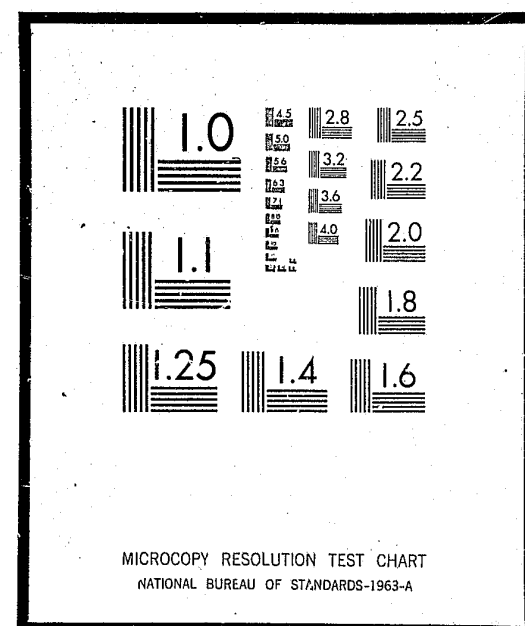


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Final Report,
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Comprehensive Analysis of a
Study on the Military and Civilian
Criminal Justice System —

Carl A. Bennett
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Report of Work Accomplished Under Contract
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Carl A. Bennett
Principal Investigator

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Abstract

system, are possible only when corrected for known differences in age and educational level of the service population. The disproportionate representation of blacks in both the military and civilian correctional institutions is well established. Clearly the military system to a large extent simply mirrors the civilian system. This is particularly apparent in terms of the effects of age, education and offense type on the ratios of blacks to whites in the inmate population, which explain many of the differences in these inmate populations but do not entirely account for service differences, so that additional selection processes must be present. Within a given service and offense type no indication of any racial difference in sentence length of preconfinement practice was found. The analysis leaves the overall impression that any discrimination is reflected in differences in the probability of becoming involved with the criminal justice system rather than differences in treatment within the judicial or correctional system.

INTRODUCTION

Report ALNA-79⁽¹⁾, submitted to the Office of Naval Research in April 1973, contained extensive data on personnel confined in military correctional facilities as of December 1972. Similar data on a limited sample of inmates of civilian correctional institutions was also obtained. The report was presented and discussed at the Conference on Corrections in the U.S. Military held at Stanford University on May 3 and 4, 1973. As an outgrowth of this discussion, it was suggested that further analysis of these data might provide additional insight into the nature of military correctional problems and their relationship to civilian programs. This report presents the results of that analysis, with particular emphasis on (1) the sampling effects and possible biases due to the low response rate outside of the U.S. Navy and U. S. Marine Corps, and (2) the characterization of the inmates and the interaction of this characterization with service and type of offense. Since report ALNA-79 was oriented rather specifically toward possible discriminatory practices in the administration of military justice, the analyses in this report also are in many instances directed fairly specifically toward confirming or negating the existence of discrimination against black members of the military services. To a large extent both ALNA-79 and this report supplement and extend the extensive study of race-related factors in the military contained in the Report of the Task Force on the Administration of Military Justice in the Armed Forces.⁽²⁾

Background data on service populations as of 1972 giving racial breakdowns and cross classification by age, rank, and education were difficult to obtain, since at that time routine reporting of data including racial breakdowns was discouraged. Kent Crawford and Edmund Thomas of the Navy Personnel Research and Development Center, San Diego, have been particularly

helpful in locating data sources, and we are particularly indebted to Mr. Kenneth C. Schefflen and Mr. Bob Brandewie of the Manpower Research and Data Analysis Center, Department of Defense, and Col. Doyle E. Stout, Headquarters, U.S. Marine Corps, Camp Pendleton, for detailed information concerning service populations. Other sources have been identified in connection with particular tabulations throughout the report.

SOME BASIC DATA ON RATES OF INCARCERATION

For each of the military services, Table 1 gives an estimate of the racial breakdown for the inmates of correctional facilities as of 30 June 1972 and the corresponding service populations. It should be remembered that in addition to varying with the service population, the inmate populations are quite variable over time (see, for example, the Navy and Marine Corps data for 30 June 1972 and 31 December 1972 given in Table 10a). The rates of incarceration can therefore probably vary by 5% to 10% depending on the time of year and other factors.

The degree to which minorities are disproportionately represented in the inmate populations is correctly measured by the ratio of the rates of incarceration given in Table 1. The black/white ratios for the entire inmate population of each service are given in the "Total" column of Table 2. Thus while only 5.63 black Navy personnel per thousand are incarcerated, compared to 15.57 black Marines per thousand, black Navy personnel are 3.66 times more likely to be incarcerated than white Navy personnel, compared to a ratio of only 2.77 for the Marine Corps. Similarly, "other" races are confined in Marine Corps, Army, and Air Force

Table 1
Service Personnel in Correctional Institutions
as of 30 June 1972

| | Service Population(1) | | Inmate Population(2) | | Inmates Per Thousand Servicemen |
|-----------|--------------------------|---------|-------------------------|---------|---------------------------------------|
| | Number | % Total | Number | % Total | |
| Navy | | | | | |
| White | 454,580 | 89.0 | 699 | 75.3 | 1.54 |
| Black | 32,485 | 6.4 | 183 | 19.7 | 5.63 |
| Other | 23,604 | 4.6 | 46 | 5.0 | 1.95 |
| Total | 510,669 | 100.0 | 928 | 100.0 | 1.82 |
| Marines | | | | | |
| White | 170,707 | 86.2 | 1,153 | 71.5 | 6.75 |
| Black | 24,724 | 12.5 | 385 | 23.9 | 15.57 |
| Other | 2,496 | 1.3 | 75 | 4.6 | 30.05 |
| Total | 197,927 | 100.0 | 1,613 | 100.0 | 8.15 |
| Army | | | | | |
| White | 678,351 | 84.0 | 2,778 | 57.8 | 4.10 |
| Black | 121,613 | 15.0 | 1,766 | 36.8 | 14.52 |
| Other | 8,021 | 1.0 | 257 | 5.4 | 32.04 |
| Total | 807,985 | 100.0 | 4,801 | 100.0 | 5.94 |
| Air Force | | | | | |
| White | 638,230 | 88.4 | 315 | 56.1 | 0.49 |
| Black | 77,752 | 10.8 | 222 | 39.5 | 2.85 |
| Other | 5,466 | 0.8 | 25 | 4.4 | 4.57 |
| Total | 721,448 | 100.0 | 562 | 100.0 | 0.78 |

(1) From "Report of the Task Force on the Administration of Military Justice in the Armed Forces", November 30, 1972, U.S. Government Printing Office.

(2) Navy and Marine data on total confinements were obtained from semi-annual and annual statistical reports compiled by Bureau of Naval Personnel, Corrections Division. Racial Breakdowns were estimated from data shown in Table 10a (see Appendix B). Because of the relative completeness of the Nellum data for Navy and

Footnotes to Table 1
(Continuation)

Marine installations, the special computer runs that would have been required to obtain a racial breakdown as of 30 June 1972 were not considered to be warranted.

Data on the inmate population of U.S. Army installations was furnished in a private communication from Lt. Col. Richard A. Fitzgerald, Chief, Correction Branch, Law Enforcement Division, Department of the Army, dated 7 October 1974. A small adjustment (~ 3%) has been made to account for Air Force prisoners assigned to the USDB, Ft. Leavenworth.

Data on the US Air Force prisoners in confinement was furnished in a private communication from Lt. Col. M. F. Allington, Chief, Management Branch, Directorate of Security Police, Department of the Air Force, dated 11 October 1974.

Table 2
Differences in Racial Distribution Among Correctional Facilities (3)

| | | Disciplinary | | Retraining | | Confinement (4) Facilities | | Total | |
|---------------|-------|--------------|--------|------------|------|-------------------------------|--------|-------|-------|
| | | W | B | W | B | W | B | W | B |
| Navy (1) | Rate | (.06) | (.24) | - | - | 1.48 | 5.39 | 1.54 | 5.63 |
| | Ratio | (4.15) | | - | | 3.64 | | 3.66 | |
| Marine Corps | Rate | (.83) | (2.14) | - | - | 5.92 | 13.43 | 6.75 | 15.57 |
| | Ratio | (2.58) | | - | | 2.27 | | 2.31 | |
| Army | Rate | .60 | 3.98 | .38 | 1.74 | 3.12 | 8.80 | 4.10 | 14.52 |
| | Ratio | 6.63 | | 4.58 | | 2.82 | | 3.54 | |
| Air Force (2) | Rate | | | .16 | 1.13 | (.36) | (1.72) | 0.49 | 2.82 |
| | Ratio | | | 7.30 | | (4.78) | | 5.82 | |

(Footnotes appear on following page)

Footnotes to Table 2

- (1) Breakdown of DISCOM data into Navy and Marine rates and ratios based on computations of Appendix I. The estimated increase of 14% in the ratio of black to white confinees in the DISCOM facility cannot be considered statistically significant.
- (2) Rates and ratio for the Air Force Retraining Group at Fort Lowry are based on Nellum data. Although the rates may be low based on incomplete sampling, the ratio should be substantially correct. Figures for Air Force confinement facilities were obtained by differencing the data of table 4c, and should be considered only indicative.
- (3) For comparison, the Nellum data for civilian correctional institutions yield the following ratios based on the % black population of the state:
- | | |
|--------------------------------------------|------|
| Louisiana Correctional & Industrial School | 5.55 |
| Missouri Training Center for Men | 8.14 |
| Washington Corrections Center | 6.39 |
| Federal Correctional Institution | 2.40 |
- (4) For purposes of this Table and in the remainder of the report, the U.S. Navy Disciplinary Command at Portsmouth, the U.S. Disciplinary Barracks at Fort Leavenworth, the U.S. Army Retraining Brigade at Fort Riley, and the 3320th Retraining Group, Lowry Air Force Base will be referred to as special facilities; all other brigs and stockades at Naval, Marine and Army installations will be referred to as confinement facilities.

facilities at a rate which is uniformly about twice that of blacks, while the rate for "other" in the Navy is comparable to that of whites. This reflects the known difference in the character and assignment of the large fraction of "orientals" in the Navy. Note that the ratio of black/white inmates for the four services shown in Table 2 is inversely proportional to the overall incarceration rates shown in Table 1. This suggests that, among other factors, the same processes of selection into the Navy and Air Force that tend to lessen the probability of incarceration may also discriminate against blacks; or, conversely, that the pressures to build minority representation may lead to a difference in the selection processes for minority personnel which is related to the probability of eventual incarceration. This will be more apparent in later analysis of service differences.

As shown in Table 3 the overall difference in rates of incarceration for the several services is comparable to similar data on other forms of involvement with the criminal justice system given in the Report of the Task Force on the Administration of Justice in the Armed Forces.⁽²⁾ As might be expected, the same major differences between the services are reflected in the inmate data as in the data in the Task Force report. The confinement rate for the Army is somewhat higher than would be predicted, possibly due to the relatively large proportion of pretrial confinements (see Table 7 and Tables A-3 through A-7, Vol. IV, of Reference (2) above). There are many reasons, known or hypothesized, for the major differences among the services, which are of concern in this analysis only to the extent that they may explain differences in racial composition of the inmates of correctional facilities. In the reference data, the relatively high rate of court-martial in relation to non-judicial punishment in the Marine Corps

Table 3
Involvement with Criminal Justice System (1)
(Rates Per Thousand Servicemen)

| | General Court-Martial Jan-June 1972 | Special Court-Martial Jan-June 1972 | Summary Court-Martial Jan-June 1972 | Non-judicial Punishment Jan-June 1972 | Confined Personnel 30 June 1972 |
|--------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|---------------------------------------------|---------------------------------------|
| Navy | 0.2 | 3.0 | 3.6 | 50.7 | 1.82 |
| Marine Corps | 1.8 | 14.5 | 14.5 | 124.9 | 8.15 |
| Army | 0.91 | 6.89 | 6.02 | 113.5 | 5.94 |
| Air Force | 0.13 | 1.49 | 0.10 | 26.00 | 0.78 |

(1) Data of columns 1 through 4 are from the "Report of the Task Force on Administration of Military Justice in the Armed Forces" November 30, 1972, U.S. Government Printing Office.

and the very low rate of summary court-martial in the Air Force are notable deviations from the basic pattern.

POSSIBLE EXPLANATIONS OF SERVICE DIFFERENCES

As discussed in the next section, the data in ALNA-79 (hereinafter referred to as the "Nellum Data" or "Nellum Sample") are virtually complete for the Navy and Marine Corps. From these data it was possible to determine the distribution by age, education and rank of the inmates of correctional facilities for these two services and examine the extent to which these factors were responsible for differences in rates of incarceration. Tables 4a, 5a, and 6a give basic data on the distribution of prisoners and service personnel, while Tables 4b, 5b, and 6b show how rates of incarceration vary with age, education, and rank, and the extent to which they modify the basic ratio of 4.48 (=8.15/1.82) of total incarceration rates for the Marine Corps and Navy. The incarceration rates for both services diminish rapidly with increasing age, increasing rank, and increasing education. The service ratio, particularly for education and rank, is substantially less where the service population differences are the greatest, but differences in these characteristics do not completely explain service differences. The extremely rapid drop in incarceration rate with rank appeared to the authors to be somewhat suspicious, suggesting the possibility that the rank of the inmates reflected changes due to involvement with the military justice systems. It is difficult to believe that the 58.1% of the Marines at Grade E-3 and above accounted for only 12.7% of the inmates, or that the 62.7% of the Navy personnel at E-4 and above accounted for only 7.2% of the inmates. While this could not be directly confirmed, analyses based on reported rank have been de-emphasized in this report.

