,826	10,265	10,400	13,263	10,726
Ratio	0.71	0.89	1.00	1.03	0.93	0.97
Fully employed retirees						
1977 CPS	9,928	11,334	13,462	14,515	19,016	14,122
1977 DRS	11,855	12,772	13,789	14,173	19,964	14,584
Ratio	0.84	0.89	0.98	1.02	0.95	0.97

[a]Weighted according to the distribution of retirees in the 1977 DRS.

[16] Since both the 1977 CPS and the 1977 DRS measure the 1976 wage and salary earnings of military retirees, retirees' post-service earnings from the two sources can be compared directly, rather than having to use indirect comparisons (i.e., comparisons of wage ratios).

[17] It was not possible to determine whether the differences between the two data sources for those with no high-school education were the result of biases in the 1977 CPS (because of oversampling of poorer persons) or biases in the 1977 DRS, or both. In any case, the disparity does not seem very serious, since less than 1 percent of the 1977 DRS sample fell into this category.

III. A DESCRIPTIVE MODEL

Using the 1977 DRS as a basis, this section presents a more systematic examination of military retirees' post-service earnings and employment. The analysis begins with some simple cross-tabulations and concludes by developing and estimating a descriptive regression model.

Cross-Tabulations

The data presented in Table 7 lead to three general findings regarding retirees' post-service earnings: First, although the average post-service earnings for *all* retirees are lower than those for comparably aged and educated nonretiree veterans, the differences, based on the 1977 DRS data, are less than those generally found in previous studies. Retired officers, on the average, earn about 25 percent less than their nonretiree counterparts, while enlisted retirees earn about 15 percent less than their nonretiree counterparts.

Second, and consistent with the results obtained by both Raduchel and Munch, the differences between retirees and other veterans are smaller for individuals with less education. For example, retired officers with only a high-school education and enlisted retirees without a

Table 7

MILITARY RETIREES' AVERAGE 1976 POST-SERVICE EARNINGS:
ALL MALES AGED 37-64

	Retirees				Nonretired Veterans
Sample	20-24 yr. Careers	25-29 yr. Careers	30-35 yr. Careers	All	
Officers					
High-school graduates	$11,990	$10,188	$6,222	$10,502	$11,864
Some college	12,321	10,185	7,951	11,187	13,844
College graduates	13,666	10,262	6,040	11,130	18,881
Post-graduates	15,940	15,051	9,629	14,436	19,146
All	13,564	12,040	7,900	12,168	16,179
Enlisted Personnel					
No high school	8,021	(a)	(a)	7,581	7,258
Some high school	10,390	7,383	2,021	9,826	9,420
High-school graduates	10,355	9,610	9,557	10,218	11,864
Some college	10,804	5,400	6,525	10,056	13,844
College graduates and post-graduates	14,106	(a)	(a)	13,102	19,131
All	10,670	7,330	6,558	10,142	12, 93

aFewer than 10 observations.

14

high-school diploma have average earnings nearly the same as those of their veteran counterparts. Retirees with higher education show larger differentials.

One reason for this education effect, as noted by previous researchers, is selection bias. Less-well-educated retirees probably represent the "cream" of all individuals in these education groups, and accordingly they exhibit higher earnings. The reverse would be expected for those with better education.

Another perhaps equally important reason is that many of the better-educated retirees acquired their higher education *after* separating from the military. Table 8 shows that more than 20 percent of all retired officers and more than 30 percent of all enlisted retirees have more education now than they had at the time they retired. These findings are particularly striking for enlisted retirees with more than a high-school education. For example, 64 percent of all enlisted retirees with at least some college had only a high-school diploma at the time of retirement, while nearly 76 percent of enlisted retirees with a college degree received that degree after leaving the military. Similarly, 30 percent of the retired officers with post-graduate training had only a college degree when they separated from the military. Thus, the estimates of retirees' post-service earnings according to education shown in Table 7 (and those shown in all previous studies) may not be strictly appropriate. An enlisted retiree who was only a high-school graduate at the time of his retirement but who subsequently went to college and graduated has not had the work experience of the typical 40- or 50-year-old college graduate. For purposes of comparison, this retiree is thus probably somewhere between a high-school graduate and a college graduate. The regression results presented later clearly support this finding.

Table 7 also hints at the effect of career length on retirees' post-service earnings, suggesting that retirees who have served longer have lower post-service earnings. This effect is consistent with the

Table 8

PERCENTAGE OF RETIREES WHO HAVE ACQUIRED ADDITIONAL EDUCATION SINCE RETIREMENT

Sample	Proportion of				
	High-School Graduates	Some College	College Graduates	Post-Graduates	All
Officers					
20-24 yr. careers	. . .	26.29	36.2	40.8	28.8
25-29 yr. careers	. . .	15.1	16.7	24.8	17.9
30-35 yr. careers	. . .	20.9	17.2	13.3	14.1
All	. . .	22.8	26.9	30.4	23.2
Enlisted					
All	11.9	64.0	75.9	81.6	32.2

conventional wisdom, but it has not been examined in any depth in previous studies of second-career earnings. Retired officers who served 30 years or more show earnings only about half as large as those of individuals who served 20 to 24 years. The difference for enlisted retirees is not quite as great, but it is nevertheless apparent.

The differences between retirees and nonretirees can be compared in terms of two components: (1) differences in earnings, holding hours worked constant, and (2) differences in hours worked. The differences in hours worked are predictable from economic theory, which implies that, other things being equal, individuals with larger nonwage incomes will work less than those with smaller nonwage incomes. Because of their sizable retirement annuities, military retirees generally have larger nonwage incomes than other veterans and, as a result, would be expected to work less than nonretirees.[1]

The results presented in Table 9 are, in fact, consistent with this prediction. Only about 56 percent of retired officers work full-time, year-round, as compared with about 80 percent of comparably aged and educated nonretired veterans. Enlisted retirees also work less than their comparably aged and educated veteran counterparts, though the differences are not as large as those for officers. (This is expected, however, since enlisted retirees have a smaller nonwage income than retired officers.)

Controlling for employment status, the results presented in Table 10 indicate that military retirees working full-time, year-round in fact

Table 9
Percentages of Retirees and Nonretirees Working Full-Time, Year-Round

Sample	Retirees			Nonretired Veterans
	Retired ≤ 5 yrs.	Retired > 5 yrs.	All	
Officers				
20-24 yr. careers	59	65	63	...
25-29 yr. careers	49	55	53	...
30-35 yr. careers	32	48	38	...
All	48	60	56	80
Enlisted				
20-24 yr. careers	61	71	67	...
25-29 yr. careers	44	60	52	...
30-35 yr. careers	29	63	40	...
All	56	59	64	73

[1] The theory is, of course, more sophisticated. As noted by Raduchel et al., "... the 'income effect' of this [the military] retirement annuity might induce [the retiree] to select jobs which had large nonpecuniary (psychic income) components, to perhaps choose not to work at all (i.e., to truly retire) or to choose to live in areas which have low costs of living and, accordingly, low money (but not real) incomes."

Table 10
RETIREES' AVERAGE 1976 POST-SERVICE EARNINGS:
FULLY EMPLOYED MALES AGED 37-64

| Sample | Retirees | | | | Nonretired Veterans |
	20-24 yr. Careers	25-29 yr Careers	30-35 yr. Careers	All	
Officers					
High-school graduates	$17,014	$16,709	$12,478	$16,285	$13,749
Some college	17,329	16,473	17,056	17,083	16,020
College graduates	18,401	21,065	18,559	18,974	21,066
Post-graduates	22,158	22,396	16,696	21,389	21,694
All	18,751	19,472	16,197	18,650	18,284
Enlisted Personnel					
No high school	11,855	(a)	(a)	11,855	10,314
Some high school	13,000	11,097	7,165	12,772	11,982
High-school graduates	13,336	11,919	18,566	13,326	13,749
Some college	13,944	12,132	11,967	13,786	16,020
College graduates and post-graduates	18,273	(a)	(a)	17,856	21,360
All	13,682	11,684	14,686	13,521	14,300

^aFewer than 10 observations.

earn about as much, on the average, as other veterans. This is especially so for retirees who served 20 to 24 years. Longer-serving retirees again exhibit smaller earnings.

These results establish several key findings. First, although military retirees, on the average, earn less than other veterans, the differences are not as large as those found in previous studies. Second, the differences that do exist seem to be mainly the result of differences in hours and/or weeks worked: Retirees working full-time, year-round earn nearly as much as other veterans working full-time, year-round, but a much smaller proportion of retirees work full-time, year-round. The reasons for this—e.g., the extent to which this work behavior is voluntary or involuntary—will be examined in more detail below.

Individuals' earnings and employment, of course, depend on a variety of factors, a finding well documented in the literature.[2] Variables affecting the demand for an individual's labor services include age, race, sex, level of education, and prior work experience. The supply of labor services primarily reflects the individual's choice about the type of work to seek (e.g., whether to seek part-time rather than full-time employment), his perception of the importance of money wages versus other aspects of the work environment, and the possible decision not to seek work at all. Variables such as the amount of the individual's nonwage income are thought to be especially important in these decisions.

[2] See, for example, Jacob Mincer, "The Distribution of Labor Incomes: A Survey with Special Reference to the Human Capital Approach," *Journal of Economic Literature*, Vol. VIII, March 1970; and Gary S. Becker, *Human Capital*, National Bureau of Economic Research, New York, 1964.

18

Based on the general theory of earnings and employment that has been developed in the literature, the following *discussion examines the determinants of retirees' earnings and compares these earnings with otherwise comparable nonretiree veterans' earnings.* Based on these findings, two models are then developed.

Methodology

Ideally, the analysis should account simultaneously for earnings and labor-force involvement (i.e., amount of time worked or spent seeking work). Such an approach is, however, beyond the scope of the present investigation—indeed, it may be beyond the resolving power of the data. Rather, these two aspects of the issue are approached somewhat more indirectly in the analysis presented here.

The analysis begins by estimating a simple regression model of retirees' post-service earnings, using *all* retirees as the sample data base. As noted earlier, such a model reflects both demand and supply factors—demand factors being those that affect retirees' ability *to* secure employment, and supply factors being those that affect retirees' willingness *to* work or seek work.[3] In other words, if the estimation reveals a post-service earnings loss for military retirees, this model *does not by itself permit us to* determine how much of this loss is voluntary (e.g., results from a voluntary decision to work fewer hours per week) and how much is involuntary.

To help sort out these supply and demand factors, the regression model described above was reestimated, but this time only for retirees who were employed full-time, year-round. The results from this reestimation provide a measure of retirees' potential post-service earnings from full-time, year-round employment. The answers to certain qualitative questions in the 1977 DRS (e.g., responses of "not working but looking for work," "not working and not looking") were then used to make a qualitative assessment of the degree to which retirees' working fewer hours and/or weeks per year is voluntary or involuntary.

Together, the regression results for all retirees, the regression results for retirees working full-time, year-round, and the qualitative assessment of labor-force participation help to provide a picture of retirees' post-service earnings and employment opportunities. While it should be emphasized that the results obtained using this approach

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[3] Econometrically, this procedure amounts to estimating the "reduced form" equation.

are not definitive, as would be the results of a fully estimated simultaneous-equations system, they are strongly suggestive.

The regression models described above were estimated as a three-stage process. The first stage focused on estimating the determinants of earnings for *nonretired* veterans. In the second stage, the regression coefficients obtained from the first stage were combined with retirees' characteristics to generate estimates of post-service earnings for the retiree counterparts of nonretired veterans (i.e., retirees having the same attributes—age, sex, education, etc.). This estimate was then subtracted from each retiree's actual post-service earnings to obtain an estimate of his earnings *differential*. In the third stage, the retirees' post-service earnings differentials were estimated as a function of retirees' attributes, both nonmilitary (e.g., education) and military (e.g., rank at retirement).

