Development and Evaluation of the 1997 ASVAB Score Scale

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Executive Summary

The Armed Services Vocational Aptitude Battery (ASVAB) is a vital component of the United States Military selection and classification system. It allows the Services to select and maintain a highly able and trained fighting force. The ASVAB allows Military policy planners to compare the cognitive level of today's force with forces of years past, to set target qualification levels, and to anticipate future trends in military needs and civilian supply (Maier, 1993).

Over the past two decades the meaning and interpretation attached to scores on the existing ASVAB scale (developed from data collected in 1980) have become dated and potentially misleading. As illustrated in the body of this report, a score of 50 on the Armed Forces Qualification Test (AFQT) no longer represents the median score of the current youth population. The aptitude levels of American youth have changed in important ways over the last two decades, ways which should be reflected in a revised score scale if Military planners are to accurately interpret the cognitive level of applicants and accessions relative to the current American youth population. This has prompted the development of a new ASVAB score scale (termed the 1997 Score Scale) based on a recent national Profile of American Youth (PAY97).

The PAY97 consists of a nationally representative sample of about 6,000 American youths aged 18–23, with oversamples of Hispanic and

Black youths. These youths were identified from a screening of over 90,000 housing units. In the summer and fall of 1997, the computerized adaptive testing version of the ASVAB was administered to study participants under standardized conditions.

This report provides details of the score-scale development based on the PAY97 data collection study. It also provides an evaluation of the potential effects of the new scale on qualification rates of Military applicants (and particular subgroups of applicants). The closing section provides a discussion of several implementation options affecting the numbers of qualified applicants and the quality of Military accessions.

1

Introduction

The Armed Services Vocational Aptitude Battery (ASVAB) is a vital component of the United States Military selection and classification system. It allows the Services to select and maintain a highly able and trained fighting force. The ASVAB allows Military policy planners to compare the cognitive level of today's force with forces of years past, to set target qualification levels, and to anticipate future trends in military needs and civilian supply (Maier, 1993).

Since its introduction in the 1970s, the ASVAB has undergone substantial changes to further enhance its usefulness as a cognitive measurement tool. These include changes in usage, mode of delivery (Sands, Waters, & McBride, 1997; Segall & Moreno, 1999), and in the psychometric theory behind its construction and scoring. Although revolutionary in nature, these changes have been introduced in a deliberate, carefully planned sequence so as to ensure constancy and interpretability of ASVAB scores. This evolutionary approach to the ASVAB program has helped ensure that alterations affecting the intricate selection and classification system are appropriately implemented and have the intended beneficial effect for all stake holders.

Over the past two decades the meaning and interpretation attached to scores on the existing ASVAB scale (developed from data collected in 1980) have become dated and potentially misleading. As illustrated in the body of this report, a score of 50 on the Armed

Forces Qualification Test (AFQT) no longer represents the median score of the current youth population. The aptitude levels of American youth have changed in important ways over the last two decades, ways which should be reflected in a revised score scale if Military planners are to accurately interpret the cognitive level of applicants and accessions relative to the current American youth population. This has prompted the development of a new ASVAB score scale (termed the 1997 Score Scale) based on a recent national Profile of American Youth (PAY97).

Although the motivation behind the score-scale revision is straightforward, the technical details are complex, partly because of the way data for the study were collected, and partly because of the way the ASVAB has evolved over the last quarter-century. Data for the 1980 norming study (Frankel & McWilliams, 1981; Maier & Sims, 1986) were collected on a paper-and-pencil (P&P) version of the ASVAB, where scores were based on the number of correct answers. Data for the 1997 norming study (Moore, Pedlow, & Wolter, 1999) were collected on a computerized adaptive testing (CAT) version of the ASVAB, where scores are based on item response theory (Lord, 1980; van der Linden & Glas, 2000; Wainer, 2000). These changes in mode of delivery (from P&P to CAT) and psychometric theory (from classical test theory to item response theory) add a layer of complexity to the development and evaluation of a new score scale.

Another layer of complexity is added by the mixed mode of ASVAB administration: The ASVAB is currently administered in two different modes (CAT and P&P), and there exist multiple operational forms of each. All scores from all forms of both modes must be placed on the new scale [even though only one form (Form 04D) of one mode (CAT) was administered in the norming data collection study]. Once placed on the new score scale, the consequences of doing so must also be evaluated for all operational ASVAB forms, including CAT and P&P versions.

This report provides details of the score-scale development based on the PAY97 data collection study. It also provides an evaluation of the potential effects of the new scale on qualification rates of Military applicants (and particular subgroups of applicants). The closing section provides a discussion of several implementation options affecting the numbers of qualified applicants and the quality of Military accessions.

1.1   1997 American Youth Population

The data used for the construction of the '97 score scale was collected as part of the Profile of American Youth 1997 (PAY97) study. Technical details of this study are provided by Moore et al. (1999). The nationally representative sample consisted of about 6,000 American youths aged 18–23, with oversamples of Hispanic and Black youths. These youths were identified from a screening of over 90,000 housing units. In the summer and fall of 1997, the CAT version of the ASVAB (CAT-ASVAB, Form 04D) was administered to study participants under standardized conditions at Sylvan Learning Centers. (Sylvan Learning Centers during this period also administered other high-stakes computerized tests, such as the CAT-GRE.)

Since the probability of sample inclusion differed among participants (i.e., was based on geographic and racial characteristics), case weights were required for use in the analysis of the PAY97 data (Moore et al., 1999). These weights, in principle, enable the unbiased estimation of test-score statistics. The development of the final set of weights for the PAY97 sample is described by MaCurdy and Vytlacil (2003). In addition to providing adjustments for sample inclusion probability, these weights also provide adjustments for shortfalls or under representation in the numbers of respondents falling into key groups defined by age, race, gender, and education.

1.2   The Armed Services Vocational Aptitude Battery

The computerized adaptive testing (CAT) version (Form 04D) of the ASVAB was administered to PAY97 study participants. This version uses adaptive Bayesian item selection and scoring rules based on item response theory (Segall, Moreno, Bloxom, & Hetter, 1997). Similar to its P&P counterpart administered in the PAY80 study, the CAT-ASVAB includes subtests designed to measure aptitudes spanning math, verbal, technical, and spatial dimensions. These subtests (listed in order of administration) are provided in Table 1.1, along with their abbreviations. Psychometric properties of the CAT-ASVAB are detailed by Segall, Moreno, and Hetter (1997). Extensive empirical work detailing comparisons between the CAT-ASVAB and P&P-ASVAB is reported by Hetter, Segall, and Bloxom (1997);

Moreno and Segall (1997); Segall (1997); and Wolfe, Moreno, and Segall (1997).

1.3 Related Work

This report is just one of several planned works describing the outcome of the PAY97 research effort. Bock and Zimowski (in preparation) will provide a detailed account of demographic influences on ASVAB test performance and analyze score trends based on earlier work conducted with the PAY80 sample (Bock & Moore, 1984). In addition, ASVAB norms for the Student Testing Program (STP) are also under development (Sims, in preparation). These STP analyses will rely on ASVAB data collected from a substantially different group of respondents whose test data were collected concurrently with PAY97 study participants. These data will be used to develop ASVAB norms for 10th, 11th, and 12th grade high school students for use in the ASVAB Career Exploration Program.

1.4 Report Outline

Details of the development and evaluation of the 1997 score scale are provided in the remaining sections of this document. The report describes five principle steps in the construction and evaluation of the 1997 Score Scale:

2. *'97 Score Scale Development*

   This section describes the development of the '97 score scale. The degree of shift between '80 and '97 score scales is examined, and subtest standard score conversions are presented along with the percentile calculations for the AFQT. In addition, development outcomes are provided for those Services (Air Force, Marine Corps, and Army) that attach a reference population interpretation to their composite score scales.

3. *Test Form Equating*

   This section provides transformations that enable the computation of standard scores and composites derived from these standard scores for all currently operational ASVAB forms.