Table 4a

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Total Enlisted Service Personnel and Prisoners by Age
December, 1972

| | Total Service Personnel ¹ | | Total Prisoners | |
|-----------------|--------------------------------------|----------|-----------------|----------|
| | <u>N</u> | <u>%</u> | <u>N</u> | <u>%</u> |
| <u>Navy</u> | | | | |
| 17 - 19 | 96,850 | 19.17 | 385 | 42.10 |
| 20 - 21 | 112,634 | 22.30 | 307 | 33.60 |
| 22 - 23 | 87,517 | 17.32 | 117 | 12.80 |
| 24 - 25 | 45,948 | 9.10 | 46 | 5.00 |
| 26 - 30 | 58,200 | 11.52 | 22 | 2.40 |
| 31 - 35 | 57,514 | 11.39 | 11 | 1.20 |
| 36 - 40 | 33,161 | 6.58 | 1 | 0.10 |
| Over 40 | 13,312 | 2.64 | 0 | 0.00 |
| Not Ascertained | 13 | -- | 27 | 2.80 |
| Total | 505,149 | 100.00 | 916 | 100.00 |
| <u>USMC</u> | | | | |
| 17 - 19 | 56,249 | 31.69 | 626 | 39.40 |
| 20 - 21 | 53,097 | 29.91 | 562 | 35.30 |
| 22 - 23 | 24,883 | 14.02 | 285 | 17.90 |
| 24 - 25 | 11,601 | 6.54 | 72 | 4.50 |
| 26 - 30 | 11,738 | 6.61 | 33 | 2.10 |
| 31 - 35 | 9,264 | 5.22 | 2 | 0.10 |
| 36 - 40 | 7,810 | 4.40 | 2 | 0.10 |
| Over 40 | 2,837 | 1.60 | 0 | 0.00 |
| Not Ascertained | 15 | .01 | 9 | 0.60 |
| TOTAL | 177,494 | 100.00 | 1,591 | 100.00 |

¹Total Service Personnel Data Adapted from Scheflen

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Table 4b

Number of Incarcerated Personnel per Thousand
Enlisted Personnel by Age, December, 1972

| | <u>Navy</u> | <u>USMC</u> | <u>Ratio</u> |
|---------|-------------|-------------|--------------|
| 17 - 19 | 3.97 | 11.12 | 2.80 |
| 20 - 21 | 2.72 | 10.58 | 3.89 |
| 22 - 23 | 1.34 | 11.45 | 8.55 |
| 24 - 25 | 1.00 | 6.21 | 6.21 |
| 26 - 30 | 0.38 | 2.81 | 7.40 |
| 31 - 35 | 0.19 | 0.21 | ----* |
| 36 - 40 | 0.03 | 0.26 | ----* |
| Over 40 | 0.00 | 0.00 | ----* |

* Numbers too small for meaningful estimate

Table 5a

Total Enlisted Service Personnel and Prisoners by
Educational Level, December, 1972

| Navy | <u>Total Service Personnel</u> ¹ | | <u>Prisoners</u> | |
|-----------------------------------|---------------------------------------------|----------|------------------|----------|
| | <u>N</u> | <u>%</u> | <u>N</u> | <u>%</u> |
| Less Than High School Graduate | 72,696 | 14.39 | 458 | 50.00 |
| High School Diploma or G.E.D. | 389,435 | 77.09 | 403 | 44.00 |
| Some College or Vocational School | 35,509 | 7.03 | 48 | 5.20 |
| College Graduate | 7,358 | 1.46 | 0 | 0.00 |
| Graduate School | 151 | .03 | 0 | 0.00 |
| Unknown | 0 | 0.00 | 7 | 0.80 |
| TOTAL | 505,149 | 100.00 | 916 | 100.00 |
| <u>USMC</u> | | | | |
| Less Than High School Graduate | 60,245 | 33.94 | 1,074 | 67.50 |
| High School Diploma or G.E.D. | 101,815 | 57.36 | 458 | 28.80 |
| Some College or Vocational School | 12,101 | 6.82 | 51 | 3.20 |
| College Graduate | 836 | .47 | 1 | 0.10 |
| Graduate School | 65 | .04 | 0 | 0.00 |
| Unknown | 2,432 | 1.37 | 7 | 0.40 |
| TOTAL | 177,494 | 100.00 | 1,591 | 100.00 |

¹Total Service Personnel Data Adapted from Schefflen (1975)

Table 5b

Number of Incarcerated Personnel per Thousand
Enlisted Personnel by Education, December 1972

| | <u>Navy</u> | <u>USMC</u> | <u>Ratio</u> |
|-----------------------------------|-------------|-------------|--------------|
| Less than High School Graduate | 6.30 | 17.82 | 2.83 |
| High School Diploma or G.E.D. | 1.03 | 4.50 | 4.37 |
| Some College or Vocational School | 1.35 | 4.21 | 3.12 |
| College Graduate or above | .00 | 1.11 | ---* |

*Numbers too small for meaningful estimates

Table 6a

Total Enlisted Service Personnel and Prisoners by Rank
December 1972

| <u>Navy</u> | Total Service Personnel ¹ | | Total Prisoners | |
|-----------------|--------------------------------------|----------|-----------------|----------|
| | <u>N</u> | <u>%</u> | <u>N</u> | <u>%</u> |
| E-7 thru 9 | 50,156 | 9.90 | 0 | 0.00 |
| E-6 | 73,932 | 14.60 | 1 | 0.10 |
| E-5 | 87,866 | 17.40 | 15 | 1.60 |
| E-4 | 105,247 | 20.80 | 50 | 5.50 |
| E-3 | 85,717 | 17.00 | 204 | 22.30 |
| E-2 | 69,981 | 13.90 | 286 | 31.20 |
| E-1 | 32,250 | 6.40 | 354 | 38.60 |
| Not Ascertained | --- | | 6 | 0.70 |
| TOTAL | 505,149 | 100.00 | 916 | 100.00 |
| <u>USMC</u> | | | | |
| E-7 thru 9 | 13,555 | 7.60 | 1 | 0.10 |
| E-6 | 12,420 | 7.00 | 2 | 0.10 |
| E-5 | 25,350 | 14.30 | 22 | 1.40 |
| E-4 | 22,509 | 12.70 | 49 | 3.10 |
| E-3 | 29,310 | 16.50 | 127 | 8.00 |
| E-2 | 35,192 | 19.80 | 281 | 17.60 |
| E-1 | 39,158 | 22.10 | 1,106 | 69.50 |
| Not Ascertained | --- | | 3 | 0.20 |
| TOTAL | 177,494 | 100.00 | 1,591 | 100.00 |

¹ Total Service Personnel Data Adapted from Schefflen (1975)

Table 6b

Number of Incarcerated Personnel per Thousand
Enlisted Personnel by Rank, December 1972

| | <u>Navy</u> | <u>USMC</u> | <u>Ratio</u> |
|------------|-------------|-------------|--------------|
| E-7 thru 9 | 0.00 | 0.07 | ---* |
| E-6 | 0.01 | 0.16 | ---* |
| E-5 | 0.17 | 0.87 | 5.08 |
| E-4 | 0.47 | 2.18 | 4.59 |
| E-3 | 2.38 | 4.33 | 1.82 |
| E-2 | 4.09 | 7.98 | 1.95 |
| E-1 | 10.97 | 28.24 | 2.57 |

* Numbers too small for meaningful estimate

Age and education are clearly related in the service populations, since younger people cannot have attained the higher educational levels. Tables 7a and 8a show a three-way classification by age, race and education of both the service population and the inmate population for the Navy and Marine Corps, and Tables 7b and 8b the corresponding incarceration rates. Table 9 shows the service ratios by age, education and race. Note the increase in the black incarceration rate relative to white with both age and education for both services, which will be discussed in more detail later.

THE NELLUM SAMPLE

The primary difficulty in analyzing and interpreting the data from the Nellum sample is the disparity in response rate of the several services. Figures 2 and 3 are reproductions of the corresponding figures of ALNA-79 report showing the actual response from the military facilities and the selected civilian facilities. The response of the Marine Corps correctional facilities was complete with respect to both the inmate data and institutional practices. Of the 30 Navy facilities, only three did not respond at all and one other supplied only institutional data. This high response by the Navy and Marine Corps is continued by the data of Table 10a, which shows that the numbers in the Nellum study are in substantial agreement with Corrections Division data on total inmates, allowing for the previously mentioned variability in inmate population over time and the absence of inmate data for the Naval Station at Norfolk and the Naval Base at Brooklyn. On the other hand, of the 194 Air Force inmates included in the study, 188 were located at the 3320th Retraining Group at Lawry AFB, so that short-term

Table 7a

Total Enlisted Service Personnel and Prisoners
By Age, Education and Race, December 1972
U.S. Navy

| <u>Age</u> | <u>Education</u> | <u>Personnel</u> | | | <u>Prisoners</u> | | |
|--------------|------------------|------------------|--------------|--------------|------------------|--------------|--------------|
| | | <u>White</u> | <u>Black</u> | <u>Other</u> | <u>White</u> | <u>Black</u> | <u>Other</u> |
| 17 - 21 | Less Than H.S. | 36,167 | 5,592 | 342 | 302 | 68 | 15 |
| | H.S. Diploma | 147,083 | 14,079 | 2,881 | 207 | 69 | 7 |
| | More Than H.S. | 3,105 | 137 | 98 | 17 | 4 | 0 |
| 22 - 27 | Less Than H. S. | 8,113 | 870 | 135 | 41 | 11 | 3 |
| | H.S. Diploma | 112,825 | 5,864 | 6,524 | 73 | 16 | 11 |
| | More Than H.S. | 25,031 | 638 | 332 | 13 | 5 | 2 |
| 28 and Older | Less Than H.S. | 15,698 | 2,155 | 3,618 | 11 | 4 | 2 |
| | H.S. Diploma | 84,411 | 6,907 | 8,857 | 13 | 3 | 3 |
| | More Than H.S. | 11,334 | 596 | 1,747 | 4 | 1 | 2 |

Table 7b

Number of Incarcerated Personnel
per Thousand Enlisted Personnel
by Age, Education and Race
U.S. Navy.

| | | <u>White</u> | <u>Black</u> | <u>Other</u> | <u>Ratio</u> |
|--------------|-----------------|--------------|--------------|--------------|--------------|
| 17 - 21 | Less Than H. S. | 8.35 | 12.16 | 43.86 | 1.46 |
| | H.S. Diploma | 1.41 | 4.90 | 2.43 | 3.48 |
| | More Than H.S. | 5.48 | 29.20 | 0.00 | 5.33 |
| 22 - 27 | Less Than H.S. | 5.05 | 12.64 | 22.22 | 2.50 |
| | H.S. Diploma | 0.65 | 2.73 | 1.69 | 4.22 |
| | More Than H.S. | 0.52 | 7.84 | 6.02 | 15.09 |
| 28 and Older | Less Than H.S. | 0.70 | 1.86 | 0.55 | --- |
| | H.S. Diploma | 0.15 | 0.43 | 0.34 | --- |
| | More Than H.S. | 0.35 | 1.68 | 1.14 | --- |

* Too few prisoners for meaningful estimate

Table 8a

Total Enlisted Service Personnel and Prisoners
By Age, Education and Race, December 1972
U.S. Marine Corps

| <u>Age</u> | <u>Education</u> | <u>Personnel</u> ⁽¹⁾ | | | <u>Prisoners</u> | | |
|--------------|------------------|---------------------------------|--------------|--------------|------------------|--------------|--------------|
| | | <u>White</u> | <u>Black</u> | <u>Other</u> | <u>White</u> | <u>Black</u> | <u>Other</u> |
| 17 - 21 | Less Than H.S. | 40,467 | 9,876 | 488 | 726 | 184 | 43 |
| | H.S. Diploma | 47,240 | 9,196 | 687 | 237 | 89 | 12 |
| | More Than H.S. | 3,454 | 589 | 58 | 13 | 7 | 1 |
| 22 - 27 | Less Than H.S. | 6,749 | 1,838 | 163 | 166 | 64 | 11 |
| | H.S. Diploma | 21,980 | 4,031 | 445 | 116 | 62 | 7 |
| | More Than H.S. | 6,158 | 793 | 122 | 21 | 21 | 1 |
| 28 and Older | Less Than H.S. | 3,194 | 672 | 158 | 12 | 1 | 0 |
| | H.S. Diploma | 16,320 | 2,477 | 362 | 4 | 4 | 2 |
| | More Than H.S. | 2,357 | 263 | 45 | 0 | 0 | 0 |