This approach—as opposed to the more traditional approach of estimating one equation (with the dummy variables for retirees) for the combined sample of retirees and nonretired veterans—was used primarily for convenience of presentation.[4] That is, since this report focuses on the post-service earnings of military retirees relative to those of their nonretired peers, the analysis is presented in the context of retirees' post-service earnings *differentials*. Moreover, the presentation itself is much less cumbersome than that of the traditional approach. It should be noted, though, that the three-stage estimation used here and the single-equation approach are econometrically equivalent.[5]

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[4] A second reason for using this approach, as discussed later in this section, was that the retiree post-service earnings equation was constrained to have the same age coefficients as that of the nonretired veterans.

[5] This is not precisely accurate; actually, the two approaches would be econometrically equivalent if (1) the single-equation approach included a retiree intercept dummy variable and slope dummy variables for *each* of the explanatory variables in the model and (2) the approach used here had included in the third step (i.e., the retiree equation) each of the explanatory variables included in the first step (i.e., the nonretired veteran equation). In fact, however, the retiree equation was constrained to have the same age coefficients as the equation for nonretired veterans. Given the hypothesis that retirees have the same age coefficients as nonretired veterans—a necessary assumption, given the collinearities among retirees' age, length of service, and time on the retired rolls—the three-step procedure is preferable on technical grounds. (The approach used here is equivalent to a constrained least-squares estimation of the single-equation approach.) It should be noted, though, that the differences in the coefficients generated by the two approaches turn out to be quite small.

The retiree equation also excluded geographic variables, which is equivalent to constraining the retiree geographic coefficients to be the same as those of the nonretired veterans. Although this was originally done for convenience, in retrospect it probably would have been preferable to include the geographic variables in the retiree equation (if for no other reason than for the sake of completeness). Again, however, the substantive impact of this exclusion was small.

In the first stage, the earnings of nonretired veterans were estimated as a linear function of age, age-squared, level of education (expressed as a series of dummy variables),[6] race, and geographic location.[7]

The results of this estimation are shown in Table 11 for all nonretired veterans and for nonretired veterans working full-time, year-round. The estimates are fairly typical for models of this sort. For example, the coefficients on age and age-squared imply a relatively

Table 11

DETERMINANTS OF 1976 EARNINGS FOR MALE NONRETIRED VETERANS
AGED 37-64: REGRESSION RESULTS BASED ON 1977 CPS

	All Nonretirees			Nonretirees Working Full-Time, Year-Round		
	Variable Mean	Regression		Variable Mean	Regression	
Variable		Coefficient	(Std. Er.)		Coefficient	(Std. Er.)
Age	50.2	1,529	(161)	49.5	785	(194)
Age-squared ($\div$ 100)	25.7	−1,685	(160)	25.0	−840	(196)
Education[a]						
Non-H.S. graduate	29.1%	−2,823	(210)	23.5%	−2,130	(254)
Some college	15.8%	1,959	(251)	17.1%	2,232	(278)
College graduate	10.0%	7,099	(297)	11.6%	7,425	(320)
Post-graduate	8.9%	7,714	(311)	10.3%	8,165	(335)
Location[a]						
South	29.3%	−1,712	(221)	28.6%	−1,248	(251)
West (excl. Calif.)	8.3%	−1,855	(331)	8.1%	−1,302	(380)
California	9.6%	−1,263	(309)	9.6%	−435	(357)
East	24.9%	−655	(229)	24.6%	3	(260)
Race[a]						
Black	7.1%	−2,826	(328)	6.0%	−2,547	(406)
Other minority	0.7%	−777	(1,024)	0.7%	−1,412	(1,167)
Constant		−20,440	(3,974)		−3,337	(4,766)

[a]0-1 categorical variables. Thus, the sample mean reflects the percentage of the sample with this attribute.

flat, inverted U-shaped curve, with earnings at a peak between 45 and 50 years of age. The coefficients on the education variables (evaluated relative to high-school graduates, the excluded categorical variable) are likewise typical. High-school graduates earn more than non-high-school graduates, less than those with some college, and so forth. The geographic location variables (evaluated relative to the Midwest, the

[6] The 1977 DRS contains categorical variables regarding educational attainment (e.g., whether or not the individual is a high-school graduate), not the years of schooling completed. The 1977 CPS data on years of schooling completed were converted to the same categorical dummy variables so that the data would be consistent with the 1977 DRS.

[7] Although most studies have used log-linear functional forms, the simple linear model was used here, primarily for expositional convenience. Log-linear models were also estimated, but they revealed no substantive difference from the linear models.

excluded categorical variable) indicate lower earnings in the South and West than in the East and Midwest. (California was entered as a separate dummy variable, since it has a large concentration of military retirees and may be somewhat atypical of its geographic region.) Finally, Table 11 shows that blacks and other nonwhites earn less than whites, the excluded categorical variable.

In the second stage of the estimation process, as described earlier, the regression coefficients from Table 11 were combined with retirees' characteristics to generate estimates of what their post-service earnings would be if they were typical of nonretired veterans with similar characteristics. (The estimates were constructed by multiplying the coefficients in Table 11 by actual retiree age, education, geographic location, and race.) The estimates were then subtracted from each retiree's actual post-service earnings to obtain his post-service earnings differential. This differential, whether positive or negative, was treated as the dependent variable in a regression model.

The post-service earnings differentials were then estimated as a function of individuals' personal attributes (including education and race, but excluding age),[8] military experience, and certain post-service factors. The regression coefficients for personal attributes measure the extent to which military retirees with these particular attributes differ from their nonretiree counterparts. Miliary experience variables include military service, career length, rank, and military occupation. Variables reflecting retirees' post-service activities include years retired and geographic location. As indicated later, certain other variables were also examined.

Before proceeding with the analysis of retirees' post-service earnings, it is important to put this analysis and the resulting comparisons of retirees and nonretired veterans into the proper perspective. Specifically, this analysis follows the previous literature in using the *average* earnings of nonretired veterans with similar attributes as the

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[8] Because of the collinearities among age, career length, and time since retirement, it was not possible to include all three variables in the regression. Age and age-squared were therefore excluded, on the grounds that differences between retirees and non-retirees with respect to the effects of age on earnings are likely to be small, whereas career length and length of time retired are potentially very important determinants of post-service earnings. (As noted earlier, this is equivalent to constraining the age coefficients in the retiree equation to be the same as they were for nonretired veterans; see Table 11.) The exclusion of age thus has the practical effect of assuming that retirees' age-earnings profiles have the same shape (though not necessarily the same level of income) as those of nonretirees. To test the validity of this assumption, the residuals from the earnings-differentials equation were regressed against age and age-squared. In no case (i.e., officer or enlisted, all retirees or only those employed full-time, year-round) were either of the coefficients statistically different from zero. Thus, the hypothesis that the shape of retirees' age-earnings profiles is the same as that of nonretirees, other things being equal, cannot be rejected.

benchmark for evaluating retirees' post-service earnings. In other words, we have assumed that retirees and nonretired veterans with the same measured attributes (e.g., age, education, and race) are in fact "comparable."

Officers

The regression results for retired officers are shown in Table 12. The constant term in the regression coefficient for all retirees relative to all nonretired veterans can be interpreted as the post-service earnings differential for the typical retired officer who retired after 20 years, held the rank of O-5, was a "regular" officer (rather than a career reservist), served most of his career in occupations other than tactical operations, has a college degree (and had that degree at the time he retired from the military), is white, has been retired for at least 10 years, and did not cite the desire to be near a military installation or a low-cost-of-living area as a principal reason for selecting his post-service relocation area.[9]

The results indicate that, correcting for age and geographic location,[10] the typical officer who serves 20 years has just about the same earnings as his nonretired veteran counterpart; these calculations indicate that he, in fact, earns $97 per year more, on the average, than his nonretired peer, though this is not, of course, statistically significant. Moreover, the constant term for retirees working full-time, year-round indicates that this typical retired officer earns about $3,300 per year *more* than comparably aged and located nonretired veterans working full-time, year-round.

Variables 2 and 3 show that retired officers with less than a college education do even better relative to their nonretired peers. For example, among all retirees, 20-year O-5s with a high-school diploma earn about $5,500 more, and those with some college earn about $4,700 more than comparably educated nonretired veterans.[11] The earnings

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[9] The excluded categorical variables in the regression model are therefore (1) college degree, (2) the same education now as at the time of retirement, (3) white, (4) rank of O-5, (5) regular officer, (6) main occupation in the service something other than tactical operations, (7) retired for at least 10 years, and (8) relocation area not chosen because of proximity to a military base or a low-cost-of-living area. In addition, variables 8 and 9 are equal to zero for an individual who served 20 years. The constant term in the regression therefore takes on the meaning of these excluded categorical variables. Obviously, the choice of which of the categorical variables to exclude does not substantively affect the results. However, choosing them aids in the interpretation of those results.

[10] "Correcting for" in the sense that retirees' estimated earnings from the first stage of the analysis were generated using the age and geographic region coefficients for nonretired veterans, as reported in Table 11.

[11] This does not mean that retirees with a high-school education or some college earn more than college graduate retirees; rather, a 20-year careerist who is a typical retiree except for education earns more than comparably educated nonretirees.

Table 12

Comparison of Retired Officers' Post-Service Earnings with Those of Nonretiree Counterparts: Regression Results[a]

	Variable[b]	All Retirees Relative to All Nonretired Veterans			Retirees Working Full-Time, Year-Round Relative to Veterans Working Full-Time, Year-Round		
		Percent of Sample[c]	Regression		Percent of Sample[c]	Regression	
			Coefficient	(Std. Error)		Coefficient	(Std. Error)
1.	Constant	...	97	(959)	...	3326	(1051)
	Education:						
2.	High school graduate	14.4	5501	(997)	15.6	5838	(1116)
3.	Some college	35.4	4761	(798)	36.6	4371	(920)
4.	Post-graduate	33.5	2450	(783)	32.6	1053	(907)
5.	Less ed. at retirement	21.7	3771	(667)	18.6	-2460	(792)
6.	Race: Black	1.1	4320	(2474)	0.9	3501	(3094)
7.	Other minority	0.9	1356	(2700)	0.8	524	(3289)
8.	LOS-20 (if LOS < 30)[d]	...	538	(116)	...	349	(131)
9.	Served 30 years or more	16.9	6487	(964)	11.5	-5816	(1174)
10.	Rank: Warrant	11.9	-1221	(966)	12.2	-3492	(1065)
11.	0-3	11.0	1199	(996)	12.9	-3975	(1073)
12.	0-4	24.3	789	(718)	26.2	1776	(784)
13.	0-6	18.7	1124	(822)	14.4	3613	(1027)
14.	0-7 or higher	0.7	5211	(3214)	0.5	1419	(4021)
15.	Career reservist	28.3	1572	(613)	30.8	2287	(669)
16.	"Combat" occupation[e]	23.2	-1023	(625)	24.1	-1277	(691)
17.	Years retired: 0-1	1.8	-8959	(1934)	0.8	-7087	(3308)
18.	2-3	11.9	-6404	(867)	9.6	-4980	(1028)
19.	4-6	18.9	-4447	(749)	17.3	-3759	(820)
20.	7-9	21.6	-1237	(706)	21.8	-1057	(761)
21.	Moved to live in low-cost-of-living area[f]	7.6	-2808	(979)	6.7	-3217	(1183)
22.	Moved to live near a military base[f]	6.0	-2534	(1097)	5.4	-798	(1284)

[a]Regression model with the dependent variable calculated as the difference between retirees' actual earnings and estimated earnings, where the estimated earnings are based on the regression coefficients for nonretired veterans from the CPS shown in Table 11 and retirees' characteristics (i.e., age, education, race, and geographic location).