TABLE 1.1. CAT-ASVAB Composition

Subtest	Abbrev.	Construct
General Science	GS	Knowledge of physical and biological sciences
Arithmetic Reasoning	AR	Ability to solve arithmetic word problems
Word Knowledge	WK	Ability to select the correct meaning of words presented in context and to identify best synonym for a given word
Paragraph Comprehension	PC	Ability to obtain information from written passages
Mathematics Knowledge	MK	Knowledge of high school mathematics principles
Electronics Information	EI	Knowledge of electricity and electronics
Auto Information	AI	Knowledge of automobile terminology and technologies
Shop Information	SI	Knowledge of tools and shop terminology and practices
Mechanical Comprehension	MC	Knowledge of mechanical and physical principles
Assembling Objects	AO	Ability to figure out how an object will look when its parts are put together

Details of the equating process of existing operational forms to the CAT-ASVAB reference form are provided.

4. *Enlistment Impact*

This section describes the impact of the '97 score scale on AFQT qualification rates. It also describes the process used to equate the two scales and the consequences of adjusting the '97 cut scores downward to maintain qualification-rate and classification agreement across the '80 and '97 scales. The effects of the new score scale on subgroup qualification rates is presented, along with the possibility and consequence of using alternate definitions of AFQT Category boundary levels.

5. *Qualification Impact*

This section describes the impact of the '97 score scale on Service classification composite qualification rates. The consequences of applying cut scores developed on the '80 scale to composite scores reported on the '97 scale are evaluated. In addition, an equating (allowing equal percentages of applicants to qualify across '80 and '97 scales) for each composite is developed and presented.

6. *Implementation Options*

This section describes four implementation options. These options differ along three dimensions: (a) AFQT score scale (i.e., '80 or '97), (b) cut or qualification score specification (based on nominal or predictive standards), and (c) quality-goal specification. Quality goals can be defined in different ways, some raising predicted performance levels and others keeping predicted performance at their current levels. The effects of implementation options on the quality of Service accessions, and on the expected numbers of qualified applicants, are discussed.

2

'97 Score Scale Development

This chapter describes the development of the '97 score scale using case weights (developed by MaCurdy & Vytlacil, 2003) applied to the PAY97 sample. The degree of shift between '80 and '97 score scales is examined in Section 2.1. Subtest standard score conversions are presented in Sections 2.2 and 2.3. The percentile calculations for the Armed Forces Qualification Test (AFQT) are presented in Section 2.4, while the composite scale development outcomes (for the three Services that report composite scores on a transformed scale) are described in the final section.

2.1   Relative Performance of '80 and '97 Youth Populations

Differences between the '80 and '97 score scales will depend directly on the degree of shift in test performance between the '80 and '97 youth populations. Examining score distributions for the '80 and '97 samples calculated relative to a common scale provides one approach for assessing the shift in performance. Table 2.1 provides means (m) and standard deviations (s) for standardized subtest scores calculated on the '80 metric for samples from both populations. Note that different ASVAB forms were administered in each study: The

TABLE 2.1. Subtest Statistics for PAY80 and PAY97 Samples

Subtest	PAY80[a]		PAY97[b]	
	m	s	m	s
GS	50	10	49.784877	9.985895
AR	50	10	49.912878	9.780678
WK	50	10	51.023350	8.663426
PC	50	10	49.779560	10.393450
AS	50	10	47.420660	8.825132
MK	50	10	51.623450	9.962462
MC	50	10	48.357198	10.160671
EI	50	10	47.245008	9.145122
VE	50	10	50.655507	9.022130

Note. All statistics based on scores computed on the '80 scale.
[a]Form 8A. [b]Equated Form 04D.

P&P-ASVAB Form 8A was administered in the '80 study, while the CAT-ASVAB Form 04D was administered in the '97 study. In order to place scores from the CAT-ASVAB form on the '80 scale, an equipercentile equating to the P&P-ASVAB Form 8A was conducted using large samples of Military applicants.[1] This equating provides a transformation of the 04D ability estimates which place them on the '80 scale.

Table 2.1 indicates generally equal or higher performance levels for PAY97 youth on math and verbal tests (AR, WK, PC, MK, and VE) and lower performance levels for most technical tests (AS, MC, and EI). The new '97 score scale will be constructed by linearly transforming PAY97 sample scores in a way that results in means and standard deviations of 50 and 10, respectively. Consequently, for the PAY97 sample, average scores on the '97 scale would be expected to increase (relative to the '80 scale) for those subtests having means below 50 (GS, AR, PC, AS, MC, and EI) and decrease for those

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[1]The equating between ASVAB forms 04D and 8A (Segall, 1999) was based on a sample of 15,506 military applicants. Test forms were randomly assigned to applicants, and 04D subtest distributions were equated to the 8A reference form distributions using an equipercentile approach described by Segall (1997). This equating provided a transformation that placed 04D scores on the '80 score scale.

TABLE 2.2. AFQT Distributions for PAY80 and PAY97 Samples

AFQT Categories			Percentage[a]	
Label	Range	Nominal %	PAY80	PAY97
I	93–99	7.5	7.9	7.6
II	65–92	28	28.2	29.1
IIIA	50–64	15	15.3	16.9
IIIB	31–49	19	18.3	21.1
IVA	21–30	10	10.3	10.6
IVB	16–20	5	4.9	4.8
IVC	10–15	6	5.8	4.2
V	1–9	9.5	9.3	5.8

[a]AFQT scores reported on the '80 scale.

subtests having means above 50 (WK, MK, and VE). Note that these same trends in average scores across scales are likely to hold for other groups scored according to both scales.

Table 2.2 displays AFQT distributions calculated from scores on the '80 metric for both the PAY80 and PAY97 samples. These distributions are expressed in terms of AFQT categories which divide the range of scores based on percentile boundaries. The third column of Table 2.2 lists the nominal (i.e., definitional) percentage in each category. For example, Category II is defined to include AFQT scores in the range 65–92, which is defined to include 28% of the population (since the AFQT is defined as percentile scores relative to the population). The fourth column provides the actual percentage of the PAY80 distribution falling in each category. In principle, these should equal the nominal values, but in practice they differ slightly because of the coarseness of the score scale. The last column lists the percentage of the PAY97 sample that falls within each category, using AFQT scores defined on the '80 scale.

As indicated in Table 2.2, the largest difference between distributions occurs over the lower AFQT ranges (Categories IVC and V). In the PAY97 population, there are five percent fewer youth falling in these lower ranges and more youth falling in higher-level categories (II, IIIA, and IIIB). The AFQT performance level is, in general, higher for the PAY97 sample ($m = 52.3$, $s = 27.3$) than for the PAY80 sample ($m = 50.4$, $s = 28.9$). This difference has impli-

TABLE 2.3. PAY97 Sample Moments
(Form 04D)

Subtest	$\hat{\mu}$	$\hat{\sigma}$
GS	0.087593	0.866291
AR	0.141784	0.867399
WK	0.198510	0.906387
PC	0.333026	0.809597
AI	−0.393601	0.705060
SI	−0.459142	0.771343
MK	0.373530	0.997426
MC	−0.096266	0.771736
EI	−0.105092	0.906286
AO	−0.026450	0.967038

cations for (a) the construction of the new score scale, and (b) how scores on the '80 and '97 scales will compare for a given group. The new AFQT '97 score scale will be constructed by assigning percentile scores in a way that results in a mean percentile score of about 50. Consequently, for the PAY97 sample, average AFQT scores on the '97 scale would be expected to decrease (relative to the '80 scale) from about 52.3 to about 50.0. The impact of this decrease on enlistment qualification rates is examined in Section 4.

2.2   Subtest Standard Score Conversions

Subtest standard scores are defined as linearly transformed subtest scores $\hat{\theta}$. Unrounded standard scores are defined to have a mean of 50 and a standard deviation of 10 in the PAY97 sample and can be computed by

$$S_k = 10 \left[\frac{\hat{\theta}^{(k)} - \hat{\mu}^{(k)}}{\hat{\sigma}^{(k)}} \right] + 50 \ , \tag{2.1}$$

where the super/subscript k refers to the kth subtest, $k \in$ (GS, AR, WK, PC, AI, SI, MK, MC, EI, AO), and $\hat{\mu}^{(k)}$ and $\hat{\sigma}^{(k)}$ are the mean and standard deviation of the subtest scores $\hat{\theta}$ calculated in the PAY97 sample. These sample moments are listed in Table 2.3.