(1) Data on U.S. Marine Corps Population from Colonel Doyle E. Stout

Table 8b

Number of Incarcerated Personnel
per Thousand Enlisted Personnel
by Age, Education and Race
U.S. Marine Corps

| | <u>White</u> | <u>Black</u> | <u>Other</u> | <u>B/W Ratio</u> | |
|--------------|----------------|--------------|--------------|------------------|------|
| 17 - 21 | Less Than H.S. | 17.94 | 18.63 | 88.11 | 1.04 |
| | H.S. Diploma | 5.02 | 9.68 | 17.47 | 1.93 |
| | More Than H.S. | 3.76 | 11.88 | 17.24 | 3.16 |
| 22 - 27 | Less Than H.S. | 24.60 | 34.82 | 67.48 | 1.42 |
| | H.S. Diploma | 5.28 | 15.38 | 15.73 | 2.91 |
| | More Than H.S. | 3.41 | 26.48 | 8.20 | 7.77 |
| 28 and Older | Less Than H.S. | 3.76 | 1.49 | .00 | --- |
| | H.S. Diploma | .24 | 1.61 | 5.52 | --- |
| | More Than H.S. | .00 | .00 | .00 | --- |

* Too few prisoners for meaningful estimate

Table 9

Ratio of Marine to Navy Incarceration Rates
by Age, Education and Race

| | | <u>White</u> | <u>Black</u> | <u>Other</u> |
|--------------|-----------------|--------------|--------------|--------------|
| 17 - 21 | Less Than H.S. | 2.15 | 1.53 | 2.01 |
| | H.S. Diploma | 3.56 | 1.98 | 7.19 |
| | More Than H. S. | 0.69 | --- | --- |
| 22 - 27 | Less Than H. S. | 4.87 | 2.75 | --- |
| | H.S. Diploma | 8.12 | 5.63 | 9.31 |
| | More Than H. S. | 6.56 | 3.38 | --- |
| 28 and Older | Less Than H. S. | 5.37 | --- | --- |
| | H.S. Diploma | --- | --- | --- |
| | More Than H. S. | --- | --- | --- |

* Too few prisoners for meaningful estimate

MILITARY INSTITUTIONS OF CONFINEMENT

NAVY

Naval Stations

Adak, Ak
 Keflavik, Iceland
 Long Beach, Ca
 x Midway Islands
 Newport, R.I.
 San Diego, Ca
 Charleston, S.C.
 Guam
 o Norfolk, Va
 Rota, Spain
 TI, San Fran., Ca

Naval Bases

*x Brooklyn, N.Y.
 Guantanamo Bay, Cuba
 Pearl Harbor, Hi
 Subic Bay, Philippines
 Key West, Fl

Naval Air Stations

Corpus Christi, Tx
 Dallas, Tx
 Jacksonville, Fl
 Memphis, Tn
 Pensacola, Fl

Naval Training Center

Great Lakes, Il

Naval Support Activity

Phila., Pa
 Boston, Ma
 x San Juan, P.R.
 Seattle, Ws

Fleet Activities

Sasebo, Japan
 Yokosuka, Japan

Naval Submarine Base

New London, Ct

Naval Disciplinary Command

Portsmouth, N.H.

MARINE CORPS

MC Supply Centers

Albany, Ga
 Barstow, Ca

MC Base (Camp Smedley D. Butler)

Okinawa, Ryukyu Islands
 Quantico, Va
 Camp Lejeune, N.C.
 Camp Pendleton, Ca

MC Air Stations

Cherry Point, N.C.
 Santa Ana, Ca
 Keneohe Bay, Hi
 Yuma, Az
 Iwakuni, Japan

MC Recruit Depots

San Diego, Ca
 Parris Island, S.C.

ARMY

Forts

Belvoir, Va
 Bliss, Tx
 Campbell, Ky
 Devens, Ma
 Gordon, Ga
 Huachuca, Az
 Knox, Ky
Leonard Wood, Mo
 Ord, Ca
 Riley, Ks (Post)
 Richardson, Ak
Clayton, Canal Zone
 MacArthur, Ca
 Benning, Ga
 Bragg, N.C.
 Carson, Co
 Dix, N.J.
 Hood, Tx
Jackson, S.C.
Lewis, Ws
 Meade, Md
 Polk, La
 Sill, Ok
 Wainwright, Ak

USA Commands

Fuerth, Germany
 Mannheim, Germany
 Berlin, Germany*
 Bremerhaven, Germany*

USA Retraining Brigade

Fort Riley, Ks

Kagnew Station*

Asmara, Ethiopia

US Disciplinary Barracks

Fort Leavenworth, Ks

Joint Services Stockade

Okinawa, Ryukyu Islands

8th Logistics Command*

Livorno, Italy

8th Army

South Korea

Camp Samae*

Sattihp, Thailand

Presidio of San Francisco, Ca*

Schofield Barracks, Hi

AIR FORCE

3320th Retraining Group,
 Lowry AFB, Co

Travis Air Force Base
 Fairfield, Ca

(Note: The Air Force has confinement facilities at approximately 42 locations throughout the world; however, all but the Retraining Group are used for short-term — maximum 30 days — prisoners)

*Transient Stockade

FIGURE 3

CIVILIAN CORRECTIONAL INSTITUTIONS
SELECTED FOR STUDY

Federal Correctional Institution
Tallahassee, Fl

Georgia Industrial Institute
 Aito, Ga

Illinois State Penitentiary
 Joliet, Il

x Louisiana Correctional & Industrial School
DeQuincey, La

x Maryland Penitentiary
 Baltimore, Md

* Massachusetts Correctional Institutions (3)
 Concord, Ma
 Norfolk, Ma
 Walpole, Ma

x Missouri Training Center for Men (2)
Moberley, Mo

x Sierra Conservation Center
 Jamestown, Ca

x State Reformatory for Men
 St. Cloud, Mn

x Sugar Land Central Unit
 TDC, Tx

x Washington Corrections Center
Shelton, Ws

Complete Inmate Data

Sample of Inmate Data

x Institutional Data

* Data received in punch card form but not used

X Navy and Marine Corps institutions not responding

Army and Airforce installations responding

o Responded but no inmate data in file

Table 10a

Number of Personnel Confined: Navy and Marine Corps

| | Corrections Division Reports | | Nellum Study | | | |
|-----------------------------------|------------------------------|-------------------|--------------|-------|-------|-------|
| | 30 Jun '72 | 31 Dec '72 | White | Black | Other | Total |
| Navy - Correctional Facilities | 891 | 1,089 | 663 | 173 | 44 | 880 |
| Disciplinary Command | 37 | 63 ⁽¹⁾ | | | | |
| Marines - Correctional Facilities | 1,417 | 1,381 | 1,002 | 329 | 72 | 1,403 |
| - Disciplinary Command | 196 | 272 | | | | |
| Total - Correctional Facilities | 2,308 | 2,470 | 1,665 | 502 | 116 | 2,283 |
| Total - Disciplinary Command | 233 | 335 | 162 | 58 | 3 | 223 |
| Total - Navy | 928 | 1,152 | | | | |
| Total - Marines | 1,613 | 1,653 | | | | |

(1) Includes 4 Coast Guard personnel

prisoners (less than 30 days) confined at other Air Force installations throughout the world were not represented. Similarly, inmates of both major correctional institutions of the Army are included in the study (the U.S. Disciplinary Barracks at Fort Leavenworth is represented by a 10% random sample), but inmates of only four of the twenty-four Forts and none of the overseas installations are included. Thus not only is the response for these two services much less complete, as shown in Tables 10b and 10c, but it is heavily weighted toward those personnel incarcerated for major offenses. Since, as will be shown later, the proportion of blacks involved and/or incarcerated tends to be related to the nature of the offense, this will distort racial comparisons. The extent of the distortion is indicated by the differences in black/white ratios by facility type shown in Table 2; these are particularly significant for Army and Air Force data.

Table 11, which shows the distribution of the Nellum data by class of offense and type of facility, illustrates the problem. Between 75 and 85 percent of the inmates of brigs or stockades (confinement facilities), as of the time of the sample, were charged with being AWOL (Class 3). Both military and civilian data (see Table S-3, Vol. IV, p. 16 of reference (2) and any recent issue of the Uniform Crime Report of the FBI) indicate that proportionately more blacks than whites are involved in major offenses and confrontation or status offenses. Proportionately fewer blacks are involved in less serious offenses, with particular emphasis in the military on Absence Without Leave, which accounts for about 40% of all military offenses. The data of Reference 2 indicate that about 25% of personnel charged with being AWOL are black, compared to about 33% for all other offenses. But

Table 10b

Number of Personnel Confined: Army

| Correction Branch Data: 30 Jun 1972 | | | | | Nellum Study | | | | |
|----------------------------------------|---|----------|----------|----------|--------------|----------|----------|----------|--------------------|
| | | <u>W</u> | <u>B</u> | <u>O</u> | <u>Total</u> | <u>W</u> | <u>B</u> | <u>O</u> | <u>Total</u> |
| Confinement Facilities | N | 2,115 | 1,070 | 189 | 3,374 | 216 | 56 | 16 | 288 |
| | % | 62.7 | 31.7 | 5.6 | 100.0 | 75.0 | 19.4 | 5.6 | 100.0 |
| USDB ⁽¹⁾ | N | 415 | 497 | 65 | 977 | 40 | 45 | 4 | 89 ⁽²⁾ |
| | % | 42.5 | 50.9 | 6.6 | 100.0 | 44.9 | 50.6 | 4.5 | 100.0 |
| USARB ⁽¹⁾ | N | 259 | 212 | 5 | 476 | 234 | 185 | 3 | 423 ⁽³⁾ |
| | % | 54.4 | 44.5 | 1.1 | 100.0 | 55.5 | 43.8 | 0.7 | 100.0 |

(1) USDB = U.S. Disciplinary Barracks, Fort Leavenworth
USARB = U.S. Army Retraining Brigade, Fort Riley

(2) 10% random sample of the 871 inmates

(3) 1 inmate with no racial information included in total

Table 10c

Number of Personnel Confined: Air Force

| Management Branch Data: 30 Jun 1972 | | | Nellum(1) Study | |
|----------------------------------------|----------|----------|--------------------|----------|
| | <u>N</u> | <u>%</u> | <u>N</u> | <u>%</u> |
| White | 315 | 46.0 | 99 | 51.0 |
| Black | 222 | 39.5 | 88 | 45.4 |
| Other | 25 | 4.5 | 7 | 3.6 |
| Total | 562 | 100.0 | 194 | 100.0 |

(1) Total consists of 188 personnel at 3320th Retraining Group, Lowry AFB, and 6 personnel at Travis AFB.

Table 11

Distribution by Class of Offense and Type of Correctional Institution - Nellum Data⁽³⁾

| | <u>Class 1</u> | <u>Class 2</u> | <u>Class 3</u> | <u>Class 4</u> | <u>Total</u> |
|-------------------------------|----------------|----------------|----------------|----------------|----------------------|
| <u>Confinement Facilities</u> | | | | | |
| Navy | 69 | 73 | 651 | 79 | 872 |
| % of Total | 7.9 | 8.4 | 74.7 | 9.0 | |
| Marine Corps | 119 | 82 | 1,094 | 112 | 1,407 |
| % of Total | 8.5 | 5.8 | 77.8 | 7.8 | |
| Army | 25 | 15 | 239 | 9 | 288 |
| % of Total | 8.7 | 5.2 | 83.0 | 3.1 | |
| <u>Specialized Facilities</u> | | | | | |
| DISCOM, Portsmouth | 37 | 23 | 105 | 57 | 222 |
| % of Total | 16.7 | 10.3 | 47.3 | 25.7 | |
| 3320th, Lowry AFB | 33 | 20 | 104 | 31 | 188 |
| % of Total | 17.6 | 10.6 | 55.3 | 16.5 | |
| USARB, Fort Riley | 53 | 50 | 287 | 33 | 423 |
| % of Total | 12.5 | 11.8 | 67.8 | 7.8 | |
| USDB, Fort Leavenworth | 25 | 13 | 18 | 33 | 89 ⁽¹⁾ |
| % of Total | 28.1 | 14.6 | 20.2 | 37.1 | |
| <u>Civilian Institutions</u> | | | | | |
| State ⁽²⁾ | 894 | 116 | | 279 | 1,289 ⁽²⁾ |
| % of Total | 69.4 | 9.0 | | 21.6 | |
| Federal | 142 | 1 | | 360 | 503 |
| % of Total | 28.2 | 0.2 | | 71.6 | |

(1) 10% random sample

(2) Data for Missouri Training Center extended to full population on basis of sample distribution.

(3) Class 1 - Major Military/Civilian Offenses; Class 2 - Confrontation or Status Offense; Class 3 - Absence Without Leave; Class 4 - Other Military/Civilian Offenses.

the 288 inmates of Army stockades, which tend to house less serious offenders, represent less than 10% of the total population of these facilities. Thus the number of white inmates of Army installations will be underrepresented, resulting in an over-estimate of the percent black in Army installations if the Nellum data are used without correction. The Table also shows a substantial similarity among services in the offense distribution in the specialized facilities when known service differences are taken into account, such as the differentiation between USARB and USDB, the confinement of major offenders from the Air Force at the USDB, and the differences in referral practice to the specialized facilities between Army, Navy and Air Force. As shown in Table 2, these differences are reflected in the percentages of black inmates in the various types of correctional facilities. The fact that less serious crimes result in actions other than confinement, such as discharge, in the Air Force, could also account for the disproportionately high percentage of blacks in Air Force confinement facilities.