[b]With the exception of "LOS-20," the variables are categorical.

[c]Percent of the sample having the particular characteristic.

[d]Equals career length minus 20, i.e., equals 0 for 20-year career, 1 for 21-year career, and so forth, up to 9 for 29-year career. Equals zero for careers of 30 or more years.

[e]For officers, defined as tactical operations; for enlisted, defined as infantry, gun crews, etc.

[f]Individuals who cited the desire to move to a low-cost-of-living area or to be near a military installation as an important factor in their post-service relocation, i.e., who said that this "very much" or "fairly much" played a role in their relocation decision.

differentials for full-time, year-round-employed retired officers with less than a college degree are even more impressive. A 20-year O-5 with a high-school diploma who is employed full-time, year-round earns about $9,000 more than comparably aged and located nonretired high-school graduates—that is, the constant term plus the coefficient for a high-school diploma equals $9,000.[12]

The coefficients for variable 5 indicate that retirees who acquired some of their education after leaving the military earn an average of nearly $4,000 less than those who received their education before leaving the military, other things being equal. Thus, a retired officer with post-graduate training who had only a college degree at retirement would earn about $1,300 less than the typical nonretiree with a post-graduate degree—i.e., $3,771 for variable 5 less $2,450 for variable 4 in Table 12. This gives further support to the notion that retirees who acquired education after leaving the military cannot be directly compared with similarly educated nonretirees who acquired their education 20 years or so earlier.

The regression results for variables 6 and 7 indicate that retired nonwhites fare better in their post-service employment than other nonwhite veterans. Although the actual coefficients are not always statistically significant, alternative specifications of the model consistently yield positive coefficients for the "black" and "other minority" variables. Two factors probably account for this, as earlier studies have also indicated. First, minority personnel who have served a full career in the military probably represent the "cream" of the respective populations. Second, a successful military career may serve as a form of certification for minority personnel who otherwise might have more difficulty securing attractive employment.

The remainder of the variables in Table 12 reflect aspects of the retiree's military career or the period since he left the service.[13] Variables 8 and 9 indicate that retirees who serve longer in the military,

[12] It should be noted, though, that many of the retired officers with only a high-school education retired at a lower rank than O-5, which, as can be seen from variables 10 through 12, somewhat offsets the magnitude of this differential.

[13] The regression model presented in Table 12 does not include variables to represent the retiree's military service because when such variables were included in earlier specifications of the model, they did not generally prove to be statistically significant. The only exception to this was in the total retiree sample, where the military-service variables were occasionally marginally significant. To the extent that such differences did appear, Marine Corps retirees, both officer and enlisted, generally fared better than retirees from the other services (although Navy retirees exhibited earnings not much below those of Marines). At the other end of the spectrum, Air Force officers and Army enlisted retirees fared the least well. But given the marginal significance of these variables, the simpler model was chosen for this analysis, especially since the inclusion or exclusion of the military-service variables never materially affected the other coefficients in the estimation.

other things being equal, have lower post-service earnings than those serving shorter careers. For example, variable 8 indicates that each year served beyond 20 (and up to 30) results in an average reduction of $538 per year in post-service earnings.[14] Thus, other things being equal, a retired officer serving 25 years could expect to earn nearly $2,700 less per year than one who served 20 years (i.e., 5 times $538, or $2,690). Variable 9 also shows that individuals serving 30 years or more earn, on the average, nearly $6,500 less than 20-year retirees. Similar results, though of smaller magnitude, are shown for retirees employed full-time, year-round.[15]

Variables 10 to 14, as expected, show that individuals retiring at a higher rank earn more in their post-service employment, other things being equal. For example, retired O-6s earn about $1,000 per year more than retired O-5s (the excluded rank variable), while O-6s employed full-time, year-round earn about $3,600 more than fully employed O-5s. Retired O-4s, O-3s, and warrant officers all earn less than O-5s, and so forth. This relationship between rank and post-service earnings is probably attributable to three factors: First, individuals promoted to higher ranks tend to be those with greater ability and potential, given the nature of the promotion selection process. Second, higher-rank personnel generally have the types of in-service job experience that qualify them for higher-paying jobs in the civilian labor market. And third, there is probably a certification effect associated with service in a higher rank.

Variable 15 shows that career reservists earn $1,500 to $2,300 less than regular officers. This, however, is likely to be an indication of quality, since officers who are selected for regular status are generally of higher quality.

Retirees whose careers consisted mainly of tactical operations, or combat-type assignments, generally earn less than other retirees. The in-service job skills acquired in these occupations are probably not as

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[14] Career length was initially modeled using a series of dummy variables. It became clear after examining the coefficients for these dummy variables that the fall-off in earnings according to career length was nearly linear, with the exception of careers of 30 years or more, where there were too few observations to detect differences between, say, 32- and 33-year careers. As a result, the final model was structured so that career length, if less than 30 years, was entered as a continuous variable (less 20, so that the constant term would be easier to interpret). For careers of 30 years or more, career length was simply entered as a dummy variable, i.e., variable 9.

[15] These career length variables may be subject to two, possibly offsetting, selection biases. On the one hand, the coefficient may be biased away from zero, since, other things being equal, those retiring earlier are likely to have higher civilian earnings— attractive post-service employment being the reason for their leaving. On the other hand, the coefficient may be biased toward zero, since, other things being equal, the more highly qualified will stay longer, on the average, because they enjoy better promotion prospects.

transferable to the civilian job market, or at least they are perceived as being less transferable. It should be noted, however, that the magnitude of the combat/noncombat job difference (shown by variable 16) is relatively small—only about $1,000 per year—and not statistically significant at a 95 percent confidence level.

The remaining variables in Table 12 address the post-service lives of retirees. Two types of variable in particular are considered: length of time on the retired rolls and post-service geographic relocation.

Consistent with the cross-tabulations presented earlier, variables 17 to 20 show that recent retirees have far lower earnings than retirees who have been out of the military for a longer period of time. For example, officers retired for a year or less earn nearly $9,000 less than those retired for 10 or more years (the excluded categorical variable). Similarly, officers retired for two to three years earn $6,400 less than those who have been out of the service for 10 years or more, and those retired for four to six years earn nearly $4,500 less.[16] This transition effect seems to disappear, for the most part, by the end of the sixth year, as the coefficients for individuals retired more than seven years are not statistically significant. (In fact, in some earlier specifications of the model, the coefficient for individuals serving seven to nine years was actually positive, though again not statistically significant.)

While some of this transition effect is probably the result of voluntary behavior on the part of retirees—i.e., of voluntary decisions to work fewer hours and/or weeks—some of it is not. Indeed, the regression results in Table 12 indicate that individuals working full-time, year-round and retired for three years or less earn an average of $5,000 to $7,000 less per year than full-time, year-round-employed retirees who have been out of the military for 10 years or more. Since the constant term for this group is about $3,300, the typical full-time, year-round-employed 20-year careerist retired for three years or less earns some $1,700 to $3,700 less than his typical nonretired counterpart.

By the time an individual has been out of the service for four years or so, however, he is earning about as much as his nonretired counterpart—the coefficient for fully employed individuals retired four to six years is just about offset by the constant term. After 10 years on the retired rolls, he is earning, on the average, about $3,300 more.

Finally, post-service geographic location is an important determinant of retirees' earnings and employment prospects. Disproportionately large numbers of retirees choose to relocate in the South or the West—about 80 percent of all military retirees, as contrasted to less

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[16] Interactions between length of time retired and career length were also estimated but were found to be statistically insignificant

than 50 percent of nonretired veterans. But wages and salaries are lower in the South and West, so retirees living in these areas earn $1,000 to $2,000 less than those living elsewhere in the country. Although regional variables were not included in the regression model of Table 12, since they generally proved to be statistically insignificant,[17] the regional effect is implicitly taken into account by the use of the nonretired veteran regression results in Table 11 as a basis for computing the results in Table 12.

Table 12 also shows two other relocation variables to be important determinants of retirees' post-service earnings. The first is the cost of living in the area. The 1977 DRS asked retirees the reasons for their post-service relocation choices, and nearly 8 percent indicated that the desire to be in a low-cost-of-living area played an important role. However, low-cost-of-living areas also tend to have lower wages and salaries, as indicated by the fact that these same retirees earn about $3,000 less than other retired officers, other things being equal.

This decision makes sense on economic grounds for many retirees, since retirement pay is stated in nominal dollars and is not tied to the cost of living in a particular area. Thus, although wages and salaries are generally lower in low-cost-of-living areas, military retirement pay goes farther. Therefore, retirees who choose to relocate in these areas do not necessarily have lower *real* (as opposed to nominal) incomes.

Table 12 also shows that the 6 percent of military retirees who cited the desire to be near a military installation as a primary reason for their post-service geographic relocation earn about $2,500 less than other retirees, other things being equal. Although there are certainly some advantages to being near a military base—e.g., proximity to military medical facilities, the availability of commissaries and post exchanges, and the opportunity to live near other military personnel (active and retired)—individuals choosing such relocation pay a price in the form of lower post-service earnings.

It is important to recognize, though, that each of these geographic relocation decisions—to live in the South or the West, to move to low-cost-of-living areas, or to reside near a military installation—is *voluntary* on the part of the retiree.

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[17] The only exception to this is that for retired officers as a whole, the South, California, and the East all show statistically significant positive coefficients. For all the other regressions—i.e., full-time officers, all enlisted, and full-time enlisted—the regional coefficients were almost always statistically insignificant. As with the military service variables, the simpler model, i.e., the one excluding the regional variables, was used. It should be emphasized, though, that the exclusion of these variables from the model is not likely to materially affect the other coefficients in the estimation or the broader conclusions that can be drawn. Indeed, some preliminary models included the geographic region variables, and the other coefficients were affected little by this inclusion.

Enlisted Personnel

The regression results for enlisted retirees presented in Table 13 yield the same general findings as those shown in Table 12 for officers. The constant term indicates that the "typical" enlisted retiree who has been on the retired rolls for at least 10 years earns about $1,500 more than his nonretired veteran counterpart.[18]

Variables 2 through 5 show that enlisted retirees with less education fare better, relative to their peers, than do those with more education. Variable 6 shows that enlisted retirees who acquired their present educational level after leaving the military earn about $2,500 less than retirees with a comparable education who received that education prior to leaving the military.[19]

Variable 7 shows that the nearly 6 percent of enlisted retirees who are black earn about $2,000 more annually than their nonretired counterparts; this difference is statistically quite significant.

Just as the variables reflecting enlisted retirees' personal attributes yield results quite similar to those for retired officers, so do the variables that measure various aspects of enlisted retirees' military careers. Variables 9 and 10 show that enlisted retirees who served longer careers generally earn less in their post-service careers than do those serving shorter careers.[20] This seems to result from both voluntary behavior on the part of retirees who serve longer careers and difficulty in finding post-service employment.[21] (Recall from Table 9 that a larg-

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[18] "Typical" in this case refers to a white enlisted retiree with a high-school diploma who served 20 years in a non-combat-arms occupation, retired as an E-7, and did not relocate either to be near a military base or to be in a low-cost-of-living area. The excluded categorical variables in the regression model are therefore (1) high-school graduate, (2) the same education at retirement as at present, (3) white, (4) 20-year career, (5) retirement as an E-7, (6) the majority of the career in a non-combat-arms occupation, (7) retirement for at least 10 years, and (8) relocation area not chosen because of the desire to be near a military base or in a low-cost-of-living area.