TABLE 2.4. Form 04D Standard Score Transformation Parameters

Subtest	A-Slope	B-Intercept
GS	11.543462	48.988873
AR	11.528721	48.365417
WK	11.032817	47.809880
PC	12.351821	45.886521
AI	14.183186	55.582509
SI	12.964407	55.952500
MK	10.025804	46.255061
MC	12.957792	51.247394
EI	11.034039	51.159592
AO	10.340850	50.273512

Given numerical values for the sample subtest moments, (2.1) simplifies to

$$S_k = A_4^{(k)}\hat{\theta}^{(k)} + B_4^{(k)} \, , \qquad (2.2)$$

where $A_4^{(k)}$ and $B_4^{(k)}$ denote the slope and intercept values respectively. Note the subscript "4" denotes values specific to the reference form 04D. (Transformation parameters for other forms are considered in Section 3.3.) Slope and intercept values are provided in Table 2.4.

In practice, standard scores are rounded to the nearest integer,

$$\breve{S}_k = \mathrm{Rnd}\left(S_k\right),$$

where the function $\mathrm{Rnd}\left(\right)$ denotes the rounding (up or down) to the nearest integer value. Unlike the '80 standard score computational formulas, the range of standard scores is not truncated at 20 or 80 (three standard deviations from the mean).[2]

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[2] Truncation was performed for the '80 score scale primarily to regress highly unreliable number-correct scores occurring over the lower range (where guessing is likely to occur) up towards the mean. On the '97 scale, this truncation is unnecessary because an allowance for guessing is incorporated into the three parameter logistic scoring model, and because in instances of low precision, scores are appropriately regressed towards the mean by the use of a Bayesian prior.

2.3   Verbal and Auto-Shop Composites

For the '80 scale, the Verbal (VE) composite was formed from the standardized unit weighted sum $X_{\mathrm{WK}} + X_{\mathrm{PC}}$ of number-right scores, where X_{WK} denotes the number-correct score on the 35-item WK test, and X_{PC} denotes the number-correct score on the 15-item PC test. Although the number-right scores were equally weighted, their relative contribution to the sum (in terms of percent of variance accounted for) is not equal. This is due primarily to the fact that the test length for PC is shorter than the WK test length. The PC variance is restricted by its shorter test length. Consequently, on the '80 scale, PC accounts for less of the variance in the VE composite than does WK, and in effect receives a smaller weight. Note that this smaller weight for PC is desirable because of PC's relatively low reliability.

To maximize the agreement in relative PC/WK weighting across '80 and '97 scales, the VE composite on the '97 scale was formed from an optimally weighted composite of unrounded WK and PC standard scores. The optimal weights were specified from the least squares regression of the VE standard score (computed relative to the '80 metric) on S_{WK} and S_{PC} (unrounded standard scores on the '97 metric). The ratio of the least-squares regression weights $b_{\mathrm{PC}}/b_{\mathrm{WK}} = 0.61934$ indicates that S_{PC} received about two-thirds the weight of S_{WK} in the optimal prediction. Using this relative weight, the weighted composite $S_{\mathrm{WK}} + 0.61934 \times S_{\mathrm{PC}}$ was standardized to mean 50 and standard deviation 10. The resulting score can be expressed as the weighted composite of WK and PC ability estimates given by

$$S_{\mathrm{VE}} = (7.225587)\,\hat{\theta}_4^{(\mathrm{WK})} + (5.010103)\,\hat{\theta}_4^{(\mathrm{PC})} + 46.897156 \ . \quad (2.3)$$

The transformation parameters for the Auto Shop (AS) composite were formed by standardizing the equal weighted[3] sum of unrounded AI and SI standard scores $S_{\mathrm{AI}} + S_{\mathrm{SI}}$. The weighted composite of AI and SI ability estimates is given by

$$S_{\mathrm{AS}} = (7.648241)\,\hat{\theta}_4^{(\mathrm{AI})} + (6.991018)\,\hat{\theta}_4^{(\mathrm{SI})} + 56.220220 \ , \quad (2.4)$$

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[3] The rationale for equal weighting is based on the P&P-ASVAB reference Form 8A test specifications. These test specifications for the Auto-Shop subtest call for roughly equal numbers of auto and shop items, with the two content areas having similar IRT information profiles.

where S_{AS} has mean 50 and standard deviation 10 in the PAY97 sample, and where S_{AI} and S_{SI} are equally weighted components of the composite.

Note that integer-valued counterparts of (2.3) and (2.4), $\check{S}_{\mathrm{VE}}$ and $\check{S}_{\mathrm{AS}}$, will be used operationally. These are obtained by rounding S_{VE} and S_{AS} to the nearest integer.

2.4   Armed Forces Qualification Test

The Armed Forces Qualification Test (AFQT) scores are calculated from a linear combination of math and verbal standardized subtest scores:[4]

$$\mathrm{AFQT}_S = \check{S}_{\mathrm{AR}} + \check{S}_{\mathrm{MK}} + 2\check{S}_{\mathrm{VE}} .$$

The AFQT scores are reported on a percentile metric, where $\mathrm{AFQT}_\%$ represents the percentage of applicants scoring at or below the given score AFQT_S:

$$\mathrm{AFQT}_\% \left(\mathrm{AFQT}_S\right) = \mathrm{Rnd} \left[100 \sum_{x=1}^{\mathrm{AFQT}_S} f(x) \right] , \qquad (2.5)$$

where $f(x)$ is the discrete probability density function for the composite distribution AFQT_S in the '97 sample.

Table 2.5 displays the conversion between the sum of subtest standard scores AFQT_S (columns 1 and 5) and the percentile score $\mathrm{AFQT}_\%$ (columns 4 and 8). The percent scoring at each level [i.e., $f(\mathrm{AFQT}_S)$] is displayed in columns 2 and 6, and the percent scoring at or below [i.e., the quantity in the right-hand side brackets of (2.5)] is displayed in columns 3 and 7. The integer-valued percentile scores $\mathrm{AFQT}_\%$ (columns 4 and 8) were calculated by rounding the cumulative percentile values (columns 3 and 7) up or down to the nearest integer. Rounded percentile scores of zero were set equal to 1; rounded percentile scores of 100 were set equal to 99. (This same convention was used in AFQT percentile calculations for the '80 score scale.)

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[4] This same formula was used to calculate AFQT scores on the '80 metric.