Another potential bias results from the extent to which inmates represent personnel held on pre-sentence confinement. Tables 12 and 13 show this effect, with the breakdown by type of institution in Table 13 emphasizing the degree to which the data of Table 6 reflect an underrepresentation of the local confinement facilities in the Army and Air Force. In Table 13 note that 80% (231/288) of the inmates of Army confinement facilities had no sentence, compared to 57% (504/881) and 46% (651/1403) of Navy and Marine inmates of base facilities. These figures agree with the greater tendency of the Army toward pre-sentence confinement mentioned in the Task Force Report.⁽²⁾ Table 13 also shows marked service differences in the distribution of length of sentence, both within confinement facilities and specialized facilities and between the two types of military facilities. While these differences reflect service differences in

Table 12

Proportion of Confinees Held Without Sentence - Nellum Data

| | | <u>No Sentence</u> | <u>Sentence</u> | <u>Total</u> |
|--------------|---|--------------------|-----------------|--------------|
| Navy | N | 504 | 600 | 1,104 |
| | % | 45.6 | 54.4 | |
| Marine Corps | N | 651 | 752 | 1,403 |
| | % | 46.4 | 53.6 | |
| Army | N | 240 | 560 | 800 |
| | % | 29.9 | 70.1 | |
| Air Force | N | 10 | 184 | 194 |
| | % | 5.2 | 94.8 | |
| Civilian | N | 1 | 1,113 | 1,114 |
| | % | 0.1 | 99.9 | |

Table 13

Distribution of Length of Sentence - Nellum Data

| | No Sentence | Length of Sentence (Months) | | | | | | | | | | Total |
|-------------------------------|----------------|-----------------------------|-----|-----|-----|----|------|-------|-------|-----|------|----------------------|
| | | <1 | 2 | 3 | 4 | 5 | 6-12 | 13-23 | 24-60 | >60 | Life | |
| <u>Confinement Facilities</u> | | | | | | | | | | | | |
| Navy | 504 | 102 | 73 | 67 | 41 | 14 | 40 | 19 | 19 | 2 | 0 | 881 |
| Marine Corps | 651 | 183 | 117 | 172 | 129 | 57 | 47 | 24 | 22 | 1 | 0 | 1,403 |
| Army | 231 | 8 | 13 | 11 | 10 | 6 | 6 | 2 | 1 | 0 | 0 | 288 |
| <u>Specialized Facilities</u> | | | | | | | | | | | | |
| DISCOM | 0 | 0 | 1 | 6 | 15 | 10 | 76 | 66 | 37 | 10 | 2 | 223 |
| 3320th | 7 | 0 | 8 | 33 | 44 | 32 | 57 | 6 | 1 | 0 | 0 | 188 |
| USARB | 7 | 1 | 86 | 127 | 103 | 33 | 48 | 13 | 4 | 1 | 0 | 423 |
| USDB | 2 | 0 | 1 | 2 | 5 | 1 | 13 | 16 | 28 | 21 | 0 | 89 ⁽²⁾ |
| <u>Civilian Institutions</u> | | | | | | | | | | | | |
| State | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 583 | 712 | 24 | 1,325 ⁽¹⁾ |
| Federal | 1 | 0 | 0 | 1 | 0 | 0 | 12 | 45 | 215 | 235 | 0 | 509 |

(1) Data for Missouri Training Center extended to full population on basis of sample distribution

(2) 10% random sample

correctional practices and known differences in the defined functions of the institutions represented, they also represent a potential confounding of these differences with other possible sources of discrimination, such as sentencing practices. The lack of a sharp distinction between the distribution of length of sentence, which is closely correlated with offense class, in the Naval Disciplinary Command (DISCOM) and the Navy and Marine Corps confinement facilities suggests a partial explanation for the relatively small change in the black/white ratio between the confinement facilities and the disciplinary command for the Navy and Marines estimated in Appendix B and shown in Table 2.

Finally, Tables 11, 12 and 13 emphasize the difference in the character of the civilian inmates represented in the Nellum sample. The only military installations which are even closely comparable in terms of class of offense and the closely associated length of sentence are the U.S. Disciplinary Barracks, and, to a lesser extent, the Naval Disciplinary Command. No civilian institutions which supply a function in the justice system similar to the brigs and stockades are represented. Note that the distinct difference in distribution of class of offense shown in Table 11 between the state institutions and the federal institutions is consistent with the significantly lower black/white ratio for the federal institution given in the footnote to Table 2, and emphasizes the disproportionate association of blacks with major crimes, for which confinement in state institutions is more likely.

In the detailed analysis of the next section we have consistently analyzed either the inmates of confinement facilities or special facilities as separate groups, since the greater homogeneity makes it possible to study more precisely the relationship of inmate characteristics and the

nature of the offense to racial distribution. No further analyses have been performed on the civilian data. Service comparisons involving the inmates of Army confinement facilities must be made with caution because of the limited sample, and it must be remembered that only a 10% random sample of the inmates of the U.S. Disciplinary Barracks was obtained; thus, that while comparisons involving relative frequency are not affected, no absolute comparisons with other special facilities are valid.

INTERACTIONS BETWEEN AGE, EDUCATION, RACE AND OFFENSE

As mentioned above, the gross fact that blacks and other minorities are disproportionately represented in the criminal justice system, both civilian and military, is well established. The detailed analyses of this section are designed to establish from selected subsets of the Nellum data the factors which affect, or reflect, the disproportionate representation of blacks. This type of analysis makes use of the greatest strength of the Nellum data, which is the detailed information on individual inmates, making possible multi-dimensional classifications.

Table 14 gives a four-way multiple classification by service, age, education and race for black and white inmates of confinement facilities charged with being Absent Without Leaves (AWOL). This classification accounts for 1,852 out of the 2,572 inmates of confinement facilities, or about 72%. The multi-dimensional contingency analysis used to analyze this type of multiple classification, which is based on methods developed by Goodman^(3,4) is described in Appendix A, along with a detailed description of the analysis of this particular example. A satisfactory prediction of the 72 cells in

Table 14

Distribution by Age, Education, and Race of
Inmates of Confinement Facilities Charged
with Absence Without Leave

| | | Less Than H.S. | | | | H.S. Graduate | | | | More Than H.S. | | | |
|----------|-------|----------------|-------|-------|---------|---------------|-------|-------|---------|----------------|-------|-------|---------|
| | | 18-19 | 20-21 | 22-23 | 24 a.o. | 18-19 | 20-21 | 22-23 | 24 a.o. | 18-19 | 20-21 | 22-23 | 24-a.o. |
| Navy | B | 23 | 18 | 4 | 5 | 16 | 20 | 6 | 7 | 0 | 0 | 1 | 2 |
| | W | 176 | 76 | 17 | 14 | 56 | 91 | 39 | 20 | 1 | 8 | 8 | 0 |
| | Total | 199 | 94 | 21 | 19 | 72 | 111 | 45 | 27 | 1 | 8 | 9 | 2 |
| Marines | B | 56 | 51 | 20 | 13 | 13 | 25 | 14 | 10 | 0 | 3 | 5 | 1 |
| | W | 333 | 185 | 60 | 20 | 59 | 73 | 42 | 19 | 4 | 3 | 7 | 4 |
| | Total | 389 | 236 | 80 | 33 | 72 | 98 | 56 | 29 | 4 | 6 | 12 | 5 |
| Army (1) | B | 4 | 10 | 2 | 1 | 3 | 5 | 2 | 4 | 0 | 1 | 1 | 3 |
| | W | 59 | 26 | 16 | 14 | 23 | 25 | 8 | 7 | 0 | 3 | 3 | 4 |
| | Total | 63 | 36 | 18 | 15 | 26 | 30 | 10 | 11 | 0 | 4 | 4 | 7 |

(1) Four of 28 Facilities

the four-way classification is obtained using a model that contains one three-way interaction between age, education and service and three two-way interactions between race and service, race and education, and race and age. When using the model in a predictive sense, the easiest way to visualize the effects involved is to think of the odds ratio for one variable as changing with the values of one or more other variables. Thus, for example, the two-way service-race interaction documented in Table 15a simply describes the manner in which the odds of an inmate being black changes with the service involved. Remember that "odds" are technically the ratio of 'success' to 'failure,' in this case the ratio of black to white inmates. The parameter α representing the multiplicative change in the odds ratio is equivalent to the single parameter describing the degree of dependence in a two by two contingency table. In a multidimensional fit such as that described here the fitted values of α (α from model) will not be the same as the apparent α from the fixed marginal table, since the fitted parameters are adjusted for other interactions present in the model. Thus in Table 15b the increase in the ratio of black to white inmates with educational level predicted from the fitted model is much less than the apparent increase computed from the marginal table, probably due to the relationship between age and education and the fact that the black to white ratio also increases with age, as shown in Table 16.

Independent of particular effects, the most significant implication of this fit is that only two-way interactions between race and the other factors are involved, which implies that age, service and education affect the black/white ratio independently for this classification, or, in a regression sense, that the prediction equation for race from the other factors is linear. Adjustments for age and education differences

Table 15a

Service-Race Interaction
Inmates of Confinement Facilities
AWOL only Aggregated over Education and Age

| | <u>Navy</u> | <u>Marines</u> | <u>Army</u> |
|---------------------|-------------|----------------|-------------|
| Black | 102 | 211 | 36 |
| White | 506 | 809 | 188 |
| B/W Ratio | .202 | .261 | .191 |
| Apparent α | 1.00 | 1.29 | 0.95 |
| α From Model | 1.000 | 1.364 | 0.886 |

Table 15b

Education-Race Interaction
Inmates of Confinement Facilities
AWOL only Aggregated over Service and Age

| | <u>Less Than H.S.</u> | <u>H.S. Graduate</u> | <u>Greater Than H.S.</u> |
|---------------------|-----------------------|----------------------|--------------------------|
| Black | 207 | 125 | 17 |
| White | 996 | 462 | 45 |
| B/W Ratio | 0.208 | 0.271 | 0.378 |
| Apparent α | 1.00 | 1.30 | 1.82 |
| α From Model | 1.00 | 1.192 | 1.474 |

Table 16

Age-Race Interaction
Inmates of Confinement Facilities
AWOL only Aggregated Over Education and Service

| | <u>18-19</u> | <u>20-21</u> | <u>22-23</u> | <u>24 and Over</u> |
|---------------------|--------------|--------------|--------------|--------------------|
| Black | 115 | 133 | 55 | 46 |
| White | 711 | 490 | 200 | 102 |
| B/W Ratio | 0.162 | 0.271 | 0.275 | 0.451 |
| Apparent α | 1.00 | 1.68 | 1.70 | 2.79 |
| α From Model | 1.000 | 1.626 | 1.570 | 2.718 |

Table 16a

Age-Race Interaction by Service
Inmates of Confinement Facilities
AWOL only Aggregated over Education

| | | <u>18-19</u> | <u>20-21</u> | <u>22-23</u> | <u>24 a.o.</u> |
|---------|-----------|--------------|--------------|--------------|----------------|
| Navy | Black | 39 | 38 | 11 | 14 |
| | White | 233 | 175 | 64 | 34 |
| | B/W Ratio | 0.17 | 0.22 | 0.17 | 0.41 |
| Marines | Black | 69 | 79 | 39 | 24 |
| | White | 396 | 261 | 109 | 43 |
| | B/W Ratio | 0.17 | 0.30 | 0.36 | 0.56 |
| Army | Black | 7 | 16 | 5 | 8 |
| | White | 82 | 54 | 27 | 25 |
| | B/W Ratio | 0.09 | 0.30 | 0.18 | 0.32 |

are additive combinations of effects due to age and education individually; in addition, the age and education differences between the services are not sufficient to explain the basic service differences. Table 16a exemplifies the consistency for the three services of the change in B/W ratio with age implied by the absence of a service-race-age interaction.

The estimated effects in Tables 15a, 15b, and 16 deal with changes in the black/white ratios of inmates of confinement facilities, and are not adjusted for differences in the black/white ratios of the overall service populations. Thus although the ratio of black to white inmates in Marine confinement facilities is about 36% higher than the similar ratio for Navy facilities, the ratio of black to white personnel in the Marine Corps is more than twice that for the Navy, so that the relative odds that a black will be incarcerated are higher for the Navy than the Marines. These adjustments are considered further in the summaries of education and service effects for the various fits given in Tables 19 and 20.