[19] It is interesting to note that variable 6 accounts for more than half of the earnings differential for those with some college that was reported earlier in Table 7. Table 7 showed average earnings of $10,056 for all enlisted retirees with some college in 1976, about $3,800 less than the annual incomes of comparably educated nonretired veterans. But Table 8 shows that 64 percent of these individuals acquired their present level of education after leaving the military. Thus, the $2,500 coefficient for variable 6 in Table 13 accounts for more than half of the $3,800 difference.

[20] The coefficient for full-time, year-round-employed enlisted retirees who served 30 or more years is an anomaly in this regard, as it indicates that these individuals earn more than 20-year careerists. However, the coefficient is neither statistically significant (the standard error is almost as large as the coefficient) nor ve— meaningful (only 2 percent of the sample served 30 or more years). Moreover, it is interesting to note that this is the *only anolamous coefficient in any of the four regressions presented here* (i.e., all retirees and full-time, year-round-employed for both retired officers and retired enlisted personnel).

[21] As was the case for retired officers, this result is subject to the possible selection biases described in footnote 15 on p. 25.

Table 13

COMPARISON OF ENLISTED RETIREES' POST-SERVICE EARNINGS WITH THOSE
OF NONRETIREE COUNTERPARTS: REGRESSION RESULTS[a]

	All Retirees			Retirees Working Full-Time, Year-Round		
		Regression			Regression	
Variable[b]	Percent of Sample[c]	Coefficient	(Std. Error)	Percent of Sample[c]	Coefficient	(Std. Error)
1. Constant	...	1539	(486)	...	1831	(539)
Education:						
2. Non-H.S. graduate	32.6	2686	(509)	32.2	2182	(557)
3. Some college	32.4	765	(608)	32.9	1188	(646)
4. College graduate	2.2	5769	(1420)	1.8	5045	(1719)
5. Post-graduate	3.6	1733	(1161)	3.4	1731	(1302)
6 Less ed. at retirement	31.4	2516	(539)	28.4	1107	(599)
7. Race Black	5.9	2187	(844)	5.4	1793	(965)
8 Other minority	4.1	740	(1005)	3.7	377	(1147)
9. LOS-20 (if LOS < 30)[d]	...	459	(100)	...	322	(118)
10 Served 30 years or more	3.6	2664	(1092)	2.2	1752	(1496)
11. Rank E-5 or less	7.0	3128	(812)	6.1	3950	(953)
12 E-6	22.4	1070	(522)	22.6	1070	(574)
13 E-8 or higher	27.3	569	(506)	28.5	140	(548)
14 "Combat" occupation[e]	11.4	1857	(623)	10.4	1300	(714)
15. Years retired: 0-1	2.0	8405	(1409)	0.5	3360	(3160)
16 2-3	14.9	4924	(603)	11.5	3404	(722)
17 4-6	20.9	2548	(534)	21.1	2475	(579)
18 7-9	20.5	306	(536)	24.4	1007	(552)
19 Moved to live in low-cost-of-living area[f]	9.3	1728	(679)	8.4	1919	(777)
20 Moved to live near a military base[f]	8.1	1544	(723)	6.8	1248	(860)

[a]Regression model with the dependent variable calculated as the difference between retirees' actual earnings and estimated earnings, where the estimated earnings are based on the regression coefficients for nonretired veterans from the CPS shown in Table 11 and retirees' characteristics (i.e., age, education, race, and geographic location)

[b]With the exception of "LOS-20," the variables are categorical.

[c]Percent of the sample having the particular characteristic.

[d]Equals career length minus 20, i.e., equals 0 for 20-year career. 1 for 21-year career, and so forth, up to 9 for 29-year career. Equals zero for careers of 30 or more years.

[e]For officers, defined as tactical operations; for enlisted, defined as infantry, gun crews, etc.

[f]Individuals who cited the desire to move to a low-cost-of-living area or to be near a military installation as an important factor in their post-service relocation, i.e., who said that this "very much" or "fairly much" played a role in their relocation decision.

er proportion of longer-serving retirees voluntarily choose to work less.) Variables 11 to 13 show, as expected, that retirees who reached a higher rank earn more in their post-service employment.

The results for variable 14 indicate that enlisted retirees whose careers consisted mainly of combat-arms occupations (e.g., infantry, gun crews) earn somewhat less than other enlisted retirees. This result is both more significant and more important for enlisted retirees than for retired officers. First, whereas the effect was only marginally statistically significant for retired officers, it is highly significant for enlisted retirees. Second, the coefficient of nearly $2,000 shown in Table 13 is not only larger in absolute amount than that for officers, it is even

larger relative to enlisted retirees' average earnings. Whereas retired officers who served in tactical operations assignments earn about 8 percent less than other retired officers, enlisted retirees who served in combat-arms occuptions earn nearly 20 percent less than other enlisted retirees.

Variables 15 to 18 show that recent retirees earn much less, on the average, than retirees who have been out of the service for a longer period of time. Finally, variables 19 and 20 show that enlisted retirees citing the desire to be in a low-cost-of-living area or to be near a military installation as a primary reason for their post-service geographic relocation earn $1,000 to $2,000 less than their counterparts who did not base their relocation decision on these factors.

Summary

To summarize, the regression results for officer and enlisted re- tirees presented in Tables 12 and 13 indicate five important findings. First, controlling for age, education, and geographic location, the typi- cal retiree who left the military on or shortly after his 20th anniver- sary earns about as much as or somewhat more than his nonretired veteran counterpart once he has been in the civilian labor force for 5 to 10 years. Second, although the retiree's particular military service does not seem to have much effect on his post-service earnings, other aspects of his military career do—especially his career length, rank, type of military occupation, and, for officers, whether he was a regular officer or a career reservist. Third, to the extent that retirees *volun- tarily* choose to locate in the West or the South, to reside in a low-cost- of-living area, or to be near a military installation—areas in which nominal pay is lower—they exhibit lower nominal post-service earn- ings. Fourth, there seems to be a transition period from military to civilian life, during which retirees do not earn as much as their non- retired veteran counterparts. And fifth, the second-career earnings loss of retirees is largely a result of the fact that retirees work less than other veterans. These last two findings are particularly important. Therefore, they are explored in more detail below.

The Transition Effect

It is clear from the regression results presented in Tables 12 and 13, as well as from the cross-tabulations presented earlier, that recent retirees earn less than those who have been on the retired rolls for a longer period of time. Several factors, some voluntary and some

beyond the retiree's control, seem to be responsible for this transition effect.

Table 14 shows that a significant number of retirees, especially retired officers, go back to school after separation from the military. Moreover, many retirees, especially those who served 30 or more years (officer and enlisted alike), are neither working nor looking for work. Though not shown in Table 14, this latter group seems to consist of two types of individuals, those who view themselves as "retired" and those who simply decided to take some time off before seeking post-service employment. Finally, a small but not insignificant proportion of retirees voluntarily work part-time immediately after leaving the military. The important point is that these three immediate post-service activities—going to school, not working and not looking for work, and voluntarily working part-time—are all *voluntary* actions. Together, they account for more than 25 percent of retired officers and more than 15 percent of enlisted retirees.

Thus, counting the approximately 50 percent of retired officers and the 60 percent of enlisted retirees who took on full-time employment immediately after leaving the military, roughly 80 percent of the miliary retirees either worked full-time immediately after separating from the service or voluntarily decided not to. About 20 percent of the retired population were not immediately able to secure the type of post-service employment they wanted—i.e., these individuals were either not working but looking for work or were working part-time but looking for full-time employment. However, as will be shown later in this section, only about 5 percent of the retirees out of the service for more than five years are "involuntarily" unemployed, which means that most of this 20 percent subsequently do find employment.

The foregoing is given further support by the results presented in Table 15, which show that the median time spent looking for a job

Table 14

RETIREES' IMMEDIATE POST-SERVICE ACTIVITIES
(PERCENT)

Sample	Working Full Time	Working Part Time	Working Part Time but Looking for Full Time	Not Working but Looking for Work	Not Working and Not Looking	Going to School
Officers						
20-24 yr. careers	58.3	2.1	2.7	18.4	5.5	12.6
25-29 yr. careers	50.6	3.6	2.2	17.5	15.6	10.4
30-35 yr. careers	35.0	5.5	1.6	21.1	28.5	8.3
All	52.1	3.3	2.4	18.6	12.3	11.2
Enlisted						
20-24 yr. careers	65.1	3.1	5.6	15.1	4.5	6.5
25-29 yr. careers	46.5	6.9	2.6	21.4	12.5	10.0
30-35 yr. careers	26.6	13.5	14.8	18.3	20.6	6.3
All	61.1	4.0	5.6	16.0	6.1	6.9

Table 15

MONTHS SPENT LOOKING FOR A JOB IMMEDIATELY
FOLLOWING RETIREMENT[a]

Sample	Mean	Median	75th Percentile	90th Percentile
Officers				
20-24 yr. careers	2.0	0.0	2.0	6.0
25-29 yr. careers	2.5	0.0	2.0	6.0
30-35 yr. careers	3.9	0.0	3.0	9.7
All	2.5	0.0	2.0	6.0
Enlisted				
20-24 yr. careers	2.2	0.0	2.0	6.0
25-29 yr. careers	2.7	1.0	3.0	6.3
30-35 yr. careers	4.8	1.0	6.0	12.0
All	2.3	0.0	2.0	6.0

[a]The modest differences between these estimates and those repcrted in the PCMC's final report are the result of additional data cleaning completed subsequent to the preparation of the PCMC report.

after leaving the service is *zero* months,[22] and that 90 percent of all the retirees surveyed found a job within six months or less. Thus, the vast majority of retirees who seek post-service employment find it within a relatively short period of time, although it appears that they are forced to accept a lower wage initially in order to secure this employment. Indeed, the results in Tables 12 and 13 show that even those retirees employed full-time experience some transition, in the form of lower annual earnings during their first few post-retirement years. The transition is relatively short-lived, as full-time, year-round-employed retirees earn as much as or more than their nonretired counterparts within three to six years. But it is costly: Fully employed retired officers earn about $35,000 less over this transition period than they would if there were no such transition; and fully employed enlisted retirees, about $20,000 less. Thus, although military retirees eventually fare quite well relative to their nonretired peers, there is clearly a transition period during which their earnings are substantially less.

Employment Status and Type of Employment

It is clear from both the cross-tabulations (Tables 7 and 10) and the regression results (Tables 12 and 13) that the single most important

[22] That is, more than half of all retirees spend less than a month looking for a job after leaving the military. They either locate employment very quickly after retiring or manage to secure post-service employment while still in the military. (Indeed, those in this latter category may have timed their retirement to coincide with the availability of their post-service job.)

difference between retirees and nonretirees is that retirees work less. Only 56 percent of retired officers work full-time, year-round, compared with 80 percent of the comparably aged and educated nonretirees; 64 percent of enlisted retirees work full-time, year-round, versus 73 percent of their nonretired counterparts. (In fact, controlling for hours and weeks worked, both enlisted retirees and retired officers actually earn more than their nonretired counterparts.)

It is clear, moreover, that the retirees' pattern of working fewer hours is mostly *voluntary.* Table 16 shows that only about 15 percent of those not working full-time, year-round (officer and enlisted alike) are looking for work. In other words, *about 85 percent of the individuals not working full-time, year-round are limiting their working hours voluntarily.*[23]

The results in Table 16 also illustrate the transition effect. Whereas nearly 20 percent of those retired within the past five years and not working full-time, year-round are looking for work, only about 10 percent of their counterparts retired more than five years are doing so.