TABLE 2.5. '97 AFQT Percentile Conversion

AFQT$_S$	%	Cum. %	AFQT$_\%$	AFQT$_S$	%	Cum. %	AFQT$_\%$
≤109	0.02	1.39	1	150	0.31	9.21	9
110	0.15	1.54	2	151	0.19	9.41	9
111	0.12	1.66	2	152	0.51	9.91	10
112	0.10	1.76	2	153	0.42	10.33	10
113	0.05	1.81	2	154	0.42	10.75	11
114	0.05	1.85	2	155	0.37	11.12	11
115	0.15	2.00	2	156	0.37	11.49	11
116	0.03	2.04	2	157	0.67	12.16	12
117	0.10	2.14	2	158	0.49	12.65	13
118	0.20	2.34	2	159	0.65	13.30	13
119	0.38	2.72	3	160	0.67	13.97	14
120	0.19	2.92	3	161	0.64	14.61	15
121	0.13	3.05	3	162	0.50	15.11	15
122	0.10	3.15	3	163	0.63	15.74	16
123	0.07	3.22	3	164	0.50	16.24	16
124	0.15	3.36	3	165	0.36	16.60	17
125	0.18	3.54	4	166	0.61	17.20	17
126	0.15	3.69	4	167	0.74	17.94	18
127	0.04	3.73	4	168	0.63	18.57	19
128	0.10	3.83	4	169	0.79	19.37	19
129	0.12	3.95	4	170	0.81	20.17	20
130	0.12	4.07	4	171	0.49	20.66	21
131	0.15	4.23	4	172	0.90	21.56	22
132	0.05	4.27	4	173	0.42	21.98	22
133	0.20	4.47	4	174	0.84	22.82	23
134	0.12	4.59	5	175	0.89	23.71	24
135	0.33	4.93	5	176	1.00	24.71	25
136	0.19	5.12	5	177	0.66	25.37	25
137	0.21	5.33	5	178	0.85	26.22	26
138	0.37	5.70	6	179	0.85	27.07	27
139	0.20	5.90	6	180	1.11	28.18	28
140	0.24	6.14	6	181	1.13	29.31	29
141	0.18	6.32	6	182	0.85	30.15	30
142	0.38	6.70	7	183	0.80	30.95	31
143	0.25	6.95	7	184	0.81	31.76	32
144	0.28	7.22	7	185	0.93	32.69	33
145	0.20	7.43	7	186	0.98	33.67	34
146	0.30	7.72	8	187	0.90	34.58	35
147	0.41	8.13	8	188	0.85	35.42	35
148	0.44	8.57	9	189	1.05	36.47	36
149	0.33	8.90	9	190	1.17	37.64	38

TABLE 2.5. '97 AFQT Percentile Conversion (continued)

AFQT$_S$	%	Cum. %	AFQT$_\%$	AFQT$_S$	%	Cum. %	AFQT$_\%$
191	1.36	39.00	39	231	0.93	79.81	80
192	1.12	40.12	40	232	0.94	80.75	81
193	1.04	41.15	41	233	0.77	81.52	82
194	0.95	42.10	42	234	0.81	82.34	82
195	1.19	43.29	43	235	0.74	83.07	83
196	1.05	44.33	44	236	0.76	83.83	84
197	0.79	45.13	45	237	0.75	84.57	85
198	1.07	46.19	46	238	0.54	85.12	85
199	0.95	47.14	47	239	0.93	86.04	86
200	0.65	47.80	48	240	0.71	86.76	87
201	1.14	48.93	49	241	0.92	87.67	88
202	0.84	49.77	50	242	0.55	88.23	88
203	1.32	51.09	51	243	0.74	88.97	89
204	0.84	51.93	52	244	0.82	89.79	90
205	0.96	52.89	53	245	0.59	90.38	90
206	1.14	54.04	54	246	0.59	90.97	91
207	1.18	55.22	55	247	0.58	91.55	92
208	1.07	56.29	56	248	0.59	92.14	92
209	1.15	57.44	57	249	0.52	92.66	93
210	1.10	58.54	59	250	0.37	93.04	93
211	0.96	59.50	60	251	0.32	93.35	93
212	1.44	60.94	61	252	0.46	93.82	94
213	1.28	62.22	62	253	0.50	94.32	94
214	1.14	63.36	63	254	0.39	94.70	95
215	1.12	64.48	64	255	0.19	94.90	95
216	1.02	65.50	66	256	0.32	95.21	95
217	1.23	66.73	67	257	0.37	95.58	96
218	0.80	67.53	68	258	0.37	95.95	96
219	1.04	68.57	69	259	0.45	96.39	96
220	1.01	69.58	70	260	0.34	96.73	97
221	0.79	70.37	70	261	0.16	96.89	97
222	1.03	71.40	71	262	0.34	97.24	97
223	0.95	72.35	72	263	0.23	97.47	97
224	0.97	73.32	73	264	0.20	97.67	98
225	1.16	74.49	74	265	0.29	97.96	98
226	0.77	75.26	75	266	0.11	98.06	98
227	1.13	76.39	76	267	0.25	98.31	98
228	0.89	77.28	77	268	0.14	98.45	98
229	0.91	78.19	78	$\geq$269	0.07	98.52	99
230	0.69	78.88	79				

2.5   Service Classification Composites

Service classification composites are used to aid in the assignment of applicants to jobs within the Military. These composites are formed from sums of weighted subtest standard scores. In contrast to the Navy, the Air Force, Marine Corps, and Army each report composite scores on standardized or percentile scales that have interpretations attached to the youth population.[5] For each of the three Services, the development of composite scales for the '97 youth population is described below.

2.5.1   Air Force

The Air Force computes four classification composites: Mechanical (M), Administrative (A), General (G), and Electrical (E). These composites are formed from unit-weighted sums of standardized subtest scores:

$$
\begin{aligned}
\mathrm{M}_S &= \breve{S}_{\mathrm{AR}} + \breve{S}_{\mathrm{MC}} + \breve{S}_{\mathrm{AS}} + 2\breve{S}_{\mathrm{VE}} \\
\mathrm{A}_S &= \breve{S}_{\mathrm{MK}} + \breve{S}_{\mathrm{VE}} \\
\mathrm{G}_S &= \breve{S}_{\mathrm{AR}} + \breve{S}_{\mathrm{VE}} \\
\mathrm{E}_S &= \breve{S}_{\mathrm{GS}} + \breve{S}_{\mathrm{AR}} + \breve{S}_{\mathrm{MK}} + \breve{S}_{\mathrm{EI}}
\end{aligned}
$$

As with the AFQT score, these composites are reported on a percentile metric, where $\mathrm{M}_\%$, $\mathrm{A}_\%$, $\mathrm{G}_\%$, $\mathrm{E}_\%$ represent the percentage of applicants scoring at or below the weighted sum of standardized subtest scores represented by M_S, A_S, G_S, E_S, respectively. The conversion to percentile scores was conducted using the same approach described for the AFQT composite. (See Section 2.4 for additional details.)

Tables C.1 through C.4 display the conversion between the sum of subtest standard scores (columns 1 and 5) and the percentile scores (columns 4 and 8). The percent scoring at each level is displayed in columns 2 and 6, and the percent scoring at or below is displayed in columns 3 and 7. For each composite ($\mathrm{M}_\%$, $\mathrm{A}_\%$, $\mathrm{G}_\%$, $\mathrm{E}_\%$), the integer-valued percentile scores (columns 4 and 8) were calculated by rounding the cumulative percentile values (columns 3 and 7) up or down to the nearest integer.

---

[5] The Navy reports their composite scores on a raw unaltered scale (as simply the unit-weighted sum of subtest standard scores).

2.5.2   Marine Corps

The Marine Corps reports composite scores on a scale with mean 100 and standard deviation 20. Transformations for four classification composites were estimated, including Mechanical (MM), General Technical (GT), Electrical (EL), and Clerical (CL).[6] The unstandardized composite scores (denoted by MM_S, GT_S, EL_S, CL_S) are computed from a unit weighted linear combination of select subtest scores:

$$
\begin{aligned}
MM_S &= \breve{S}_{AR} + \breve{S}_{MC} + \breve{S}_{EI} + \breve{S}_{AS} \\
GT_S &= \breve{S}_{AR} + \breve{S}_{MC} + \breve{S}_{VE} \\
EL_S &= \breve{S}_{GS} + \breve{S}_{AR} + \breve{S}_{MK} + \breve{S}_{EI} \\
CL_S &= \breve{S}_{MK} + \breve{S}_{VE}
\end{aligned}
$$

The first two moments of the unstandardized composite distributions are provided in Table 2.6. These moments (mean μ and standard deviation σ) define the standardized composite score

$$
C = Rnd\left[20\left(\frac{C_S - \mu_{C_S}}{\sigma_{C_S}}\right) + 100\right] , \tag{2.6}
$$

where $C \in (MM, GT, EL, CL)$, $Rnd()$ denotes rounding to the nearest integer, and μ_{C_S} and σ_{C_S} denote the mean and standard deviation of the unstandardized score for composite C provided in Table 2.6. Given numerical values of μ_{C_S} and σ_{C_S}, (2.6) simplifies to a linear transformation of unstandardized composite scores:

$$
\begin{aligned}
MM &= Rnd(0.588215 \times MM_S - 17.645724) \\
GT &= Rnd(0.755294 \times GT_S - 13.289535) \\
EL &= Rnd(0.577992 \times EL_S - 15.599795) \\
CL &= Rnd(1.092264 \times CL_S - 9.232992)
\end{aligned}
$$

These transformations can be used to place the unstandardized composite scores on a scale with mean 100 and standard deviation 20 in the '97 reference population.