Tables 17a, 17b, 17c, and 18a, 18b, 18c, and 18d give the five-way clasification of inmates of confinement facilities and special facilities, respectively, by age, race, education, offense class and service or facility as appropriate. The offense classes are those established in the Nellum Study and are described as follows, where the numbers in paranthesis refer to the article number in the Uniform Code of Military Justice:

Class 1. Major Military Civilian Offenses

Murder (118)
 Manslaughter (119)
 Rape (120)
 Larceny (121)
 Robbery (122)
 Maiming (124)
 Sodomy (125)
 Arson (126)
 Assault (128)
 Burglary (129)
 Housebreaking (130)

Class 2. Confrontation or Status Offenses

Disrespect to officer (89)
 Disobey officer (90)
 Disobey, disrespect, assault NCO (91)
 Disobey order (92)
 Escape (95)
 Riot (116)
 Provoking words and gestures (117)

Class 3. Absence without Leave

Desertion (85)
 Unspecified AWOL (86)
 Missing movement (87)

Class 4. Other Military/Civilian Offenses

False official statements (107)
 Destroying government property (108)
 Destroying private property (109)
 Malingering (115)
 Forger, bad checks (123)
 Extortion (127)
 Perjury (131)
 Fraudulent claim (132)
 Driving while drunk (111)
 Drunk on duty (112)
 Misbehaving as sentinel (113)
 Unspecified (134)

Table 17a

Distribution by Age, Education, Race and
 Offense Class of Inmates of U.S. Navy
 Confinement Facilities

| | | Less Than H.S. | | | | H.S. Graduate | | | | More Than H.S. | | | |
|---------|---|----------------|-------|-------|---------|---------------|-------|-------|---------|----------------|-------|-------|---------|
| | | 18-19 | 20-21 | 22-23 | 24 a.o. | 18-19 | 20-21 | 22-23 | 24 a.o. | 18-19 | 20-21 | 22-23 | 24 a.o. |
| Class 1 | B | 7 | 2 | 1 | 0 | 11 | 8 | 1 | 1 | 0 | 3 | 0 | 0 |
| | W | 6 | 5 | 1 | 2 | 5 | 3 | 0 | 2 | 0 | 0 | 0 | 0 |
| Class 2 | B | 5 | 1 | 0 | 0 | 4 | 3 | 1 | 0 | 0 | 1 | 1 | 0 |
| | W | 7 | 4 | 0 | 1 | 5 | 15 | 8 | 2 | 0 | 4 | 3 | 0 |
| Class 3 | B | 23 | 18 | 4 | 5 | 16 | 20 | 6 | 7 | 0 | 0 | 1 | 2 |
| | W | 176 | 76 | 17 | 14 | 56 | 91 | 39 | 20 | 1 | 8 | 8 | 0 |
| Class 4 | B | 4 | 2 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| | W | 10 | 2 | 2 | 0 | 12 | 9 | 5 | 1 | 2 | 1 | 0 | 0 |
| Total | | 238 | 110 | 26 | 22 | 111 | 150 | 60 | 33 | 3 | 17 | 13 | 2 |

Table 17b

Distribution by Age, Education, Race and
Offense Class of Inmates of the U.S. Marine Corps
Confinement Facilities

| | | Less Than H.S. | | | | H.S. Graduate | | | | More Than H.S. | | | |
|---------|---|----------------|-------|-------|---------|---------------|-------|-------|---------|----------------|-------|-------|---------|
| | | 18-19 | 20-21 | 22-23 | 24 a.o. | 18-19 | 20-21 | 22-23 | 24 a.o. | 18-19 | 20-21 | 22-23 | 24 a.o. |
| Class 1 | B | 18 | 10 | 2 | 2 | 4 | 12 | 8 | 0 | 1 | 2 | 1 | 0 |
| | W | 21 | 10 | 1 | 3 | 4 | 4 | 6 | 2 | 0 | 1 | 0 | 2 |
| Class 2 | B | 6 | 10 | 5 | 2 | 1 | 2 | 5 | 1 | 0 | 0 | 1 | 0 |
| | W | 12 | 13 | 2 | 2 | 1 | 7 | 7 | 0 | 0 | 1 | 0 | 0 |
| Class 3 | B | 56 | 51 | 20 | 13 | 13 | 25 | 14 | 10 | 0 | 3 | 5 | 1 |
| | W | 333 | 185 | 60 | 20 | 59 | 73 | 42 | 19 | 4 | 3 | 7 | 4 |
| Class 4 | B | 2 | 1 | 0 | 1 | 1 | 6 | 2 | 0 | 0 | 0 | 1 | 1 |
| | W | 15 | 15 | 5 | 1 | 6 | 20 | 9 | 2 | 0 | 0 | 1 | 0 |
| Total | | 463 | 295 | 95 | 44 | 89 | 149 | 93 | 34 | 5 | 10 | 16 | 8 |

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Table 17c

Distribution by Age, Education, Race and
Offense Class of Inmates of Four U.S. Army
Confinement Facilities

| | | Less than H.S. | | | | H.S. Graduate | | | | More Than H.S. | | | |
|---------|---|----------------|-------|-------|---------|---------------|-------|-------|---------|----------------|-------|-------|---------|
| | | 18-19 | 20-21 | 22-23 | 24 a.o. | 18-19 | 20-21 | 22-23 | 24 a.o. | 18-19 | 20-21 | 22-23 | 24 a.o. |
| Class 1 | B | 6 | 1 | 0 | 0 | 2 | 1 | 0 | 2 | 0 | 0 | 0 | 0 |
| | W | 2 | 3 | 0 | 2 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Class 2 | B | 0 | 1 | 1 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| | W | 2 | 1 | 0 | 0 | 1 | 3 | 0 | 1 | 0 | 1 | 0 | 0 |
| Class 3 | B | 4 | 10 | 2 | 1 | 3 | 5 | 2 | 4 | 0 | 1 | 1 | 3 |
| | W | 59 | 26 | 16 | 14 | 23 | 25 | 8 | 7 | 0 | 3 | 3 | 4 |
| Class 4 | B | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | W | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 |
| Total | | 73 | 43 | 20 | 18 | 31 | 41 | 10 | 14 | 0 | 6 | 4 | 7 |

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Table 18a

Distribution by Age, Education, Race and
Offense Class of Inmates of U.S. Navy Disciplinary Command
Portsmouth

| | | Less Than H.S. | | | | H.S. Graduate | | | | More Than H.S. | | | |
|---------|---|----------------|-------|-------|---------|---------------|-------|-------|---------|----------------|-------|-------|---------|
| | | 18-19 | 20-21 | 22-23 | 24 a.o. | 18-19 | 20-21 | 22-23 | 24 a.o. | 18-19 | 20-21 | 22-23 | 24 a.o. |
| Class 1 | B | 1 | 5 | 1 | 0 | 0 | 6 | 1 | 1 | 0 | 0 | 2 | 0 |
| | W | 3 | 3 | 3 | 1 | 1 | 4 | 3 | 1 | 0 | 0 | 0 | 0 |
| Class 2 | B | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 1 |
| | W | 4 | 4 | 0 | 0 | 2 | 4 | 1 | 2 | 0 | 0 | 0 | 0 |
| Class 3 | B | 1 | 5 | 5 | 2 | 2 | 1 | 5 | 0 | 0 | 0 | 1 | 0 |
| | W | 16 | 16 | 27 | 4 | 2 | 7 | 3 | 1 | 0 | 0 | 1 | 2 |
| Class 4 | B | 0 | 3 | 2 | 0 | 0 | 2 | 4 | 0 | 0 | 0 | 1 | 0 |
| | W | 9 | 8 | 6 | 2 | 3 | 10 | 5 | 0 | 1 | 0 | 0 | 1 |
| Total | | 34 | 44 | 44 | 9 | 10 | 36 | 23 | 6 | 1 | 0 | 5 | 4 |

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Table 18b

Distribution by Age, Education, Race and
Offense Class of Inmates of U.S. Disciplinary Barracks
Fort Leavenworth*

| | | Less Than H.S. | | | | H.S. Graduate | | | | More Than H.S. | | | |
|---------|---|----------------|-------|-------|---------|---------------|-------|-------|---------|----------------|-------|-------|---------|
| | | 18-19 | 20-21 | 22-23 | 24 a.o. | 18-19 | 20-21 | 22-23 | 24 a.o. | 18-19 | 20-21 | 22-23 | 24 a.o. |
| Class 1 | B | 0 | 2 | 6 | 4 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 |
| | W | 1 | 1 | 3 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Class 2 | B | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 |
| | W | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Class 3 | B | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| | W | 1 | 2 | 4 | 3 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 0 |
| Class 4 | B | 1 | 3 | 3 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 3 | 1 |
| | W | 3 | 1 | 0 | 0 | 1 | 4 | 3 | 0 | 0 | 0 | 0 | 0 |
| Total | | 7 | 11 | 18 | 13 | 3 | 8 | 11 | 8 | 0 | 0 | 4 | 1 |

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Table 18c

Distribution by Age, Education, Race and
Offense Class of Inmates of U.S. Army Retraining Brigade
Fort Riley

| | | Less Than H.S. | | | | H.S. Graduate | | | | More Than H.S. | | | |
|---------|---|----------------|-------|-------|---------|---------------|-------|-------|---------|----------------|-------|-------|---------|
| | | 18-19 | 20-21 | 22-23 | 24 a.o. | 18-19 | 20-21 | 22-23 | 24 a.o. | 18-19 | 20-21 | 22-23 | 24 a.o. |
| Class 1 | B | 3 | 4 | 4 | 0 | 0 | 10 | 0 | 4 | 0 | 0 | 0 | 1 |
| | W | 12 | 5 | 1 | 2 | 1 | 3 | 0 | 4 | 0 | 2 | 0 | 0 |
| Class 2 | B | 7 | 7 | 5 | 1 | 2 | 6 | 1 | 1 | 0 | 2 | 1 | 0 |
| | W | 6 | 3 | 0 | 0 | 0 | 3 | 1 | 1 | 0 | 0 | 1 | 1 |
| Class 3 | B | 22 | 20 | 15 | 10 | 5 | 9 | 18 | 8 | 0 | 2 | 0 | 3 |
| | W | 69 | 45 | 12 | 7 | 14 | 12 | 6 | 2 | 0 | 1 | 2 | 0 |
| Class 4 | B | 4 | 2 | 1 | 0 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 |
| | W | 7 | 5 | 1 | 1 | 0 | 6 | 0 | 1 | 0 | 0 | 0 | 0 |
| Total | | 130 | 91 | 39 | 21 | 23 | 51 | 28 | 21 | 0 | 7 | 4 | 5 |

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Table 18d

Distribution by Age, Education, Race and
Offense Class of Inmates of U.S. Air Force Retraining Group
Lowry Air Force Base

| | | Less Than H.S. | | | | H.S. Graduate | | | | More Than H.S. | | | |
|---------|---|----------------|-------|-------|---------|---------------|-------|-------|---------|----------------|-------|-------|---------|
| | | 18-19 | 20-21 | 22-23 | 24 a.o. | 18-19 | 20-21 | 22-23 | 24 a.o. | 18-19 | 20-21 | 22-23 | 24 a.o. |
| Class 1 | B | 2 | 3 | 0 | 0 | 4 | 2 | 4 | 1 | 0 | 0 | 0 | 1 |
| | W | 3 | 2 | 0 | 0 | 2 | 5 | 0 | 1 | 0 | 1 | 0 | 1 |
| Class 2 | B | 0 | 4 | 0 | 0 | 1 | 2 | 1 | 1 | 0 | 1 | 0 | 0 |
| | W | 0 | 0 | 0 | 0 | 1 | 5 | 1 | 0 | 0 | 1 | 0 | 1 |
| Class 3 | B | 3 | 11 | 4 | 0 | 3 | 9 | 6 | 5 | 0 | 1 | 3 | 0 |
| | W | 10 | 9 | 2 | 3 | 5 | 8 | 6 | 4 | 0 | 2 | 2 | 1 |
| Class 4 | B | 0 | 2 | 0 | 0 | 0 | 1 | 6 | 1 | 0 | 0 | 0 | 1 |
| | W | 0 | 0 | 1 | 0 | 1 | 7 | 6 | 0 | 0 | 0 | 3 | 0 |
| Total | | 18 | 31 | 7 | 3 | 17 | 39 | 30 | 13 | 0 | 6 | 8 | 5 |

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The models required to fit these five-way classifications turn out to be relatively straightforward extensions of the model required for the AWOL only data of Table 14. The data of Tables 17a, 17b, and 17c can be adequately fitted with the following interactions:

Three-Way: Age-Education-Service
Age-Race-Offense

Two-Way: Education-Race
Service-Race
Education-Offense
Service-Offense

Thus the $4 \times 3 \times 3 \times 2 \times 4 = 288$ cells of this five-way classification are adequately described by the 80 parameters included in the above interactions. The X^2 value for the remaining 208 degrees of freedom is 219.8, for which $P = 0.29$. What is surprising is that this five-way classification requires only 38 more parameters than the 42 required to fit the 72 cells of the AWOL only model as described in Appendix A. The only changes are that the Age-Race interaction does change with offense class adding an additional three-way interaction, and that two additional two-way interactions between offense class and education and service must be added. The interpretation of this change is discussed later.