Table 16

PERCENTAGE OF MILITARY RETIREES LOOKING FOR WORK

Sample	Retirees Not Working Full-Time, Year-Round			All Retirees		
	Retired $\leqslant$5 yrs	Retired $\geqslant$5 yrs	All	Retired $\leqslant$5 yrs	Retired $>$5 yrs	All
Officers						
20-24 yr. careers	19.6	15.0	16.3	8.3	5.2	6.0
25-29 yr. careers	18.6	10.6	12.2	9.9	4.8	6.7
30-35 yr. careers	16.0	9.9	13.4	10.8	5.5	8.3
All	17.9	12.6	14.4	9.4	5.1	6.3
Enlisted						
20-24 yr. careers	17.6	14.1	15.3	7.1	4.2	5.0
25-29 yr. careers	26.3	2.8	14.9	15.2	1.1	7.2
30-35 yr. careers	38.9	20.0	32.1	30.4	8.3	19.1
All	21.4	12.9	16.2	9.7	4.0	5.8

These results should not be viewed with surprise, however, since we would expect retirees in general, and recent retirees in particular, to work less than their nonretired peers. Unlike the case of individuals longer on the retired rolls, where the decision to work less appears to be driven mostly by supply-side (i.e., voluntary) factors, the fact that recent retirees work less appears to be the result of both supply- and demand-side factors. On the supply side, three factors seem to encourage recent retirees to voluntarily work less. The first is simply the

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[23] Raduchel et al. found essentially the same result using a more sophisticated simultaneous-equations econometric model.

large amount of nonwage income that these individuals receive; and indeed, economic theory predicts that individuals with larger amounts of nonwage income will, other things being equal, work less. Second, many recent retirees seem to view the transition from military to civilian life as a time "to take it easy for a while"—a sort of extended vacation. This is given some support by the sizable numbers shown in Table 14 "not working and not looking." Third, the availability of the GI Bill encourages recent retirees not to work, but instead to return to school. As indicated in Table 14, this is especially true for recent retirees who served shorter careers.

The fewer hours or weeks worked by recent retirees is not driven entirely by supply-side factors, however; recent retirees in fact do appear to have greater difficulty in securing attractive post-service employment. Even though most who look for work are able to find it within a relatively short period of time (as shown in Table 15), these individuals are at a substantial disadvantage relative to their non-retired peers for the first few years after retirement. This means, then, that the cost of not working is less for recent retirees than it is for other individuals. Thus, the voluntary decision by recent retirees to work fewer hours or weeks is clearly influenced by the limited opportunities available to them.

The same cannot be said for individuals longer on the retired rolls; their wages from full-time employment put them in a relatively advantageous position relative to their nonretired peers. Therefore, the fewer hours or weeks worked by individuals longer on the retired rolls seems more truly voluntary—that is, more a result of supply-side factors such as the large amount of nonwage income.

Other Factors Affecting Post-Service Earnings

In addition to the variables included in the regression results presented in Tables 12 and 13, the 1977 DRS included certain others as well.

To begin with, Table 17, which shows the mean of the full-time regression residuals from Tables 12 and 13 according to the similarity of the retiree's post-service employment and military occupation,[24] indicates that retirees whose post-service employment is similar to their military occupation earn considerably more than those whose post-service employment is unlike their military occupation. Retired

[24] For example, the "Very much like" line in Table 17 is simply the mean of the residuals from the regression equations shown in Tables 12 and 13 for individuals who indicated that their present post-service job is very similar to their military occupation. The other lines in Table 17 were calculated in a similar fashion.

Table 17

RETIREES' POST-SERVICE EARNINGS AS A FUNCTION OF
SIMILARITY OF POST-SERVICE EMPLOYMENT AND MILITARY
OCCUPATION: RETIREES WORKING FULL-TIME, YEAR-ROUND

| | Mean of Regression Residuals[a] | | | |
| | Officer | | Enlisted | |
Relationship of Post-Service Job to Military Occupation	Percent of Sample	Mean (Std. Error)	Percent of Sample	Mean (Std. Error)
Very much like	27.4	$2,280 (528)	25.7	$1,257 (412)
Somewhat like	25.4	280 (548)	21.6	292 (449)
Very little like	16.7	-765 (677)	13.1	-313 (577)
Not at all like	29.8	-1,922 (506)	38.8	-862 (335)

[a]Mean of the residuals from the regression model reported in Tables 12 and 13.

officers employed in jobs "very much like" their military occupation earn about $4,000 more than those in jobs "not at all like" their military occupation.[25]

Second, the results reported in Table 18 indicate that the type of employer also has a significant effect on retirees' post-service earnings.[26] Those employed by the federal government or by large businesses seem to earn appreciably more than average, while those employed by state and local governments or small businesses appear to earn less. For example, retired officers employed by the federal government earn over $4,000 more than the average retiree.[27]

[25] Although it would seem preferable to have included these variables directly into the regressions reported in Tables 12 and 13, they were excluded to keep the basic model simple and easier to explain. For the most part, the inclusion of job similarity variables in the regression model does not significantly affect the coefficients. The only exception is the "combat" variable, which, though still negative (and statistically significant for enlisted retirees), does decline somewhat in magnitude and statistical significance. (This change in magnitude and significance results, of course, from the fact that individuals serving in the combat arms are also likely to report that they are employed in post-service jobs not at all like their military occupation.) In other words, individuals who served in the combat arms exhibit lower earnings, on the average, than other retirees, even after the similarity between retirees' military and post-service occupations is taken into account.

[26] Table 18 was calculated in the same fashion as Table 17. The "Self-employed" column simply shows the mean of the residuals from the regression equations presented in Tables 12 and 13 for those individuals who indicated that they were self-employed.

[27] The mean of the residuals for retirees working full-time, year-round for employers other than the federal government is about -$500; the difference between this and the $3,738 for retired officers employed by the federal government is thus more than $4,000.

Table 18

RETIREES' POST-SERVICE EARNINGS AND TYPE OF EMPLOYMENT:
RETIREES WORKING FULL-TIME, YEAR-ROUND[a]

	Officer		Enlisted	
Type of Employment	Percent Answering	Regression Coefficient (Std. Error)	Percent Answering	Regression Coefficient (Std. Error)
Self-employed	11	$ 705 (813)	7	$2,056 (778)
Large business	24	1,599 (561)	26	1,122 (403)
Medium business	13	-252 (747)	16	-1,616 (513)
Small business	8	3,567 (966)	8	2,336 (720)
Federal government	14	3,738 (966)	21	1,541 (448)
State/local government	13	-2,094 (747)	11	-1,260 (610)
Other[b]	17	-1,281 (671)	11	-1,449 (607)

[a]Mean of the residuals from the regression presented in Tables 12 and 13.
[b]Includes elementary and secondary schools, colleges or universities, medical institutions, and other private organizations.

Finally, it is interesting to compare retirees' post-service earnings differentials with their own perceptions about their pay. Table 19 indicates that retirees are, on the average, quite accurate in their perceptions about how their pay compares with that of nonretirees.[28] For example, the earnings differentials for the 33 percent of retired officers and the 37 percent of enlisted retirees who felt that their pay was about the same as that of their nonretired counterparts are not statistically significantly different from zero. Retirees who indicated that their own pay was much better than that of comparable nonretirees show a statistically significant positive coefficient, while the converse holds for retirees who indicated that their own pay was much worse.

[28] Unlike Tables 17 and 18, which show the means of the residuals from the retiree regressions of Tables 12 and 13, Table 19 shows the mean of the post-service earnings differentials (i.e., retirees versus nonretired veterans), controlling for age, education, race, and region of the country. That is, these earnings differentials were calculated as the difference between retirees' actual earnings and the estimate of what those earnings would be if they were the same as those of nonretired veterans (where the latter were calculated using the CPS regression coefficients in Table 11). The "About the same" line, for instance, reports the average post-service earnings differential for those individuals who indicated that they thought their pay was about the same as that of nonretirees.

Table 19

RETIREES' POST-SERVICE EARNINGS AND SELF-EVALUATION OF THEIR PAY: RETIREES WORKING FULL-TIME, YEAR-ROUND

Retirees' Self-Evaluation of their Pay Relative to that of Comparable Nonretirees	Mean of Post-Service Earnings Differentials[a]			
	Officer		Enlisted	
	Percent of Sample	Mean (Std. Error)	Percent of Sample	Mean (Std. Error)
Own pay much better	13.9	$4,911 (781)	21.2	$1,096 (483)
Own pay a little better	14.1	2,282 (776)	16.7	292 (543)
About the same	33.2	715 (506)	37.0	-529 (365)
Own pay a little worse	21.9	-692 (623)	14.2	-1,598 (588)
Own pay much worse	14.1	-4,323 (776)	9.1	-3,535 (736)

[a]The difference between retirees' post-service earnings and the earnings for non-retired veterans, controlling for age, education, race, and region of the country (where these were controlled for by using the CPS regression results shown in Table 11).

Second-Career Earnings Losses

What do the preceding results tell us about military retirees' second-career earnings losses? To answer this, we must first define what is meant by "losses." In this sense, second-career earnings losses can be thought of as the difference between what retirees actually earn in their post-service careers and what they would have earned had they not served full careers in the military. Obviously, we can never know those losses with certainty, so the best we can do is to compare retirees' post-service earnings with the earnings of nonretirees who appear to be comparable in terms of certain measured attributes, such as age and education.

For the purposes of this analysis, the "comparable" group of nonretirees was defined as similarly aged and educated (and geographically located) nonretired veterans. As noted earlier, veterans were chosen as the base for comparison because they had to meet the same initial entry qualifications (e.g., physical and mental attributes) as retirees. But how truly comparable are they? A priori, we can think of two reasons why they might not be exactly comparable. On the one hand, the military's promotion and up-or-out personnel systems are designed to retain the most qualified personnel and weed out the least qualified. To the extent that military personnel policy is successful in achieving these objectives, we would expect retirees to be more capable, on the average, than the typical nonretired veteran. Thus, comparisons of retirees' average post-service earnings with the average

earnings of comparably aged and educated nonretired veterans probably understate retirees' second-career earnings losses. On the other hand, both theory and empirical evidence indicate that military personnel who voluntarily leave the service at the end of their initial obligation tend to be more capable than average. To the extent that this is true, the comparisons probably overstate retirees' second-career earnings losses.

Some rough calculations suggest that these two biases may just about offset one another, so that the average earnings of comparably aged and educated nonretired veterans would appear to be a reasonably good measure of what military retirees would have earned had they not served full careers.[29] The difference between the earnings of the two groups therefore appears to be a reasonably good measure of retirees' second-career earnings losses.