---

[6] Although the CL composite was not used operationally by the Marine Corps at the time of writing, it was included in the analysis in anticipation of its eventual use.

TABLE 2.6. Moments of Unstandardized
Marine Corps Composite Distributions

Unstandardized	Moments	
Composite	$\hat{\mu}$	$\hat{\sigma}$
MM_S	200.0046	34.0012
GT_S	149.9939	26.4797
EL_S	200.0024	34.6026
CL_S	100.0060	18.3106

2.5.3 Army

The Army calculates a total of ten classification composites. One composite is calculated from integer-weighted subtest scores, while the other nine are calculated from non-integer weights. The approach for deriving new '97 scale weights is described separately for integer- and non-integer weighted composites.

Integer-Weighted Composite

The Army reports its General Technical (GT) composite scores on a scale with mean 100 and standard-deviation 20. The process of standardization for this composite is the same as the process used for the Marine Corps composites (Section 2.5.2). The unstandardized composite score (denoted by GT_S) is computed from a unit-weighted linear combination of AR and VE subtest scores:

$$\mathrm{GT}_S = \breve{S}_{\mathrm{AR}} + \breve{S}_{\mathrm{VE}} \ .$$

The first two moments of the distribution of unstandardized composite scores are $\hat{\mu}\left(\mathrm{GT}_S\right) = 100.0135$ and $\hat{\sigma}\left(\mathrm{GT}_S\right) = 18.6169$. These moments can be used to define the standardized composite score given in Equation 2.6. Given these moments, the linear transformation of unstandardized composite scores simplifies to

$$\mathrm{GT} = \mathrm{Rnd}\left(1.074292 \times \mathrm{GT}_S - 7.443781\right) \ .$$

This transformation places the unstandardized composite score on a scale with mean 100 and standard deviation 20 in the '97 reference population.

Non-integer Weighted Composites

The Army calculates nine classification composites from non-integer weighted linear combinations of eight ASVAB standard scores. These

composites, calculated from subtest scores on the '80 scale, are intended to provide optimal prediction of success in training. (See Table A.1.)

The composite calculations on the '80 scale can be represented in matrix notation by

$$\mathbf{c}^{(80)} = \mathbf{B}^{(80)}\mathbf{s}^{(80)} + \mathbf{u}^{(80)} \ , \qquad (2.7)$$

where $\mathbf{c}^{(80)}$ is a 9×1 vector of composite scores, $\mathbf{B}^{(80)}$ is a 9×8 matrix of weights, $\mathbf{s}^{(80)}$ is the 8×1 vector of standardized subtest scores $s_{\text{GS}}^{(80)}, ..., s_{\text{VE}}^{(80)}$, and $\mathbf{u}^{(80)}$ is a 9×1 vector of intercept terms. Note that $\mathbf{B}^{(80)}$, $\mathbf{s}^{(80)}$, and $\mathbf{u}^{(80)}$ were all derived previously for use with standard scores $\mathbf{s}^{(80)}$ on the '80 metric, and that the resulting composite scores $\mathbf{c}^{(80)}$ have mean 100 and standard deviation 20 in the '80 youth population.

Given that standard scores on the '80 scale can be expressed as linear transformations of scores on the '97 scale (denoted by $\mathbf{s}^{(97)}$), we have the relation:

$$\mathbf{s}^{(80)} = \mathbf{A}\mathbf{s}^{(97)} + \mathbf{d} \ , \qquad (2.8)$$

where $\mathbf{A}$ is an 8×8 diagonal matrix of slope parameters, and $\mathbf{d}$ is a 8×1 vector of intercept parameters. Then, by substituting (2.8) into (2.7), a new set of transformations (that can be applied directly to $\mathbf{s}^{(97)}$) can be derived to produce values identical to $\mathbf{c}^{(80)}$ (previously calculated from standard scores $\mathbf{s}^{(80)}$ on the '80 scale):

$$\begin{aligned} \mathbf{c}^{(80)} &= \mathbf{B}^{(80)}\left(\mathbf{A}\mathbf{s}^{(97)} + \mathbf{d}\right) + \mathbf{u}^{(80)} \\ &= \mathbf{B}^{(80)}\mathbf{A}\mathbf{s}^{(97)} + \mathbf{B}^{(80)}\mathbf{d} + \mathbf{u}^{(80)} \ . \qquad (2.9) \end{aligned}$$

A final set of composite weights can be derived in such a way as to produce composite scores $\mathbf{c}^{(97)}$ with mean 100 and standard deviation 20 in the '97 youth population, and to retain the same optimal-prediction qualities shared by those composite scores reported on the '80 scale (i.e., $\mathbf{c}^{(80)}$). This can be accomplished from the transformation

$$\mathbf{c}^{(97)} = 20 \times \mathbf{V}^{-1/2}\left(\mathbf{c}^{(80)} - \boldsymbol{\mu}_{c^{(80)}}\right) + 100 \times \mathbf{1}_9 \ , \qquad (2.10)$$

where $\boldsymbol{\mu}_{c^{(80)}}$ is a 9×1 vector of means of composite scores $\mathbf{c}^{(80)}$ in the '97 youth population, $\mathbf{V}$ is a 9×9 diagonal matrix of $\mathbf{c}^{(80)}$

TABLE 2.7. Army Composite Weights ('97 Metric)

	GS	AR	MK	MC	EI	AS	VE	Constant
CL	.00000	.75179	.58715	.11541	.07756	.07489	.67976	-14.32772
CO	.19868	.33090	.63397	.38486	.19979	.41161	.30347	-23.17105
EL	.08324	.44254	.49064	.26341	.30258	.36786	.49906	-22.46667
FA	.15031	.42263	.60172	.42966	.16389	.35866	.31958	-22.32119
GM	.23521	.46357	.45285	.29280	.30216	.50542	.21527	-23.36174
MM	.05942	.32829	.28517	.39607	.30796	.87309	.21150	-23.08481
OF	.14306	.53676	.34092	.36843	.19683	.50334	.36757	-22.84882
SC	.01235	.42812	.63650	.25070	.32194	.24636	.52770	-21.18951
ST	.12865	.49010	.47825	.31207	.14493	.21736	.62177	-19.65219

variances in the '97 youth population, and $\mathbf{1}_9$ is a 9×1 vector of 1s. Substituting (2.9) into the right-hand side of (2.10) and simplifying, we have

$$
\begin{aligned}
\mathbf{c}^{(97)} &= 20 \times \mathbf{V}^{-1/2} \left(\mathbf{B}^{(80)} \mathbf{A} \mathbf{s}^{(97)} + \mathbf{B}^{(80)} \mathbf{d} + \mathbf{u}^{(80)} - \boldsymbol{\mu}_{c^{(80)}} \right) \\
&\quad + (100 \times \mathbf{1}_9) \\
&= 20 \times \mathbf{V}^{-1/2} \mathbf{B}^{(80)} \mathbf{A} \mathbf{s}^{(97)} \\
&\quad +20 \times \mathbf{V}^{-1/2} \left(\mathbf{B}^{(80)} \mathbf{d} + \mathbf{u}^{(80)} - \boldsymbol{\mu}_{c^{(80)}} \right) + (100 \times \mathbf{1}_9) \\
&= \mathbf{B}^{(97)} \mathbf{s}^{(97)} + \mathbf{u}^{(97)} \quad\quad\quad\quad (2.11)
\end{aligned}
$$

where

$$
\mathbf{B}^{(97)} = 20 \times \mathbf{V}^{-1/2} \mathbf{B}^{(80)} \mathbf{A} \quad\quad\quad (2.12)
$$

and

$$
\mathbf{u}^{(97)} = 20 \times \mathbf{V}^{-1/2} \left(\mathbf{B}^{(80)} \mathbf{d} + \mathbf{u}^{(80)} - \boldsymbol{\mu}_{c^{(80)}} \right) + (100 \times \mathbf{1}_9). \quad (2.13)
$$

That is, the transformation with slope and intercept parameters $\mathbf{B}^{(97)}$ and $\mathbf{u}^{(97)}$ can be applied directly to standard scores on the '97 scale $\mathbf{s}^{(97)}$ to maintain the optimality of the non-integer weights (originally calculated from standard scores reported on the '80 scale). These updated transformations (2.12) and (2.13) provide composite scores $\mathbf{c}^{(97)}$ that have mean 100 and standard deviation 20 in the '97 youth population. These values are provided in Table 2.7.