The model required to adequately fit the data of Tables 18a, 18b, 18c and 18d requires one four-way interaction in addition to one three-way and two two-way interactions, reflecting a higher level of heterogeneity in the data:

Four Way: Age-Race-Offense-Facility

Three-Way: Age-Education-Facility

Two-Way: Education-Race
Education-Offense

The residual X^2 for fitting this model to the 384 cells of the classification is 203.7 for 216 degrees of freedom, for which $P = 0.70$. Note that the only difference in this special facility model compared to the previous model for confinement facilities is that the age-race relationship is now dependent on a combination of facility and offense class as opposed to offense class only, which probably reflects the previously mentioned heterogeneity of the special facilities as opposed to confinement facilities with respect to assignment practices.

Table 19 summarizes the service-race interaction, which is remarkably consistent over the several models involving confinement facilities only. Numbers in parentheses are Army data based on the total inmate population as reported in Table 1 rather than the Nellum data. The important conclusion is that the differences in the ratio between black and white incarceration rates for the various services and facility types are not completely explained by differences in age, education, and offense. Of particular note is that while the overall rate of incarceration is lower for the Navy and Air Force as compared to the Army and Marines, the relative probability of a black serviceman being incarcerated is higher for the Navy and Air Force, and this difference is only partially explained by differences in the age and education of the service population. While speculation on the reason for this difference in the data may be inappropriate, in that the associations

Table 19

Service-Race Interaction
Inmates of Confinement Facilities
Aggregated Over Age, Education and Offense

| | <u>Navy</u> | <u>Marines</u> | <u>Army</u> | |
|---------------------------------------|-------------|----------------|-------------|---------|
| Black | 162 | 319 | 56 | (1,070) |
| White | 623 | 982 | 211 | (2,115) |
| B/W Ratio | .260 | .325 | .265 | (.506) |
| Apparent α | 1.00 | 1.25 | 1.02 | (1.95) |
| α From Model | 1.00 | 1.297 | 0.979 | |
| α (AWOL only Model) | 1.00 | 1.364 | 0.886 | |
| α (All Offenses Model) | 1.00 | 1.302 | 0.973 | |
| Population B.W Ratio ⁽¹⁾ | 0.083 | 0.192 | 0.218 | |
| True Change in Odds Ratio | 1.00 | 0.56 | 0.37 | (0.71) |
| <u>Incarceration Rates (per 1000)</u> | | | | |
| Black | 4.40 | 11.37 | (8.24) | |
| White | 1.40 | 6.71 | (3.56) | |

⁽¹⁾ Data from Schefflen (1975)

present do not indicate or confirm any specific cause or effect relationship, one possible hypothesis is that known differences in selection practices between the Navy and Air Force, on the one hand, and the Army and Marines, on the other, do not hold equally for the two races, especially under pressures to increase minority representation. Another equally likely hypothesis, however, is that blacks experience (a) greater discrimination and/or (b) have more difficulty adjusting in services where they comprise a smaller proportion of the service population.

The education-race interaction summarized in Table 20 is interesting in that it is the only two-way interaction which is independently present in all models fitted. Note that the fitted effects are consistently less than the apparent effect, which is due to the fact that the services with high relative incarceration rates for blacks also have relatively high educational levels. What is even more astonishing is the fact that the odds that an inmate will be black increases consistently with educational level even though the relative number of black servicemen in these higher educational categories is less; so thus the true change in odds is even greater, confirming the changes in black to white incarceration ratios with educational level seen in Tables 7b and 8b. In spite of the known relationships between black involvement and nature of offense, and nature of offense and educational level, to be discussed later, it is difficult to understand this approximately fourfold increase in the odds that a black serviceman with greater than a high school education will be incarcerated compared to his white equivalent. The data of Tables 7b and 8b indicate that the absolute rate of incarceration of black service personnel simply does not drop with educational level to anywhere near the same extent as does the rate for whites.

Table 20

Education-Race-Interaction
Inmates of Confinement Facilities
Aggregated Over Age, Service and Offense

| | <u>< H.S.</u> | <u>H.S.</u> | <u>> H.S.</u> |
|-------------------------------|------------------|-------------|------------------|
| Black | 300 | 208 | 29 |
| White | 1147 | 607 | 62 |
| B/W Ratio | .262 | .343 | .468 |
| Apparent α | 1.00 | 1.31 | 1.79 |
| α From Model | 1.00 | 1.178 | 1.447 |
| α (AWOL only Model) | 1.00 | 1.192 | 1.474 |
| α (All Offenses Model) | 1.00 | 1.245 | 1.569 |
| α (Spec. Fac. Model) | 1.00 | 1.37 | 1.26 |
| Population B/W Ratio | .190 | .099 | .059 |
| True Change in Odds | 1.00 | 2.26 | 4.69 |

Both the model for the confinement facilities and the special facilities contain an education-offense interaction, and the corresponding marginal tables are shown in Table 21. The primary effect is a disproportionate involvement of those with less than high school education with AWOL type offenses which is apparently not completely accounted for by the relationship between education and age. One could again speculate that the behavioral characteristics associated with being a high school drop-out are not inconsistent with those that might lead to absence without leave, so that an independent association with education in addition to the age effect appears reasonable.

Table 22 summarizes the data on the age-race-offense interaction for the five-way classification for confinement facilities. From these data it is apparent that the age-race interaction was unique to the AWOL offenses, and represents a disproportionate involvement of young whites in this offense class. For the other offense classes the black/white ratio appears to be constant with age, as shown in Table 22a, but, as noted from the fitted α 's in Table 22, quite different for the three classes. The weighted average α 's for these classes (relative to the black/white ratio for 18-19 year olds charged with being AWOL) are:

Class 1: 7.23 Class 2: 3.18 Class 4: 1.26

Depending on age, the chances that an inmate charged with a major offense will be black ranges from 3 to 7 times greater than the chances that an inmate charged with being AWOL will be black; overall, the odds are almost 6 times as great for class 1 as opposed to class 4 offenses.

Table 21

Education-Offense Interaction
Inmates of Special and Confinement Facilities
Aggregated Over Race, Age, and Service

| | <u>Less Than H.S.</u> | <u>H.S. Graduate</u> | <u>More Than H.S.</u> |
|-------------------------------|-----------------------|----------------------|-----------------------|
| <u>Special Facilities</u> | | | |
| Class 1 | 78 | 63 | 7 |
| Class 2 | 46 | 47 | 9 |
| Class 3 | 329 | 146 | 22 |
| Class 4 | 67 | 69 | 11 |
| <u>Confinement Facilities</u> | | | |
| Class 1 | 105 | 79 | 10 |
| Class 2 | 75 | 71 | 12 |
| Class 3 | 1,203 | 587 | 62 |
| Class 4 | 64 | 78 | 5 |

Table 22

Age-Offense-Race Interaction
Inmates of Confinement Facilities
Aggregated Over Education and Service

| | | <u>18-19</u> | <u>20-21</u> | <u>22-23</u> | <u>(22 a.o.)</u> | <u>24 a.o.</u> |
|---------|---|--------------|--------------|--------------|------------------|----------------|
| Class 1 | B | 49 | 39 | 13 | (18) | 5 |
| | W | 39 | 28 | 8 | (21) | 13 |
| Class 2 | B | 17 | 21 | 14 | (17) | 3 |
| | W | 28 | 49 | 20 | (26) | 6 |
| Class 3 | B | 115 | 133 | 55 | | 46 |
| | W | 711 | 490 | 200 | | 102 |
| Class 4 | B | 9 | 11 | 4 | (7) | 3 |
| | W | 45 | 49 | 23 | (27) | 4 |

B/W Ratios

| | | | | | |
|---------|-------|-------|-------|--------|-------|
| Class 1 | 1.256 | 1.393 | -- | (0.86) | -- |
| Class 2 | 0.607 | 0.429 | -- | (0.65) | -- |
| Class 3 | 0.162 | 0.271 | 0.275 | | 0.451 |
| Class 4 | 0.200 | 0.224 | -- | (0.26) | -- |

α From Model

| | | | | | |
|---------|------|------|------|--------|------|
| Class 1 | 7.62 | 8.04 | -- | (4.95) | -- |
| Class 2 | 3.73 | 2.52 | -- | (3.69) | -- |
| Class 3 | 1.00 | 1.61 | 1.56 | | 2.66 |
| Class 4 | 1.18 | 1.26 | -- | (1.37) | -- |

Table 22a

Age-Offense-Race Interaction
Inmates of Confinement Facilities
Aggregated Over Education, Service, and non-AWOL Offenses

| | | <u>18-19</u> | <u>20-21</u> | <u>22-23</u> | <u>24 a.o.</u> |
|-------|---|--------------|--------------|--------------|----------------|
| AWOL | B | 115 | 133 | 55 | 46 |
| | W | 711 | 490 | 200 | 102 |
| Other | B | 75 | 71 | 31 | 11 |
| | W | 112 | 126 | 51 | 23 |

B/W Ratios

| | | | | |
|-------|-------|-------|-------|-------|
| AWOL | 0.162 | 0.271 | 0.275 | 0.451 |
| Other | 0.670 | 0.563 | 0.608 | 0.478 |

One of the most startling characteristics of the Nellum data is the degree to which it mirrors the differential involvement of blacks in various classes of offenses, a finding which has appeared in criminal justice statistics from many sources.⁽⁵⁾ There has been much speculation as to the reason for this ranging from simple socioeconomic causes to more fundamental differences in behavior. One hypothesis, which was mentioned by Harold Cohen at the Conference on Corrections referred to in the Introduction, is that blacks, either inherently or because of environmental factors, tend to react more aggressively to stress conditions than whites, while whites tend to be more escapist in their behavior. This led to a consideration of the Nellum data using two selected groupings of offenses designated "Aggressive" and "Non-Aggressive" as shown below, where the numbers in parentheses again refer to the Uniform Code of Military Justice:

Aggressive

Destroy Government Property (108)
Destroy Private Property (109)
Extortion (127)
Assault (128)
Rape (120)
Robbery (122)
Maiming (124)
Misbehavior (113)
Murder (118)
Riot (116)

Non-Aggressive

Perjury (131)
Forgery (123)
Larceny (121)
AWOL (86)
Desertion (85)
False Official Statements (107)
Conspiracy (81)

Table 23 shows the results of a cross tabulation of this classification of offenses with race for the total prisoner population of the Navy and Marine Corps where the Nellum data is essentially complete. Approximately one quarter of the black inmates are charged with "aggressive" offenses,

Table 23

Race by Nature of Offense by Service
Total Prisoner Population, Navy and Marine Corps.

| | White | | Black | |
|-------------------------|----------|----------|----------|----------|
| | <u>N</u> | <u>%</u> | <u>N</u> | <u>%</u> |
| <u>USN</u> | | | | |
| Aggressive Offenses | 15 | 2.5 | 53 | 30.5 |
| Non-Aggressive Offenses | 577 | 97.5 | 121 | 69.5 |
| TOTAL | 592 | 100.0 | 174 | 100.0 |
| <u>USMC</u> | | | | |
| Aggressive Offenses | 30 | 3.6 | 53 | 20.3 |
| Non-Aggressive Offenses | 795 | 96.4 | 208 | 79.7 |
| TOTAL | 825 | 100.0 | 261 | 100.0 |
| <u>TOTAL</u> | | | | |
| Aggressive Offenses | 45 | 3.2 | 106 | 24.4 |
| Non-Aggressive Offenses | 1,372 | 96.8 | 329 | 75.6 |
| TOTAL | 1,417 | 100.0 | 435 | 100.0 |

as compared to about 3% of the white inmates, and this difference is equally marked for the Navy and Marine Corps separately in spite of the differences in incarceration rate and other prisoner characteristics noted earlier. Tables 24, 25, and 26 show that this interaction persists when the data are broken down by age, education and rank. Table 27 shows the ratio of black to white inmates in the Nellum sample for selected specific offenses which occur most frequently. Note that the relative number of blacks charged with robbing is almost 10 times greater than the relative number of blacks charged with being AWOL.

Direct comparison of these data with civilian data is difficult because of definitional problems and because the offense patterns are so much different. Table 28 shows the comparison of data from the Nellum sample to arrest data from the 1972 Uniform Crime Report for comparable offenses with sufficient military data for a valid comparison. Allowing for a general tendency for the ratios in the military to be higher (which may be due to the fact that we are dealing with inmates rather than arrests), both sets of ratios seem to reflect similar differences, with robbery the highest, larceny the lowest, and homicide and assault lying between. There is some question as to whether the definition of assault is comparable in the two cases. It is also interesting to note, although they are obviously not comparable crimes, that the B/W ratio of 0.240 for AWOL shown in Table 27 compares quite closely to ratios in the Uniform Crime Reports (not shown in Table 28) of 0.297 for drunkenness, 0.313 for vagrancy, and 0.342 for narcotics offenses, all of which to some extent reflect a similar type of "escapist" behavior and are traditionally "white" crimes. One of the authors is planning to continue this investigation of differential involvement as part of his doctoral program.