The above discussion and the empirical results presented earlier in this section suggest that military retirees do not on the average experience much second-career income loss. They do generally evidence an earnings loss during the transition from military to civilian life, but many make up at least some of this loss with higher-than-average earnings during the post-transition years. Based on the regression coefficients presented in Tables 12 and 13, Table 20 illustrates the post-service earnings losses (or gains) for several "typical" retirees. For example, the typical retired O-5 who served 20 years experiences an earnings loss of about $47,000 cumulative through the 10-year transition period and makes up only about $1,000 of this in the post-transition period, leaving a total second-career earnings loss of about

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[29] To illustrate, consider the case of retired officers. Assume first of all that the military initially attracts a roughly representative sample of college graduates. Assume further the following retention rates: 0 to 3 years of service, 80 percent cumulative retention; 4 years of service, 60 percent; 5 to 10 years of service, 80 percent; and 11 to 20 years of service, 80 percent. Finally, assume that about 80 percent of those who leave before completing five years of service are "below average," since the military presumably weeds out these individuals early. Assume that about 75 percent of those who leave in their fifth year (roughly the end of the initial obligation) are "above average" and that those leaving between their initial obligation and the tenth year are split evenly between "above average" and "below average"—i.e., some lower quality are forced out, while some higher quality select themselves out. Finally, assume that 75 percent of those leaving after their tenth year are "below average," having been forced out by the up-or-out system. Under these assumptions, those remaining at the end of 20 years are split almost evenly between "above" and "below" average, as illustrated below:

Length of Service	Number Above Average	Number Below Average	Total
Initial obligation	50	50	100
End of 4 years	46	34	80
End of 5 years	22	26	48
End of 10 years	17	21	38
End of 20 years	15	15	30

Table 20

SECOND-CAREER EARNINGS LOSSES FOR SOME TYPICAL RETIREES[a]

| Rank | Education | LOS (years) | Employment Status[b] | Baseline for Comparison ($ thousands)[c] | Post-Service Earnings Gain (Loss) ($ thousands)[d] | | | |
					Transition	Post-transition	Total	Percent
O-5	College	20	All	434.3	-46.8	1.3	-45.5	-10
O-5	College	20	FT-YR	484.5	5.3	43.2	+37.9	+1
O-5	College	23	FT-YR	421.3	-15.8	22.8	+7.0	+2
O-5	College	26	FT-YR	358.1	26.2	20.9	5.3	1
E-7	HS	20	All	320.3	19.8	26.2	+6.4	+2
E-7	HS	20	FT-YR	371.2	-5.6	31.1	+25.5	+7
E-7	HS	24	FT-YR	302.5	18.5	6.6	11.9	4

[a]The "typical" retiree is white, had a noncombat occupational speciality, and did not move to be near a military base or in a low-cost-of-living area.

[b]All retirees or full-time, year-round-employed retirees.

[c]Total (undiscounted) earnings for comparably aged and educated nonretired veterans over the equiva lent periods.

[d]Calculated on the basis of regression coefficients presented in Tables 12 and 13, assuming the individ ual works until age 65.

$46,000. The typical retired O-5 who served 20 years and who is employed full-time, year-round, however, has a transition period earnings loss of only about $5,000 and a post-transition gain of some $43,000. He therefore has a net second-career earnings *gain* of nearly $38,000. As a third example, the typical O-5 who served 26 years and is working full-time, year-round experiences a transition-period earnings loss of about $26,000 and a post-transition earnings gain of about $21,000, for a net loss of about $5,000.

These results are obviously only approximate and are dependent on the validity of the assumption that the earnings of comparably aged and educated nonretired veterans are a good measure of what retirees would have earned had they not served full military careers. But this does not appear to be an unreasonable assumption.

IV. MILITARY RETIREES' CAREER EARNINGS PROFILES

The combination of retired pay and post-service earnings results in an average income (exclusive of spouse earnings and other unearned income) for military retirees that substantially exceeds the average income for nonretired veterans, as shown in Table 21. Indeed, the average income for all retired officers is greater than the 75th percentile of the earnings distribution for comparably aged and educated nonretired veterans; and the average income for all enlisted retirees is near the 75th percentile.

If we consider only individuals employed full-time, year-round, the results are even more dramatic. As shown in Table 22, the combination of post-service earnings and retired pay places fully employed retired officers in the *upper 10 percent* of all full-time, year-round-employed military veterans. Enlisted retirees generally fall between the 75th and 90th percentiles.

Age-Earnings Profiles

Putting these findings into the context of age-earnings profiles provides some revealing insights into the lifetime earnings prospects for an individual who makes the military a career. Using the regression results presented in Table 12, Fig. 1 shows the career earnings profile

Table 21

AVERAGE 1976 POST-SERVICE EARNINGS PLUS MILITARY RETIREMENT
INCOME: MALE RETIREES AGED 40-64

Sample	Retirees			Nonretired Veterans		
	20-24 yr. Careers	25-29 yr. Careers	30-35 yr. Careers	All	Mean	75th Percentile
Officers						
High-school graduates	$20,184	$22,874	$20,370	$20,752	$11,747	$16,900
Some college	21,315	23,374	26,758	22,565	13,847	19,058
College graduates	25,795	28,833	28,912	27,338	18,976	25,600
All	23,193	26,250	26,966	24,707	16,128	22,000[a]
Enlisted personnel						
Some high school	15,002	15,511	8,208	14,864	9,407	14,600
High-school graduates	15,050	17,060	20,342	15,528	11,747	16,900
Some college	16,637	13,988	17,607	16,365	13,847	19,058
All	15,644	15,760	16,313	15,646	11,786	17,000[a]

[a]Estimated.

40

Table 22

AVERAGE 1976 POST SERVICE EARNINGS PLUS MILITARY RETIREMENT INCOME:
MALE RETIREES AGED 40-64 WORKING FULL-TIME, YEAR-ROUND

| Education	Retirees				Noncareer Veterans	
	20-24 yr Careers	25-29 yr Careers	30+ yr Careers	All	Mean	50th Percentile
Officers						
High school graduates	$24,753	$29,…	$26,14?	$26,030	$13,65?	$2?,54?
Some college	26,160	28,902	?5,03?	?,???	?1,057	2?,000
College graduates	31,38?	3?,7?0	38,020	33,22?	21,2??	2?,000
All	28,159	3?,65?	3?,09?	30,57?	18,???	2?,200ᵃ
Enlisted personnel						
Some high school	17,?6?	19,?5?	1?,?0?	??,900	12,00?	??,???
High school graduates	18,029	20,02?	30,?5?	18,??6	13,68?	1??,8??
Some college	19,?1?	20,62?	22,943?	19,94?	16,0??	20,000
All	,?,?4??	20,01?	2?,?4?	18,929	13,6??	1?,000ᵃ

ᵃEstimated

for two typical officers: one who retires at the end of 20 years as an O-5 and one who retires at the end of 26 years as an O-6.[1]

Part (a) of Fig. 1 shows that the typical 20-year officer retiree who chooses to work full-time immediately after leaving the military receives as much income as he did just before retiring, *even taking account of the post-service transition effect*. After he has been out of the military for about 10 years, the combination of post-service earnings and military retired pay exceeds his last RMC by about $9,000 per year, and it exceeds the median earnings for comparably aged and educated nonretired veterans by about $17,000.

Part (b) indicates that an officer retiring after 26 years as an O-6 does even better: The combination of retired pay and post-service earnings results in an increase of about $4,000 in his income immediately after separation. Once the transition effects have been worked out and he has been in the civilian labor market for 10 years, his earnings are about $11,000 more than his highest salary in the military, and more than double the median earnings for comparably aged and educated nonretirees.

Figure 2 presents lifetime earnings profiles for a typical enlisted member who retires as an E-7 at the end of 20 years and one who