Note that the slope $\mathbf{A}$ and intercept $\mathbf{d}$ parameters were estimated by linearly equating '97 subtest standard scores to the '80 scale using subtest moments estimated from the PAY97 sample. Because the relation between scores on the two scales is slightly non-linear (near

the extremes of the scale for CAT-ASVAB), composite scores $\mathbf{c}^{(80)}$ and $\mathbf{c}^{(97)}$ calculated by (2.7) and (2.11) will not be exact linear transformations of one another. The level of agreement between optimally weighted scores calculated on the '80 and '97 metrics is assessed in Section 5.

2.5.4 Navy

Unlike the other Services, the Navy does not report their composite scores on a transformed scale that attaches a special meaning to reported scores (a meaning based on performance levels of the norming population). Rather, the Navy reports their scores directly as the "sum of standardized subtest scores." Consequently, it is unnecessary to calculate 1997 transformations for Navy composites.

3
Test Form Equating

3.1   Background

Section 2 provides transformations that enable the computation of (a) standard scores, and (b) composites derived from these standard scores. However, these transformations are only appropriate for the CAT-ASVAB reference Form 04D. Before the new score scale can be applied to other operational test forms, these forms had to be equated to the CAT-ASVAB reference form (04D) which was administered in the PAY97 Norming Study.

Historically, ASVAB forms have been equated to the existing reference form (P&P-8A) using an equipercentile approach (Kolen & Brennan, 1995) applied separately to each subtest. These subtest equatings have proven sufficient to provide nearly equivalent Service classification composite distributions across alternate forms.

Beginning in January 2002, however, a new scoring method, based on item response theory (IRT),[1] was implemented for P&P-ASVAB forms 25A, 25B, 26A, and 26B. With this approach, ability estimates are based on item response functions that have been placed on a common metric and have been estimated from large opera-

---

[1] This IRT-based method assigns scores based on the mode of the posterior density function.

tional samples. This allows IRT scores produced from alternate P&P forms to be treated as interchangeable without the need for a special equating. In a sense, the form-specific equatings associated with the previous number-right-based forms became unnecessary, since in the context of IRT, the ability estimates are interchangeable across different sets of items.[2] The equivalence of the IRT-based subtest and composite distributions across P&P forms was verified using data collected from operational administrations of these forms (Segall & Thomasson, 2001).

Although CAT-ASVAB forms also provide IRT-based ability estimates (which should in principle be interchangeable), historically these forms have been separately equated. Several factors contributed to the decision to use form-specific equating functions, including:

- CAT-ASVAB parameters were estimated from data collected in paper-based, rather than computer-based, presentations.

- Calibration data were collected in non-operational administrations.

- Parameters of different forms were estimated from different populations and under different levels of motivation.

- CAT-ASVAB has shorter test lengths than P&P-ASVAB, so a handful of poorly specified item response functions (IRFs) might have a large effect on score distributions.

- Some parameter estimates may have drifted over time; some estimates were obtained from data collected in the early 1980s.

The equating approach taken here attempts to rely more heavily on the invariance property of IRT ability estimates, and at the same time address concerns about the potential difference among forms in the distributions of IRT-based test scores. For this study, CAT-ASVAB forms were equated to the reference form using a linear method which matches the first two moments of the distribution of the estimated ability parameters $\hat{\theta}$. Provided the $\hat{\theta}$ distributions of

---

[2] In fact, this is the fundamental feature of IRT that makes computerized adaptive testing possible.

the two forms have the same shapes, the linear equating should provide a more accurate equating than the more complex and demanding equipercentile approach. (In addition, the linear equating method is, of course, a more parsimonious approach than the equipercentile approach.) To the extent that the distributions do not have similar shapes, the linear equating method can result in forms which exhibit different qualification rates. The adequacy of the linear approach in this regard is evaluated in Section 3.4.

For the P&P-ASVAB forms, a single linear equating was estimated between the set of four forms (25A, 25B, 26A, 26B) and the CAT-ASVAB reference form 04D. (Ability estimates among the P&P forms are treated as interchangeable, as is currently done on the '80 scale.) This linear equating addresses two issues. First, the P&P-ASVAB and CAT-ASVAB IRFs are not currently on a common metric. In a sense, the linear equating helps ensure that the P&P ability estimates are placed on a metric comparable to the CAT reference form 04D. Second, the linear equating between test-score distributions helps match the CAT and P&P distributions in a way that strict IRT linking does not. That is, the linear equating between test-score distributions is appropriately influenced by possible IRF and ability-parameter mis-specification in either the CAT or P&P versions.

3.2 Data

The Enlistment Testing Program currently consists of three CAT-ASVAB forms (01D, 02D, and 03D) and four P&P forms (25A, 25B, 26A, 26B). Data used for the equating of these forms were taken from three sources listed in Table 3.1. Applicants in the Initial Operational Test and Evaluation (IOT&E) Study (Segall, 1999) were randomly assigned to Forms 03D or 04D. These data were used to derive the equating between forms 03D and 04D. The CY2001 sample consisted of applicants taking operational CAT-ASVAB during the calendar year 2001. The groups taking each form are randomly equivalent (due to the random assignment of applicant to form ensured by the test administration software). These data were used to derive equatings of forms 01D and 02D to the scale of 03D. (Using a chaining process described below, these transformations were then combined with those estimated from the IOT&E Study to provide

TABLE 3.1. Data Sources and Sample Sizes for Form Equating

	Form					
Source	01D	02D	03D	04D	25B	Total
IOT&E Study			7,496	7,752		15,248
CY2001 Sample	92,206	97,139	97,304			286,649
Anchoring Study				6,232	5,955	12,187

direct transformations of 01D and 02D to the 04D scale. Finally, applicants in the Anchoring Study (Segall, 2000) were randomly assigned to CAT-ASVAB Form 04D or P&P-ASVAB Form 25B. These data formed the basis of the P&P-ASVAB (25A, 25B, 26A, 26B) to 04D equating transformations.

3.3   Equating and Standard-Score Transformations

Subtest and composite (i.e., VE and AS) standard-score transformations can be derived separately for each ASVAB form. These transformations take the form of those presented in Table 2.4

$$S_{(k)} = A_4^{(k)} \hat{\theta}_4^{(k)} + B_4^{(k)} , \tag{3.1}$$

where $S_{(k)}$ denotes the unrounded standard score, $\hat{\theta}_4^{(k)}$ denotes the subtest ability estimate, and $A_4^{(k)}$ and $B_4^{(k)}$ denote the slope and intercept values, respectively. Note the subscript "4" denotes values specific to Form 04D, and the super-subscript k refers to subtest, where $k \in$ (GS, AR, WK, PC, AI, SI, MK, MC, EI, AO). Note in addition, there are two standardized scores (VE and AS) that are a linear combination of more than one ability estimate (see equations 2.4 and 2.3). By accounting for differences in the first two moments of the subtest score distributions across test forms, form-specific standard-score transformations can be developed for all operational ASVAB forms. These are presented below.