Table 24

Race by Nature of Offense by Age
Total Prisoner Population, Navy and Marine Corps

| | 17-19 Yrs. | | | | 20-21 Yrs. | | | | 22-23 Yrs. | | | | 24 and Older | | | |
|-------------------------|------------|--------|-------|--------|------------|--------|-------|--------|------------|--------|-------|--------|--------------|--------|-------|--------|
| | White | | Black | | White | | Black | | White | | Black | | White | | Black | |
| | N | % | N | % | N | % | N | % | N | % | N | % | N | % | N | % |
| <u>USN</u> | | | | | | | | | | | | | | | | |
| Aggressive Offenses | 3 | 1.20 | 26 | 38.24 | 6 | 2.99 | 21 | 32.31 | 4 | 4.44 | 4 | 16.00 | 1 | 2.56 | 2 | 14.29 |
| Non-Aggressive Offenses | 246 | 98.80 | 42 | 61.76 | 195 | 97.01 | 44 | 67.69 | 86 | 95.56 | 21 | 84.00 | 38 | 97.44 | 12 | 85.71 |
| TOTAL | 249 | 100.00 | 68 | 100.00 | 201 | 100.00 | 65 | 100.00 | 90 | 100.00 | 25 | 100.00 | 39 | 100.00 | 14 | 100.00 |
| <u>USMC</u> | | | | | | | | | | | | | | | | |
| Aggressive Offenses | 17 | 4.17 | 18 | 21.18 | 7 | 2.69 | 20 | 20.20 | 3 | 2.78 | 11 | 22.00 | 3 | 6.67 | 3 | 12.00 |
| Non-Aggressive Offenses | 391 | 95.83 | 67 | 78.82 | 253 | 97.31 | 79 | 79.80 | 105 | 97.22 | 39 | 78.00 | 42 | 93.33 | 22 | 88.00 |
| TOTAL | 408 | 100.00 | 85 | 100.00 | 260 | 100.00 | 99 | 100.00 | 108 | 100.00 | 50 | 100.00 | 45 | 100.00 | 25 | 100.00 |

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Table 25

Race by Nature of Offense by Rank
Total Prisoner Population, Navy and Marine Corps

| | <u>E-1</u> | | | | <u>E-2</u> | | | | <u>E-3 & Higher</u> | | | |
|-------------------------|------------|--------|-------|--------|------------|--------|-------|--------|-------------------------|--------|-------|--------|
| | White | | Black | | White | | Black | | White | | Black | |
| | N | % | N | % | N | % | N | % | N | % | N | % |
| <u>USN</u> | | | | | | | | | | | | |
| Aggressive Offenses | 2 | .81 | 9 | 23.08 | 6 | 3.37 | 31 | 37.35 | 7 | 4.32 | 13 | 31.71 |
| Non-Aggressive Offenses | 248 | 99.20 | 39 | 81.25 | 172 | 96.63 | 52 | 62.65 | 155 | 95.68 | 28 | 68.29 |
| Total | 250 | 100.00 | 48 | 100.00 | 178 | 100.00 | 83 | 100.00 | 162 | 100.00 | 41 | 100.00 |
| <u>USMC</u> | | | | | | | | | | | | |
| Aggressive Offenses | 21 | 3.27 | 34 | 16.27 | 6 | 5.31 | 14 | 35.00 | 3 | 4.35 | 5 | 41.67 |
| Non-Aggressive Offenses | 622 | 96.73 | 175 | 83.73 | 107 | 94.69 | 26 | 65.00 | 66 | 95.65 | 7 | 58.33 |
| Total | 643 | 100.00 | 209 | 100.00 | 113 | 100.00 | 40 | 100.00 | 69 | 100.00 | 12 | 100.00 |

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Table 26

Race by Nature of Offense by Education
Total Prisoner Population, Navy and Marine Corps

| USN | Less Than High School | | | | High School Diploma | | | | More Than High School | | | |
|-------------------------|-----------------------|--------|-------|--------|---------------------|--------|-------|--------|-----------------------|--------|-------|--------|
| | White | | Black | | White | | Black | | White | | Black | |
| | N | % | N | % | N | % | N | % | N | % | N | % |
| Aggressive Offenses | 10 | 2.87 | 21 | 25.30 | 4 | 1.84 | 26 | 32.50 | 1 | 4.35 | 5 | 55.56 |
| Non-Aggressive Offenses | 339 | 97.13 | 62 | 74.70 | 213 | 98.16 | 54 | 67.50 | 22 | 95.65 | 4 | 44.44 |
| TOTAL | 349 | 100.00 | 83 | 100.00 | 217 | 100.00 | 80 | 100.00 | 23 | 100.00 | 9 | 100.00 |
| USMC | | | | | | | | | | | | |
| Aggressive Offenses | 22 | 3.62 | 28 | 16.97 | 7 | 3.57 | 21 | 25.93 | 1 | 5.26 | 4 | 30.77 |
| Non-Aggressive Offenses | 585 | 96.38 | 137 | 83.03 | 189 | 96.43 | 60 | 74.07 | 18 | 94.74 | 9 | 69.23 |
| TOTAL | 607 | 100.00 | 165 | 100.00 | 196 | 100.00 | 81 | 100.00 | 19 | 100.00 | 13 | 100.00 |

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Table 27
Race by Specific Offense

| | Number | | B/W |
|--------------------------------|--------------|--------------|--------------|
| | <u>Black</u> | <u>White</u> | <u>Ratio</u> |
| <u>Navy & Marine Corps</u> | | | |
| AWOL | 340 | 1,413 | 0.240 |
| Disobedience or Disrespect | 29 | 54 | 0.54 |
| Larceny | 26 | 47 | 0.55 |
| Disobey Order | 16 | 52 | 0.31 |
| Assault | 45 | 22 | 2.04 |
| Robbery | 34 | 6 | 5.67 |
| Other | 70 | 232 | -- |
| Total | 560 | 1,826 | -- |
| <u>All Military</u> | | | |
| AWOL | 543 | 1,844 | 0.294 |
| Disobedience or Disrespect | 61 | 71 | 0.86 |
| Larceny | 48 | 77 | 0.62 |
| Disobey Order | 36 | 72 | 0.50 |
| Assault | 69 | 36 | 1.92 |
| Robbery | 46 | 16 | 2.88 |
| Other | 131 | 299 | -- |
| Total | 934 | 2,415 | -- |

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Table 28
Civilian and Military Ratios for Comparable Crimes

| | | Uniform Crime Report Arrests (1972) | Nellum Sample Of Inmates Of Military Correctional Facilities |
|----------|-----------|----------------------------------------|--------------------------------------------------------------------|
| Robbery | B | 34,263 | 46 |
| | W | 18,864 | 16 |
| | B/W Ratio | 1.816 | 2.88 |
| Assault | B | 46,282 | 69 |
| | W | 52,024 | 36 |
| | B/W Ratio | 0.890 | 1.92 |
| Larceny | B | 97,813 | 48 |
| | W | 198,124 | 77 |
| | B/W Ratio | 0.494 | 0.62 |
| Homocide | B | 6,470 | 9 |
| | W | 5,523 | 10 |
| | B/W Ratio | 1.171 | 0.90 |

There is no evidence in the Nellum data of any discrimination in sentencing practice or length of sentence. It was previously noted that large numbers of the inmates of confinement facilities were in pre-sentence status. Table 29 shows the breakdown of pre-sentence status by race, offense class, and service. Analysis of these data shows that the interaction between race and pre-sentence status is clearly non-existent, although interactions with offense class and service are clearly present. The large percentage of Army inmates of confinement facilities in pre-sentence status was previously mentioned.

The analysis of distribution of length of sentence shown in Table 30 by offense class and many similar analyses of data on individual offenses, confirms the conclusion of the Nellum report that sentence length is independent of race if the nature of the offense is taken into account.* The significant X^2 value for class 2 offenses in special facilities shown in Table 30 is entirely due to the unexpected cluster of 14 white inmates in the sentences of over 12 months category; no explanation is available for this finding.

CONCLUDING REMARKS

Personnel charged with being AWOL dominate the Military Criminal Justice System. By and large these personnel are young, white, and at the lower educational levels. It is interesting to note the analogous position occupied by the "crime" of being AWOL in the military system and the so-called

* The significant differences in the average sentence length between blacks and whites for the several services shown in Table 32 of ALNA-79 are due in one instance to a single outlier in the distribution, and in the other case to a computational error.

Table 29

a. Pre-Sentence Status by Race, Offense Class and Service Confinement Facilities

| | | <u>Navy</u> | | <u>Marines</u> | | <u>Army</u> | |
|---------|--------------|-------------|-----|----------------|-----|-------------|-----|
| | | B | W | B | W | B | W |
| Class 1 | Pre-Sentence | 24 | 8 | 36 | 19 | 7 | 7 |
| | Sentenced | 10 | 16 | 24 | 35 | 5 | 3 |
| Class 2 | Pre-Sentence | 3 | 20 | 8 | 14 | 4 | 8 |
| | Sentenced | 13 | 29 | 25 | 31 | 2 | 1 |
| Class 3 | Pre-Sentence | 68 | 323 | 96 | 397 | 26 | 162 |
| | Sentenced | 34 | 183 | 115 | 412 | 10 | 26 |
| Class 4 | Pre-Sentence | 2 | 19 | 12 | 34 | 2 | 2 |
| | Sentenced | 8 | 25 | 3 | 40 | 0 | 2 |

b. Pre-Sentence Status by Race

| | <u>Black</u> | <u>White</u> | <u>B/W Ratio</u> |
|--------------|--------------|--------------|------------------|
| Pre-Sentence | 288 | 1,013 | 0.284 |
| Sentenced | 249 | 803 | 0.310 |

c. Pre-Sentence Status by Service

| | <u>Pre-Sentence</u> | <u>Sentenced</u> | <u>Ratio</u> |
|---------|---------------------|------------------|--------------|
| Navy | 467 | 318 | 1.47 |
| Marines | 616 | 685 | 0.89 |
| Army | 218 | 49 | 4.45 |

Table 30

a. Race by Length of Sentence by Offense Class
Special Facilities

| | <u>Class 1</u> | | <u>Class 2</u> | | <u>Class 3</u> | | <u>Class 4</u> | |
|-------------------|----------------|----|----------------|----|----------------|-----|----------------|----|
| | B | W | B | W | B | W | B | W |
| 1 - 3 Months | 17 | 13 | 19 | 11 | 68 | 114 | 8 | 9 |
| 4 - 5 Months | 13 | 14 | 13 | 11 | 67 | 92 | 4 | 15 |
| 6 - 11 Months | 8 | 16 | 14 | 6 | 36 | 80 | 7 | 12 |
| 12 + Months | 12 | 9 | 3 | 14 | 11 | 19 | 5 | 11 |
| TOTAL | 50 | 52 | 49 | 42 | 182 | 305 | 24 | 47 |
| χ^2 (3 d.f.) | 3.67 | | 12.21 | | 3.59 | | 2.87 | |
| | .50<P<.75 | | .010<P<.005 | | .50<P<.75 | | .25<P<.50 | |

b. Race by Length of Sentence by Offense Class
Confinement Facilities

| | <u>Class 1</u> | | <u>Class 2</u> | | <u>Class 3</u> | |
|-------------------|----------------|----|----------------|----|----------------|-----|
| | B | W | B | W | B | W |
| 1 Month | 4 | 11 | 14 | 16 | 51 | 161 |
| 2 Months | 4 | 6 | 3 | 10 | 25 | 121 |
| 3 Months | 7 | 10 | 8 | 9 | 33 | 150 |
| 4 Months | 5 | 7 | 7 | 8 | 26 | 103 |
| 5 Months | 1 | 7 | 2 | 3 | 10 | 46 |
| 6 - 11 Months | 4 | 12 | 2 | 10 | 13 | 43 |
| 12 + Months | 4 | 6 | 1 | 4 | 3 | 13 |
| TOTAL | 29 | 59 | 37 | 60 | 161 | 637 |
| χ^2 (6 d.f.) | 3.70 | | 6.37 | | 4.36 | |
| | .25<P<.50 | | .50<P<.75 | | .25<P<.50 | |

"victimless" crimes of the civilian system, both in terms of the magnitude of the problem and the nature of the offenders.

When this large group of inmates is removed from the data, the characterization of the remaining inmates of correctional institutions is not substantially different from that found in the civilian sector for similar offenses, although, as would be expected, the offense pattern itself is substantially different. By and large the impression is given that the processes and practices of the military system mirror both the good and bad points of civilian practice.

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APPENDIX A

COMPUTERIZED MULTI-WAY CONTINGENCY ANALYSIS

The computer program used in multi-way contingency table analysis at Battelle H.A.R.C. was developed and programmed by R.W. Perry and Carl A. Bennett in the summer of 1973. The program is a composite and functions much like several other programs available for conducting such analyses. The distinguishing features of the Battelle program are its modified calculation and execution algorithms which greatly increase the speed and efficiency of analysis.

The function of the program is to consider alternative models for an m-way contingency table, using the method detailed by Leo Goodman (1971). The program has two parts. Part I seeks best initial fit by examining models that fit successively, the m-1-way marginals, the $m(m-1)/2$ 2-way marginals, the $m(m-1)(m-2)/6$ 3-way marginals, etc., until an acceptable fit is obtained, i.e., the likelihood-ratio chi-square statistic for this model (H') does not exceed a specified rejection level. The program then examines the model (H'') containing all the next higher level effects. If the decrease in the likelihood-ratio chi-square statistic between H' and H'' does not exceed a specified rejection level, the program selects H' as the initial best fit. Otherwise, it repeats the procedure for H'' to H''' . If the model proceeds to a fit involving all (m-1)-way marginals and that fit is unsatisfactory, the program is terminated with a laconic remark. The interpretation is that the m-way interaction is significant. Part I, therefore, is largely a search routine, designed to help the investigator locate interactions and develop a plausible model in the absence of a pre-existing theoretical or substantive model.