[1] For the sake of illustration, both are assumed to be college graduates who entered the military at age 23 and who work full-time, year-round immediately upon separation from the military. Post-service earnings were calculated using the regression results for full-time, year-round-employed retired officers presented in Table 12, relative to the median earnings of comparably aged college-graduate veterans. The regression coefficients for "years retired" were smoothed. For a description of the data used to calculate nonretiree age-earnings profiles, see Richard V.L. Cooper, *Military Manpower and the All-Volunteer Force*, The Rand Corporation, R-1450-ARPA, September 1977, Chap. 15. The age-earnings profiles were updated to 1978 according to average earnings in nonagricultural employment as reported in the *Economic Report of the President*.
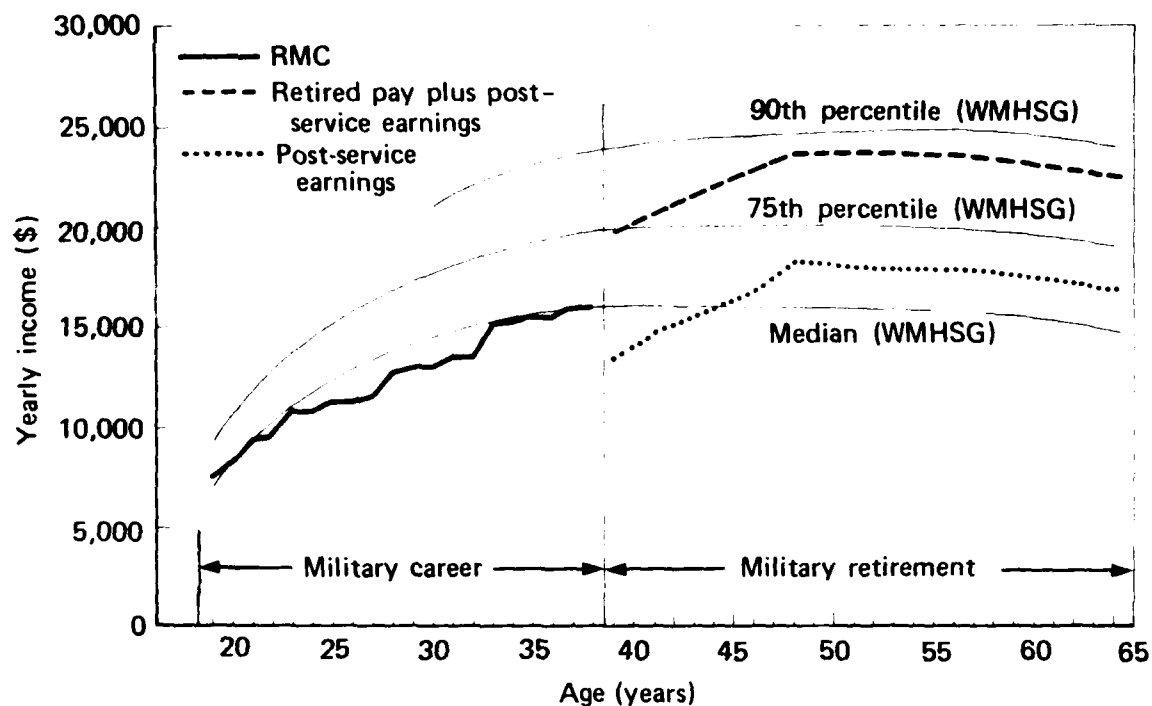
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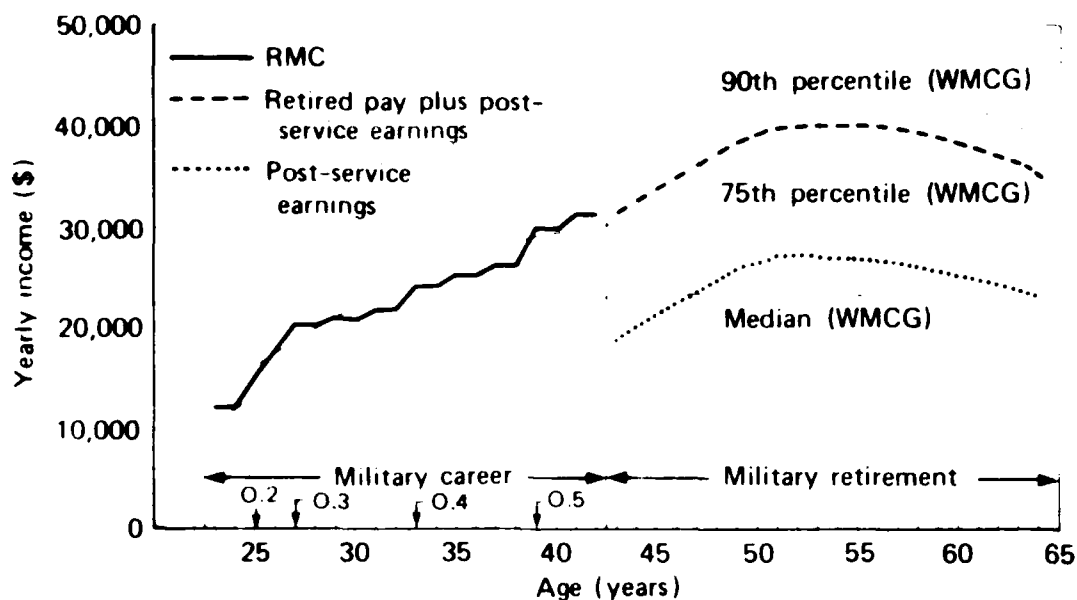
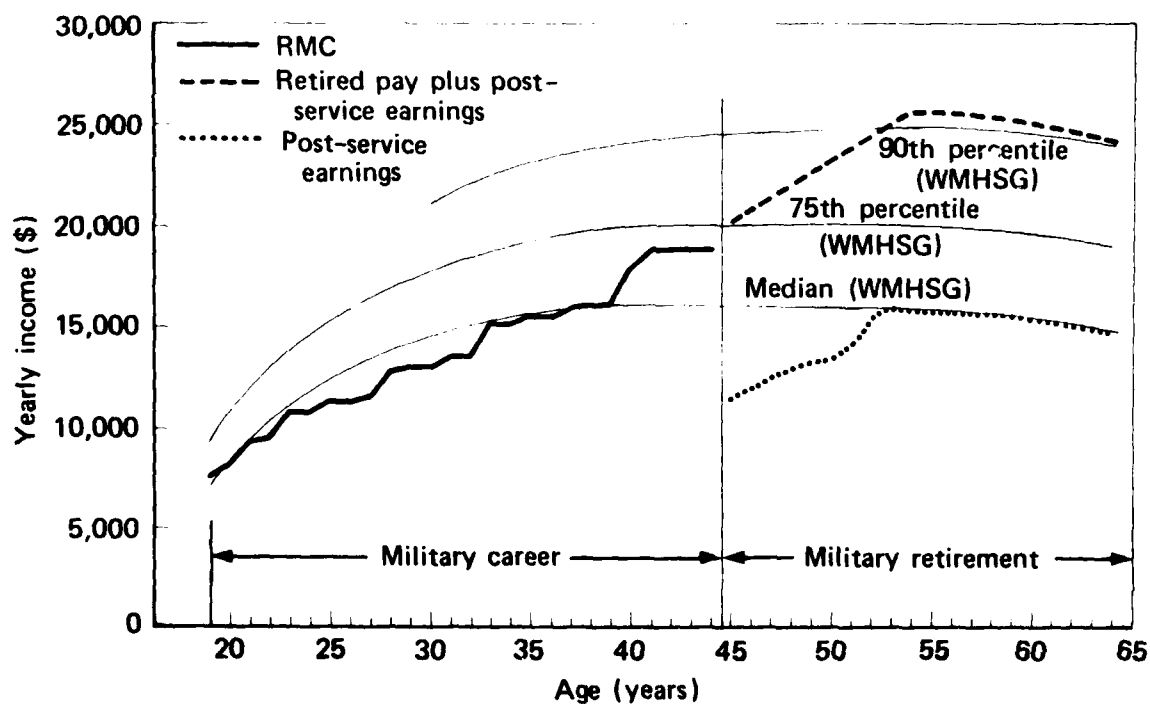(a) 20-year officer retiring as an O-5
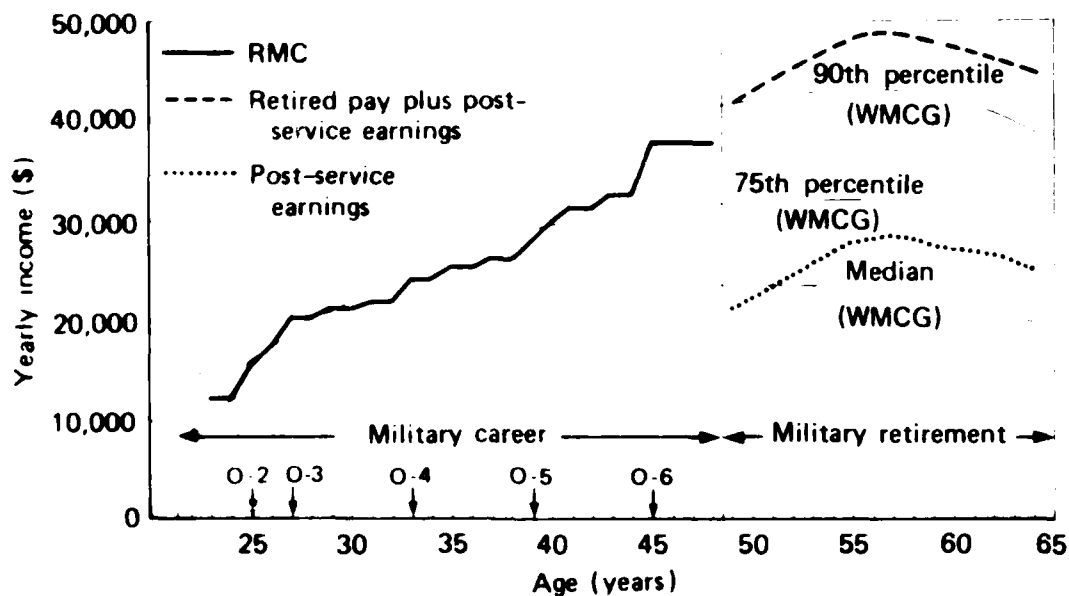
(b) 26-year officer retiring as an O-6

Fig. 1 — Career earnings profiles under the present system for two hypothetical officers in FY 1978: comparison with white male college-graduate (WMCG) nonretired veterans

(a) 20-year enlisted member retiring as an E-7

(b) 26-year enlisted member retiring as an E-8

Fig. 2 — Career earnings profiles under the present system for two hypothetical enlisted members for FY 1978: comparison with white male high-school-graduate (WMHSG) nonretired veterans

44

retires as an E-8 at the end of 26 years.[2] These results are in some ways even more striking than those for officers, since enlisted retirees do so much better in their post-service lives than they did while serving. For example, whereas the typical enlisted retiree earns less than the median wage and salary earnings of comparably aged and educated veterans *during* his service career, the combination of post-service earnings and military retired pay results in an immediate income jump of about $4,000. After the enlisted retiree has been out of the service for 10 years or so, he earns nearly 50 percent (i.e., about $8,000) more per year than his nonretired counterparts, which puts him into approximately the upper 10 percent of comparably aged and educated veterans. Part (b) of Fig. 2 shows that the enlisted careerist retiring as an E-8 after 26 years of service does even better, ending up in about the 90th percentile for comparably aged and educated veterans in the civilian sector.

Career Incentives

While Figs. 1 and 2 assist in visualizing the career earnings for military retirees, Table 23 is more useful for examining the incentive structure of the present military retirement system. This table shows the present value of future income (to age 64) for a military officer just completing 20 years of service as a function of the length of time he continues to remain in the service. "Income," in this sense, refers to military RMC, military retired pay, and earnings from post-service employment.

As shown in Table 23, the present value of future income for the officer not expecting to be promoted to O-6 is $495,000 if he retires immediately after his 20th anniversary and works the remaining 22 years of the standard working lifespan in full-time civilian employment.[3] If he instead serves one more year in the military, the present value of his future income is about $493,000. Thus, the present value of retiring from the military at the end of 20 years and working 22 years in post-service employment is about $2,000 more than that of remaining 21 years in the military and spending 21 years in full-time civilian employment.

Two general findings emerge from Table 23 First, the differences in present value of military careers of various lengths are surprisingly small. For example, although the officer not expecting to reach grade

[2] The estimates were calculated in the same fashion as those for retired officers, except that an entry age of 19 years was used for enlisted personnel

[3] That is, assuming a standard retirement age of 65 and retirement from the service at age 43.

Table 23

PRESENT VALUE OF FUTURE INCOME[a] TO
AGE 64 AS A FUNCTION OF CAREER LENGTH
FOR OFFICERS JUST COMPLETING
20 YEARS OF SERVICE

Career Length (yrs.)	Value ($)	
	0-5 Not Expecting to Reach 0-6	0-5 Expecting to Reach 0-6[b]
20	495,000	495,000
21	493,000	493,000
22	497,000	497,000
23	495,000	562,000
24	492,000	559,000
25	490,000	556,000
26	487,000	567,000
27	484,000	565,000
28	482,000	563,000
29	(c)	557,000
30	(c)	541,000

[a]Present value (discounted at 5 percent) of future income from RMC, military retirement, and so-called second-career earnings from age 43 (i.e., just after completing 20 years of service) until age 64 as a function of military career length. For example, the present value of future income for an officer not expecting to reach 0-6 will be $492,000 at the end of his 20th year if he serves 24 years. This includes the present value of four years of RMC (for years of service 21 through 24), plus the present value of future retirement and second-career earnings that begins immediately upon separation from the military. Estimates were calculated assuming the officer works full-time, year-round after leaving the military and are based on the regression coefficients shown in Table 12.

[b]Assumes the officer is promoted to 0-6 after the completion of 22 years of service.

[c]Not applicable because of mandatory retirement of 0-5s at 28 years of service.

O-6 maximizes the present value of his future earnings by serving 22 years (to take advantage of the longevity pay raise that takes place then), the difference in present value between this and a career of 20, or 21, or 24 years is *less than 1 percent.* The combination of RMC, military retirement, and post-service earnings opportunities thus provides no clear incentive for an officer to either stay in the service or leave once he has served at least 20 years.

Second, the differences in the present values of future income under alternative career lengths tend to favor officers serving shorter careers, unless, of course, they expect to be promoted. The officer who expects to make O-6, for instance, realizes a significant benefit by remaining in the military long enough to be promoted.[4] Even then,

[4] He must stay long enough to be promoted to O-6 if he is to realize the financial benefits that accrue to O-6s. Since it is assumed that promotion to O-6 takes place after the completion of 22 years of service, the first two lines of Table 23 are the same for career lengths of less than 23 years.

however, he does not have much financial incentive to stay longer, unless he expects further promotion.

If anything, these results probably overstate the financial incentive to remain in the service, since they are based on the assumption that active duty military pay keeps pace with civilian pay and retired pay. This has not, however, been the case for the past half-dozen years. Although military retired pay has received regular (now twice a year) cost-of-living adjustments, pay "caps" have held active duty military pay to less than the CPI. This means that Table 23 understates the financial benefits of early separation, perhaps by as much as 10 percent.

These findings help to explain much of the current officer retention pattern. Other things being equal, it is to an individual's advantage to remain in the military long enough to see whether he will be promoted.[5] It does not cost him much to wait for a year or two beyond his 20th anniversary, even if he is not promoted, because his higher retirement pay will offset the smaller second-career earnings he can expect to receive if he remains longer. If he is not promoted, it pays him to leave as soon as he can find a good post-service job; if he is promoted, he maximizes the present value of his future earnings by remaining until the end of 26 years of service, when the last longevity pay raise takes place (unless, of course, he expects to be promoted to flag rank, in which case it clearly pays him to stay longer).

Perhaps the most important point to emerge from Table 23, however, is one that was raised earlier—namely, that there are no clear financial incentives in the present system either to stay or to leave the military after the completion of 20 years of service. The differences in present value for the different career lengths shown in Table 23 are much smaller than would in general be expected to influence major career decisions.