3.3.1   Form 03D

Form 03D subtest standard-score transformations were developed using data from the IOT&E Study (see Table 3.1). For subtest k, the form 03D ability estimate $\hat{\theta}_3^{(k)}$ can be transformed to the 04D

TABLE 3.2. IOT&E Sample Subtest Moments

Subtest	μ		σ	
	04D	03D	04D	03D
GS	0.139031	0.178258	0.748675	0.742858
AR	0.221570	0.229621	0.699826	0.729938
WK	0.173454	0.166271	0.761518	0.751634
PC	0.429614	0.444126	0.615121	0.647018
AI	-0.302564	-0.384413	0.719048	0.719639
SI	-0.334146	-0.253040	0.730913	0.686308
MK	0.477187	0.360997	0.802852	0.852715
MC	0.087070	0.113232	0.676303	0.647970
EI	0.086836	0.113929	0.856383	0.788251
AO	0.157043	0.055295	0.855839	0.861201

scale by the linear equating transformation:

$$\dot{\theta}_4^{(k)} = \left[\frac{\hat{\theta}_3^{(k)} - \mu_3^{(k)}}{\sigma_3^{(k)}} \right] \sigma_4^{(k)} + \mu_4^{(k)} , \qquad (3.2)$$

where $\mu_3^{(k)}$, $\mu_4^{(k)}$, $\sigma_3^{(k)}$, and $\sigma_4^{(k)}$ denote the means and standard deviations of forms 03D and 04D in the IOT&E sample (see Table 3.2). This transformation ensures that the transformed 03D values $\dot{\theta}_4^{(k)}$ will have the same mean and variance as the Form 04D ability estimates in the IOT&E sample. To obtain the standard-score transformation

$$S = A_3^{(k)} \hat{\theta}_3^{(k)} + B_3^{(k)} , \qquad (3.3)$$

$\dot{\theta}_4^{(k)}$ [the right-hand side of (3.2)] can be substituted for $\hat{\theta}_4^{(k)}$ in (3.1). Given numerical values for all the μ's, σ's (Table 3.2), and for $A_4^{(k)}$ and $B_4^{(k)}$ (Table 2.4), the equation simplifies to a linear transformation with slope and intercept parameters denoted by $(A_3^{(k)}, B_3^{(k)})$. These transformation values are provided in Table 3.3.

A slightly modified approach was used to calculate the transformation parameters for the AS and VE composites. The first two moments of the distribution of a provisional 03D VE score were calculated (where the standard scores for 03D were calculated according to the parameters provided in Table 3.3). In addition, the moments of the 04D VE standard score distribution were calculated according to (2.3). Then the linear transformation that placed the provisional

TABLE 3.3. Form 03D Standard Score Transformation Parameters

Subtest	A-Slope	B-Intercept
GS	11.633849	48.519947
AR	11.053129	48.381800
WK	11.177901	47.865008
PC	11.742904	45.977707
AI	14.171541	56.738913
SI	13.807007	55.114211
MK	9.439542	47.631594
MC	13.524388	50.844242
EI	11.987751	50.751994
AO	10.276460	51.329230

03D VE on the 04D scale was calculated and combined with the WK and PC subtest standard score transformations to provide

$$S_{\text{AS}} = (7.638941)\,\hat{\theta}_3^{(\text{AI})} + (7.442444)\,\hat{\theta}_3^{(\text{SI})} + 56.389857 \quad (3.4)$$

$$S_{\text{VE}} = (7.330453)\,\hat{\theta}_3^{(\text{WK})} + (4.658058)\,\hat{\theta}_3^{(\text{PC})} + 47.015269 \quad (3.5)$$

The AS transformation was calculated using the same approach.

3.3.2   Form 01D

Form 01D subtest standard-score transformations were developed using data from the CY2001 Sample (see Table 3.1). For subtest k, the form 01D ability estimate $\hat{\theta}_1^{(k)}$ can be transformed to the 03D scale by the linear equating transformation:

$$\dot{\theta}_3^{(k)} = \left[\frac{\hat{\theta}_1^{(k)} - \mu_1^{(k)}}{\sigma_1^{(k)}}\right] \sigma_3^{(k)} + \mu_3^{(k)} , \qquad (3.6)$$

where $\mu_1^{(k)}$, $\mu_3^{(k)}$, $\sigma_1^{(k)}$, and $\sigma_3^{(k)}$ denote the means and standard deviations of forms 01D and 03D in the CY2001 sample (provided in Table 3.4). This transformation ensures that the transformed 01D values $\dot{\theta}_3^{(k)}$ will have the same mean and variance as the Form 03D ability estimates in the CY2001 sample. To obtain the standard-score transformation

$$S = A_1^{(k)}\hat{\theta}_1^{(k)} + B_1^{(k)} ,$$

TABLE 3.4. CY2001 Sample Subtest Moments (Forms 01D and 03D)

Subtest	μ		σ	
	03D	01D	03D	01D
GS	0.276280	0.337502	0.743059	0.814240
AR	0.331573	0.337261	0.735248	0.838488
WK	0.295040	0.277547	0.756783	0.803816
PC	0.541195	0.348370	0.640326	0.767887
AI	−0.328393	−0.270693	0.734060	0.814678
SI	−0.191311	−0.263687	0.698151	0.878812
MK	0.417688	0.425812	0.863611	0.826382
MC	0.200854	−0.069134	0.649176	0.866200
EI	0.203479	0.012895	0.798097	0.784303
AO	0.181096	0.191032	0.842499	0.834607

TABLE 3.5. Form 01D Standard Score Transformation Parameters

Subtest	A-Slope	B-Intercept
GS	10.616822	48.150942
AR	9.692200	48.777920
WK	10.523853	48.242075
PC	9.792186	48.921604
AI	12.769181	55.541600
SI	10.968650	55.365076
MK	9.864793	47.373829
MC	10.135894	54.261398
EI	12.198591	53.033941
AO	10.373640	51.208559

$\dot{\theta}_3^{(k)}$ [the right-hand side of (3.6)] can be substituted for $\hat{\theta}_3^{(k)}$ in (3.3). Given numerical values for all the μ's, σ's (Table 3.4), and for $A_3^{(k)}$ and $B_3^{(k)}$ (Table 3.3), the equation simplifies to a linear transformation with slope and intercept parameters denoted by $(A_1^{(k)}, B_1^{(k)})$. These transformation values are provided in Table 3.5.

The approach used to calculate the transformation parameters for the VE composite required the calculation of the first two moments of the distribution of VE scores for 01D and 03D, where 03D VE scores were computed from (3.5) (which placed them on the 04D scale) and a provisional 01D VE composite was formed from standard scores calculated from WK and PC transformation parameters (provided

in Table 3.5). Then the linear equating transformation that placed the provisional 01D VE on the 04D scale was calculated and combined with the WK and PC subtest standard score transformations to provide

$$
\begin{aligned}
S_{\mathrm{AS}} &= (6.912023)\,\hat{\theta}_1^{(\mathrm{AI})} + (5.937386)\,\hat{\theta}_1^{(\mathrm{SI})} + 55.894109 \\
S_{\mathrm{VE}} &= (6.880065)\,\hat{\theta}_1^{(\mathrm{WK})} + (3.872187)\,\hat{\theta}_1^{(\mathrm{PC})} + 48.440471
\end{aligned}
$$

The AS transformation was calculated using the same approach.

3.3.3 Form 02D

Form 02D subtest standard-score transformations were also developed using data from the CY2001 Sample (Table 3.1). For subtest k, the form 02D ability estimate $\hat{\theta}_2^{(k)}$ can be transformed to the 03D scale by the linear equating transformation:

$$
\dot{\theta}_3^{(k)} = \left[\frac{\hat{\theta}_2^{(k)} - \mu_2^{(k)}}{\sigma_2^{(k)}} \right] \sigma_3^{(k)} + \mu_3^{(k)} , \tag{3.7}
$$

where $\mu_2^{(k)}$, $\mu_3^{(k)}$, $\sigma_2^{(k)}$, and $\sigma_3^{(k)}$ denote the means and standard deviations of forms 02D and 03D in the CY2001 sample (provided in Table 3.6). This transformation ensures that the transformed 02D values $\dot{\theta}_3^{(k)}$ will have the same mean and variance as the Form 03D ability estimates in the CY2001 sample. To obtain the standard-score transformation

$$
S = A_2^{(k)}\hat{\theta}_2^{(k)} + B_2^{(k)} ,
$$

$\dot{\theta}_3^{(k)}$ [the right-hand side of (3.7)] can be substituted for $\hat{\theta}_3^{(k)}$ in (3.3). Given numerical values for all the μ's, σ's (Table 3.6), and for $A_3^{(k)}$ and $B_3^{(k)}$ (Table 3.3), the equation simplifies to a linear transformation with slope and intercept parameters denoted by $(A_2^{(k)}, B_2^{(k)})$. These transformation values are provided in Table 3.7.