The second part of the program is designed for "honing" a model-- that is, for cleaning up any rough spots and producing the most parsimonious model to explain the data. Part II is an iterative sequence which begins with a specified model and deletes, one at a time, those effects not contributing significantly to the fit. If the model at the beginning of an iteration is H^* , the model retained for the next iteration, H^{**} , is the one that yields the smallest likelihood-ratio statistic, provided that the difference between the likelihood-ratio chi-square for H^* and H^{**} does not exceed a specified rejection level. If no such H^{**} exists, H^* is accepted as the best final fit. Goodman (1971, p. 48) cautions that finding the "best fitting" model in a stepwise procedure of this kind does not necessarily mean that a still better fit cannot be found. He also notes (p. 49) that levels of significance must be treated with caution in a stepwise analysis.

STRUCTURE OF INPUT

In this approach a "variable" is an exhaustive one-way classification with 2 or more categories; the number of categories is the "dimension" of the variable. In a rectangular display of the m-way table, variable 1 is the variable that changes first in reading across (from left to right) the first row of the table; variable 2 is the one that changes next; etc. For example, the 4-way table (frequencies in cells not shown),

| Var. 4 = | Var. 3 = | Var. 2 = | Var. 1 = |
|----------|----------|----------|----------|
| | | | 1 2 3 |
| 1 | 1 | 1 | |
| | 1 | 2 | |
| | 2 | 1 | |
| | 2 | 2 | |
| 2 | 1 | 1 | |
| | 1 | 2 | |
| | 2 | 1 | |
| | 2 | 2 | |

or, equivalently,

| Var. 4 = Var. 3 = | | Var. 2 = 1 | | | Var. 2 = 2 | | |
|-------------------|---|------------|------|------|------------|------|------|
| | | Var. 1 = | | | Var. 1 = | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| 1 | 1 | (1) | (2) | (3) | (4) | (5) | (6) |
| | 2 | (7) | (8) | (9) | (10) | (11) | (12) |
| 2 | 1 | (13) | (14) | (15) | (16) | (17) | (18) |
| | 2 | (19) | (20) | (21) | (22) | (23) | (24) |

has dimensions 3 x 2 x 2 x 2. (Numbers in parentheses indicate the order in which the cell counts, or frequencies, appear in input to program). The number of cells is the product of the dimensions, here, 24. The "configuration" of a model describes the combination of variables being fit. Some configurations and their meanings, for the case of a 4-way table:

| | | | | | | |
|-----|-----|--------------------------------------------------------------------------------------------|-----|-------------------------------------------------------------------------------------|----|-----------------------|
| 1 | 2 | 3 | 4 | (all one-way marginals--tests hypothesis of mutual independence of all 4 variables) | | |
| 12 | 13 | 23 | 14 | 24 | 34 | (all 2-way marginals) |
| 123 | 124 | 134 | 234 | (all 3-way marginals) | | |
| 124 | 3 | (3-way marginals for var. 1 by var. 2 by var. 4, and 1-way marginals for var.3) | | | | |
| 13 | 234 | (2-way marginals for var. 1 by var. 3, and 3-way marginals for var. 2 by var. 3 by var. 4) | | | | |

The program constructs the configurations to produce the models required for the stepwise procedure.

LOGIC OF ANALYSIS: EXAMPLE

Table A-1 shows the frequency of A.W.O.L. by age by education by race by service for confinement facilities (also shown in body of report as Table 14). The print-out shows that these are observed frequencies $[f(0)]$ and gives the number of levels for each dimension (age = 4; education = 3; race = 2; service = 3).

Since we knew that the four variables are not independent, our first concern was with examining all of the possible two-way effects in the table. The iterative sequence (Part VI) of the program was begun, with instructions to assemble the minimum information X^2 values from each possible matrix. These X^2 values were then used as input to a subroutine which performs a 2^k factorial analysis and outputs a listing of each possible interaction along with the appropriate "factorial effect" and degrees of freedom. This output is interpreted like an analysis of variance and is shown below:

| Possible Interaction | X^2 | Degrees Of Freedom |
|----------------------|--------|--------------------|
| Age-Education | 153.05 | 6 |
| Age-Race | 38.36 | 3 |
| Age-Service | 16.90 | 6 |
| Education-Race | 6.20 | 2 |
| Education-Service | 62.18 | 4 |
| Race-Service | 6.14 | 2 |
| Residual | 60.23 | 40 |
| TOTAL | 343.06 | 63 |

The pattern of the interactions is interesting for two reasons: (1) many of the 2-way interactions appear to be significant and (2) when age, education or service appear together in any combination, the associated X^2 is greatly increased. In any situation where there are a large number of 2-way

interactions of this size, the investigator must suspect that a third order interaction is probably responsible. Our suspicions are virtually confirmed if we can trace patterns of effects with different combinations of 2-way interactions. In the present example, we have become certain that some 3-way interaction is present and have particular reasons for eyeing age-education-service.

Once again, the 4-way table was fed into Part II of the program, this time with instructions to analyze all possible third order interactions, perform the factorial experiment and assemble output. The results of this analysis are shown below:

| Possible Interaction | X^2 | Degrees Of Freedom |
|-------------------------|-------|-----------------------|
| Age-Education-Race | 5.68 | 6 |
| Age-Education-Service | 19.68 | 12 |
| Age-Race-Service | 5.34 | 6 |
| Education-Race-Service | 1.60 | 4 |
| Residual | 18.40 | 12 |
| TOTAL | 50.70 | 40 |

As we had suspected, the important 3-way interaction is age-education-service. The factorial X^2 value for this interaction is larger than the others by a factor of almost 4. Knowing now which 3-way interaction to include in our analysis, the task became one of determining which other two-way effects are independent of the 3-way and therefore require inclusion in the model. After some simple mathematics and a great deal substantive thinking, a proposed best fitting model was chosen:

3-way effect: age-education-service
2-way effects: age-race, education-race, race-service

Keeping this model in mind, the original table (A-1) was fed into the program one last time, with instructions to consider all possible combinations of 3-way with 2-way effects, and to print the estimated cell values based on the model. The previously indicated best-fitting model is here reproduced as table A-2. The configuration number indicates that this was the 68th matrix tested by the program. The numbers immediately below the configuration sequence identify the model being tested (for the program, 1=age, 2=education, 3=race, 4=service). The values shown in the body of the table represent estimates of the corresponding cell values shown in Table A-1, where the estimates are computed based upon the specified model. The X^2 value printed below the table is a test to determine the existence of any remaining relationship after we have taken out the effects specified in the model. Our comparative analysis of each of the possible models indicated that this model most efficiently explained the table.

Leo A. Goodman, "The analysis of multidimensional contingency tables; stepwise procedures and direct estimation methods for building models for multiple classifications," Technometrics 13 (February, 1971): 13, pages 33-61.

Table A-1

| TABLE 1- DIMENSIONS- 4 3 2 3 | | | | | | | | | | | | |
|------------------------------|--------|--------|-------|-------|-------|-------|-------|-------|------|------|------|------|
| F(0) | 23.00 | 18.00 | 4.00 | 5.00 | 16.00 | 20.00 | 6.00 | 7.00 | 0.00 | 0.00 | 1.00 | 2.00 |
| F(0) | 176.00 | 76.00 | 17.00 | 14.00 | 56.00 | 91.00 | 39.00 | 20.00 | 1.00 | 8.00 | 8.00 | 0.00 |
| F(0) | 56.00 | 51.00 | 20.00 | 13.00 | 13.00 | 25.00 | 14.00 | 10.00 | 0.00 | 3.00 | 5.00 | 1.00 |
| F(0) | 333.00 | 185.00 | 60.00 | 20.00 | 59.00 | 73.00 | 42.00 | 19.00 | 4.00 | 3.00 | 7.00 | 4.00 |
| F(0) | 4.00 | 10.00 | 2.00 | 1.00 | 3.00 | 5.00 | 2.00 | 4.00 | 0.00 | 1.00 | 1.00 | 3.00 |
| F(0) | 59.00 | 26.00 | 16.00 | 14.00 | 23.00 | 25.00 | 8.00 | 7.00 | 0.00 | 3.00 | 3.00 | 4.00 |

Table A-2

| CONFIGURATION 68- 1246 1300 2300 3400 | | | | | | | | | | | | |
|--------------------------------------------------------------|--------|--------|-------|-------|-------|-------|-------|-------|------|------|------|------|
| F(E) | 23.03 | 16.49 | 3.58 | 4.98 | 9.72 | 22.46 | 8.86 | 8.04 | .16 | 1.91 | 2.09 | .69 |
| F(E) | 175.97 | 77.51 | 17.42 | 14.02 | 62.28 | 88.54 | 36.14 | 18.96 | .84 | 6.09 | 6.91 | 1.31 |
| F(E) | 58.92 | 53.08 | 17.52 | 10.78 | 12.63 | 25.19 | 14.03 | 10.62 | .83 | 1.80 | 3.51 | 2.08 |
| F(E) | 330.08 | 182.92 | 62.48 | 22.22 | 59.37 | 72.81 | 41.97 | 18.38 | 3.17 | 4.20 | 8.49 | 2.92 |
| F(E) | 6.54 | 5.71 | 2.77 | 3.59 | 3.16 | 5.50 | 1.78 | 3.00 | 0.00 | .87 | .85 | 2.22 |
| F(E) | 56.45 | 30.29 | 15.23 | 11.41 | 22.84 | 24.50 | 8.22 | 8.00 | 0.00 | 3.13 | 3.15 | 4.78 |
| DF = 28 CHI SQUARE = .3115295E+02 PROBABILITY = .3133601E+00 | | | | | | | | | | | | |

Appendix B

As indicated in the footnotes to tables 1 and 3, racial breakdowns of Navy and Marine Corps inmates of brigs and the Naval Disciplinary Command as of 30 June 1972 were not easily obtained. For purposes of this report these racial breakdowns were estimated as follows:

1. The racial composition of the known total number of inmates of Navy and Marine Corps installations other than the Naval Disciplinary Command was assumed to be the same as that found in the Nellum Study for the same groups of facilities.

2. Since the Nellum data contain no information on whether the inmates of the Naval Disciplinary Command were Navy or Marine Corps personnel, a two way interpolation was required to estimate racial breakdown by service for this institution. The desired data are those shown in the table below where, for example, N_{11} is the number of Marine Corps inmates of DISCOM on 30 Jun '72.

| | W | B | O |
|--------|----------|----------|----------|
| Navy | N_{11} | N_{12} | N_{13} |
| Marine | N_{21} | N_{22} | N_{23} |

We know from Table 10a that

$$N_{1.} = N_{11} + N_{12} + N_{13} = 37$$

$$N_{2.} = N_{21} + N_{22} + N_{23} = 196$$

The first assumption required is that the racial composition of the total of 233 inmates is the same as that inferred by direct extrapolation from the Nellum data, i.e., that

$$N_{.1} = N_{11} + N_{21} = 169$$

$$N_{.2} = N_{12} + N_{22} = 61$$

$$N_{.3} = N_{13} + N_{23} = 3$$

The second assumption required is that the change in the odds that an inmate of the Disciplinary Command facility as opposed to a brig or stockade will be black or other is the same for both services, i.e.,

$$N_{12} = N_{11} \cdot \lambda_1 \left(\frac{175}{671} \right)$$

$$N_{13} = N_{11} \cdot \lambda_2 \left(\frac{45}{671} \right)$$

$$N_{22} = N_{21} \cdot \lambda_1 \left(\frac{332}{1012} \right)$$

$$N_{23} = N_{21} \cdot \lambda_2 \left(\frac{73}{1012} \right)$$

The solution to these equations is shown in Table B-1. Single parentheses represent simple proportional extensions from the Nellum data, and double parentheses the results of the two-way extension assuming no third order interaction between service, race, and type of facility. The interactions between racial composition and type of facility obtained from the two-way extension are $\lambda_1 = 1.14$ and $\lambda_2 = 0.25$, indicating that the odds that an inmate of the disciplinary facility will be black is 14% greater than the odds that an inmate of other correctional facilities will be black, while the odds that an inmate of the disciplinary facility will be from a race other than white or black are only about one quarter the corresponding odds for other Navy and Marine correctional facilities.

Table B-1

| | Inmates - 30 June '72 | | | Nellum Sample | | |
|-----------------------------|-----------------------|--------|-------|---------------|-------|-------|
| | White | Black | Other | White | Black | Other |
| Navy - Correctional Fac. | (671) | (175) | (45) | 663 | 173 | 44 |
| - DISCOM | ((28)) | ((8)) | ((1)) | | | |
| Marines - Correctional Fac. | (1,012) | (332) | (73) | 1,002 | 329 | 72 |
| - DISCOM | ((146)) | ((53)) | ((2)) | | | |
| Total | (169) | (61) | (3) | 223 | 162 | 58 |
| | | | | | | 3 |

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