As a result, t'.. ¬ision about how long to continue serving is likely to be a function o1 ↳ ʳ factors, such as the individual's own *perceptions* about his marketability in the civilian sector, about the attractiveness of future military assignments, about his potential for further promotion, and so forth. There is no strong lure to remain or to leave. Rather, the factors that determine post-20-year retention behavior are, for the most part, outside the military's control.

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[5] For example, the expected present value of future earnings at the end of 20 years of service for the individual who perceives himself as having a 50 percent chance of being promoted to O-6 is simply the average of the two lines in Table 23.

V. IMPLICATIONS FOR MILITARY RETIREMENT POLICY

The preceding analysis has produced a number of important results, perhaps the most important of which is that military retirees generally fare quite well relative to other veterans in terms of post-service earnings. If we view comparably aged and educated nonretired veterans as the benchmark for comparison, retirees' second-career earnings losses appear small, on the average. Indeed, for many subgroups of retirees, there seems to be no second-career earnings loss at all.

While this finding appears to contradict the data on second-career earnings losses shown in the few earlier studies of military retirees' post-service earnings, the samples used in the earlier investigations contained disproportionate numbers of recent retirees, who do tend to have lower earnings than those who have been out of the military for longer periods of time. In fact, when sample composition is controlled for, the 1977 DRS results are very much like those of previous studies.

To the extent that our results do differ from those of previous studies, the differences seem to stem from the failure of earlier studies to control for characteristics of retirees' military careers. And these characteristics appear to play a significant role in the determination of post-service earnings. For example, those serving longer careers—especially those serving 30 or more years—do not seem to fare as well as those who retire shortly after 20 years. Retirees who had very military-oriented careers likewise do not fare as well as those who served in other occupational specialties. More generally, the results show that retirees who are able to secure post-service employment similar to their military occupations earn more than those whose post-service employment is less like their military experience.

Furthermore, to the extent that military retirees evidence post-service earnings losses, these losses appear to be largely the result of *voluntary* behavior. Except during the five- or six-year transition period following retirement, when military retirees appear to be at a genuine disadvantage relative to their nonretired peers, any second-career loss can, on the average, be attributed to voluntary decisions made by the retiree. Military retirees work less than nonretired veterans, and the vast majority appear to limit their working hours voluntarily. Also, military retirees tend to relocate in the South and the West, where (nominal) yearly wages are $1,000 to $2,000 lower than in other parts of the country. About 80 percent of the military retired population resides in these lower-wage areas, compared with some 47

47

percent of comparably aged nonretired veterans. Similarly, the approximately 10 percent of the retired population who have chosen to relocate to lower-cost-of-living areas or to be near a military installation earn $1,000 to $2,000 less annually than their fellow retirees.

What do these findings tell us about what military retirement policy ought to be? First of all, it is important to recognize that the findings on post-service earnings are not in themselves sufficient to form a basis for prescribing a specific military retirement system. But they do provide valuable insights regarding the general nature of possible changes to the system. For example, the results presented here argue for some type of immediate post-service monetary benefit to offset the adverse financial consequences of having to begin a new career in mid-life. This can be argued, not only on welfare grounds, but also in terms of supply and demand, for military retirees perceive (and correctly so) that there is a period of adjustment during the transition from military to civilian life. Thus, the military would probably find it much more difficult to retain the numbers and types of career personnel it needs without the promise of at least some financial a sistance during the transition period.

By the same token, the "need" for a large financial benefit seems to diminish rather rapidly as the military retiree gains more experience in the civilian labor market. It should be emphasized at this point that the analysis presented here has generally been performed in terms of averages, so there are certainly *some* retirees who fare less well during their post-service careers. However, it is difficult to justify a system that is as expensive as the present one, or that creates as many force management and equity problems, solely on the basis of the few retirees who experience significant employment problems during their post-retirement years.

The lifetime earnings profiles shown in Sec. IV leave one with the distinct impression that retirement pay need not be as generous as it presently is beyond the transition period, especially for those retirees who have served relatively short careers. Not only are the total earnings of retirees much higher than those of the typical nonretired veteran, the combination of post-service earnings and retired pay is in most cases substantially greater than the retiree's active duty earnings. Even if active duty pay is not high enough to attract and retain the desired numbers and kinds of personnel, as may well be the case today, one has to question the wisdom of loading such a large fraction of total military compensation into retired pay. To the extent that greater compensation is needed, it would seem much more efficient, and much more equitable, to put it into active duty pay, rather than into future retired pay.

The results of this analysis also offer some useful insights regarding

career length. First, retirees who serve longer generally exhibit lower post-service earnings than those who serve shorter careers. This, combined with the shorter time that longer-serving retirees have to recover from the transition to civilian life, means that longer-serving retirees are at a considerable disadvantage relative to those serving shorter careers, other things being equal. Even though the longer-serving retiree receives a larger retirement pay, it is not enough to fully offset the reduction in post-service earnings. There is, in fact, no clear incentive to either stay or leave after the completion of 20 years of service, unless one expects to be promoted, in which case it does pay to remain until the promotion occurs. The problem with the present system, then, is that the factors that determine whether an individual will stay in the service or leave after 20 years are essentially beyond the military's control.

In sum, the results presented here can be used to argue for a military retirement system that (1) provides some immediate post-service financial benefit, such as the trust fund recommended by the President's Commission on Military Compensation; (2) pays less than the present system between this adjustment period and "old age"; and (3) would more strongly reward careers beyond 20 years.

It is interesting to note that these results are in fact consistent with what we would expect a priori. For example, theory predicts that those with large nonwage incomes will work less than those with smaller nonwage incomes: Retirees with their large nonwage incomes in fact do work less, on the average, than comparably aged and educated nonretired veterans. Theory also predicts that those with large nonwage incomes will place a relatively higher value on the nonpecuniary aspects of a job, such as hours worked, working conditions, etc.: This seems to be the case for military retirees, as evidenced, for example, by their post-service relocation decisions. The theory that those with fixed nominal incomes will relocate to lower-cost-of-living areas also holds, since this is exactly what retirees, on the average, seem to do.

With respect to human-capital theory, we would expect there to be a transition (in the form of lower earnings) as individuals change careers in mid-life: This is clearly true in the case of military retirees. We would also expect those with less general human capital to fare less well in subsequent career changes: Again, retirees who served in the combat arms (who therefore have human capital that is less transferable to their post-service careers) and retirees who are employed in jobs not like their military occupations do evidence lower earnings. Finally, we would expect individuals retiring later to fare less well than those who retire earlier: And indeed, those who served longer careers exhibit lower post-service earnings.

Appendix

THE 1977 DOD RETIREE SURVEY

The 1977 DRS was designed to compile a demographic profile of the military retired population and to obtain information regarding the employment experiences of military retirees after separating from the service. The survey was jointly sponsored by the Compensation Directorate, Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics) and the Office of Planning and Policy Analysis, Office of the Assistant Secretary of Defense (Health Affairs).

The instrument itself was a self-administered mail survey, which was sent to 12,763 individuals on May 20, 1977. This sample represented a reasonable cross-section of retirees according to geographic location, age, length of time since retirement, and several other factors. The survey oversampled officers relative to enlisted personnel, and the Marine Corps relative to the other services.

By July 15, 1977, 6,930 surveys had been returned, constituting an overall response rate of 56 percent. (This is based on a total sample of 12,356, since 407 of the 12,763 mailed were undeliverable.) This response rate is about average or somewhat better than average for a mail survey, especially when direct follow-up is not possible. In this case, direct follow-up was not possible because personal identifiers were not included in the survey. Actually, the response rates for nondisabled retirees (with whom the present analysis is primarily concerned) were about 64 percent overall—72 percent for nondisabled officers and 54 percent for nondisabled enlisted personnel.

The final sample used for the analysis presented here consisted of 2,951 nondisabled military retirees, selected through the following edit procedures. Of the original sample of 6,930 individuals, 2,389 were removed for failing to meet the sex, age, and length-of-service criteria of the analysis, which focuses on the post-service earnings of male military retirees up to the "normal" retirement age of 65. The sample was edited to include only males aged 37 to 64 who had served at least 20 years in the active forces (19 years for enlisted personnel in the Navy and Marine Corps). The sample also excluded 912 disabled retirees. Another 563 individuals whose earnings information was missing were also excluded. (These individuals indicated that they had worked but left the earnings question blank.) Finally, 115 individuals were excluded because of failure to meet certain internal consistency

52

checks.[1] The derivation of the final sample is shown in Table A-1, and the composition of the final sample is shown in Table A-2. Approximate tests were conducted to determine whether the exclusion of the 563 individuals with missing earnings and the 115 excluded for miscellaneous reasons had introduced biases in the data.[2] Where comparisons were possible, these tests proved negative—that is, the exclusions do *not* appear to have biased the data. Moreover, the fact that the 1977 CPS yields very similar results to the 1977 DRS, as discussed in the text, suggests that nonresponse bias is not a problem either.

Table A-1

SURVEY SAMPLE

Surveys mailed	12,763
Undeliverables	407
Surveys delivered	12,356
Surveys returned	6,930
Wrong age, sex, years of service[a]	2,389
Disabled retirees[b]	912
Missing earnings data[b]	563
Miscellaneous errors[b]	115
Final sample	2,951

[a]The sample was limited to males aged 37-64 who served 20-35 years (or 19 years in the Navy or Marine Corps).

[b]Shows only those not previously excluded.

Table A-2

SAMPLE COMPOSITION: NUMBERS OF RETIREES IN FINAL SAMPLE

	Length of Service (yrs.)			
Retirees	20-24	25-29	30-35	All
Officers	886	457	276	1,619
Enlisted	1,132	153	47	1,332
Total	2,018	610	323	2,951

[1] These included, for instance, individuals who indicated that they had worked full-time but had no income (14 individuals); individuals who indicated more than $200 per month income from the Veterans Administration (40 individuals); respondents whose pay grade was missing or apparently erroneous (26 individuals); those with education missing (3 individuals); those who failed to provide two or more of age, age at retirement, and year at retirement (5 individuals); those whose activity at the present time was not consistent with weeks worked (17 individuals); and 10 others with miscellaneous errors.

[2] For example, the distributions of those who did and those who did not report their earnings were compared with respect to such variables as educational attainment, weeks worked, and pay grade at retirement.

The more general, and more important, question centers on nonresponse bias. For two reasons, however, this does not appear to be much of a problem. First, the 64 percent response rate for nondisabled retirees (the portion of the sample used here) is quite good for a mail survey. Second, and probably more important, the earnings reported in the 1977 DRS are quite similar to the military retirees' earnings reported in the 1977 CPS.[3] In other words, the 1977 CPS results give greater credibility to the 1977 DRS sample, thus implying that nonresponse bias is not much of a problem.

[3] The exception to this, as shown in Sec. II, is less-educated retirees, especially those with no high-school education (and, to a lesser extent, those with only some high-school education).

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See Reverse Side

Analysis of military retirees' post-service earnings and
employment indicates that retirees fare better than was
previously thought. The earnings differential between
retirees and comparably aged and educated nonretired
veterans is almost entirely due to retirees' working less--a
decision that appears to be largely voluntary. In the
transition period immediately following retirement, retirees
are at a disadvantage in civilian employment, but eventually
those who work full-time earn more, on average, than their
nonretired counterparts. Retirees serving shorter careers
and those in civilian occupations similar to their military
occupations fare best in post-service earnings. These findings
suggest: (1) the present system should be modified to provide
immediate financial help to ease the transition to civilian
life; (2) the present retirement annuity is larger than is
necessary; and (3) more incentives should be provided to
serve beyond 20 years.

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