The approach used to calculate the transformation parameters for the VE composite required the calculation of the first two moments of the distribution of VE scores for 02D and 03D, where 03D VE scores were computed from (3.5) (which placed them on the 04D scale), and a provisional 02D VE composite was formed from standard scores

TABLE 3.6. CY2001 Sample Subtest Moments (Forms 02D and 03D)

Subtest	μ 03D	02D	σ 03D	02D
GS	0.276280	0.440274	0.743059	0.823780
AR	0.331573	0.309831	0.735248	0.873406
WK	0.295040	0.259518	0.756783	0.850094
PC	0.541195	0.322324	0.640326	0.818622
AI	−0.328393	−0.367549	0.734060	0.861382
SI	−0.191311	−0.246393	0.698151	0.847495
MK	0.417688	0.392266	0.863611	0.835913
MC	0.200854	−0.079385	0.649176	0.850118
EI	0.203479	−0.066214	0.798097	0.891771
AO	0.181096	0.198515	0.842499	0.837635

TABLE 3.7. Form 02D Standard Score Transformation Parameters

Subtest	A-Slope	B-Intercept
GS	10.493866	47.113967
AR	9.304716	49.163834
WK	9.950953	48.580487
PC	9.185298	49.372262
AI	12.076841	56.523911
SI	11.373969	55.275250
MK	9.752319	47.748879
MC	10.327647	54.380522
EI	10.728527	53.901626
AO	10.336139	51.138382

calculated from WK and PC transformation values (provided in Table 3.7). Then the linear equating transformation that placed the provisional 02D VE on the 04D scale was calculated and combined with the WK and PC subtest standard score transformations to provide

$$
\begin{aligned}
S_{\mathrm{AS}} &= (6.521594)\,\hat{\theta}_2^{(\mathrm{AI})} + (6.142037)\,\hat{\theta}_2^{(\mathrm{SI})} + 56.367825 \\
S_{\mathrm{VE}} &= (6.519033)\,\hat{\theta}_2^{(\mathrm{WK})} + (3.639742)\,\hat{\theta}_2^{(\mathrm{PC})} + 48.833981
\end{aligned}
$$

The AS transformation was calculated using the same approach.

3.3.4 Form 25B

Form 25B subtest standard-score transformations were developed using data from the Anchoring Study (see Table 3.1). For subtest k, the form 25B ability estimate $\hat{\theta}_{25\mathrm{B}}^{(k)}$ can be transformed to the 04D scale by the linear equating transformation:

$$
\dot{\theta}_4^{(k)} = \left[\frac{\hat{\theta}_{25\mathrm{B}}^{(k)} - \mu_{25\mathrm{B}}^{(k)}}{\sigma_{25\mathrm{B}}^{(k)}} \right] \sigma_4^{(k)} + \mu_4^{(k)} , \qquad (3.8)
$$

where $\mu_{25\mathrm{B}}^{(k)}$, $\mu_4^{(k)}$, $\sigma_{25\mathrm{B}}^{(k)}$, and $\sigma_4^{(k)}$ denote the means and standard deviations for forms 25B and 04D in the Anchoring Study sample (provided in Table 3.8). This transformation ensures that the transformed 25B values $\dot{\theta}_4^{(k)}$ will have the same mean and variance as the Form 04D ability estimates in the Anchoring Study sample. To obtain the standard-score transformation

$$
S = A_{25\mathrm{B}}^{(k)} \hat{\theta}_{25\mathrm{B}}^{(k)} + B_{25\mathrm{B}}^{(k)} ,
$$

$\dot{\theta}_4^{(k)}$ [the right-hand side of (3.8)] can be substituted for $\hat{\theta}_4^{(k)}$ in (3.1). Given numerical values for all the μ's, σ's (Table 3.8), and for $A_4^{(k)}$ and $B_4^{(k)}$ (Table 2.4), the equation simplifies to a linear transformation with slope and intercept parameters denoted by $(A_{25\mathrm{B}}^{(k)}, B_{25\mathrm{B}}^{(k)})$. These transformation values are provided in Table 3.9.

To calculate the transformation for the VE composite, the first two moments of the distribution of VE scores were calculated for 25B and 04D standard scores, where 04D VE scores were computed from (2.3) and where 25B standard scores were calculated from weighted

TABLE 3.8. Anchoring Study Sample Subtest Moments

Subtest	μ		σ	
	04D	25B	04D	25B
GS	0.110343	0.295551	0.758176	0.831350
AR	0.202541	0.321543	0.709745	0.867403
WK	0.167009	0.293603	0.791270	0.852233
PC	0.433710	0.190763	0.618219	0.756241
AI	−0.366129	—	0.731588	—
SI	−0.404922	—	0.743423	—
AS	—	0.215995	—	0.808653
MK	0.451699	0.305715	0.803390	0.864733
MC	0.061627	0.290567	0.681431	0.826979
EI	0.019043	0.295974	0.874071	0.814665
AO	0.159984	0.122991	0.851460	0.847170

TABLE 3.9. Form 25B Standard Score Transformation Parameters

Subtest	A-Slope	B-Intercept
GS	10.527430	47.151224
AR	9.433283	47.667251
WK	10.243609	46.644903
PC	10.097481	49.317406
AS	12.381293	47.914860
MK	9.314591	47.936105
MC	10.677225	48.943491
EI	11.838647	47.865784
AO	10.393213	50.649606
AS	12.381293	47.914860

WK and PC transformation values (provided in Table 3.9). Then the linear transformation that placed 25B VE on the 04D scale was calculated and combined with the WK and PC subtest standard score transformations to provide

$$S_{\mathrm{VE}} = (6.861654)\,\hat{\theta}_{25\mathrm{B}}^{(\mathrm{WK})} + (4.091172)\,\hat{\theta}_{25\mathrm{B}}^{(\mathrm{PC})} + 47.481779$$

The AS transformation was calculated using a different approach, since for form 25B (which is a paper-based version), the Auto-Shop (AS) subtest produces a single IRT score $\hat{\theta}_{\mathrm{AS}}$.[3] The linear transformation for 25B AS was calculated by first finding the moments of the 04D AS standard-score composite (Equation 2.4) and then finding the moments of the $\hat{\theta}_{\mathrm{AS}}$ modal estimate in the Anchoring Study sample. Then a direct linear equating of the 25B AS score $\hat{\theta}_{\mathrm{AS}}$ to the 04D AS composite S_{AS} was conducted to find the linear transformation parameters. These are listed in the 5th row of Table 3.9.

3.4   Form Equivalence Analyses

To maintain a fair and equitable selection system, it is desirable for distributions of test scores to be the same across alternate forms. This helps ensure that the same numbers of applicants qualify at select cut points regardless of form, and that applicants can be indifferent with regard to form (and also to mode: CAT or P&P). In general, equating performed at the subtest level does not guarantee that distributions of composite scores derived from these subtests are equated. However, when subtest scores were equated on the '80 scale, these composite distributions were found to provide similar qualification rates not only across forms within a given medium, but also across mediums (CAT and P&P).

One issue that arises in the context of the new '97 score scale is whether equated forms provide the same level of composite-distribution equivalence as displayed by those same forms equated on the '80 scale. Note that for CAT-ASVAB forms, the method of equating differs across score scales. For the '80 scale, test forms were routinely

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[3] Due to dimensionality and content balancing concerns, the CAT-ASVAB forms produce two separate unidimensional ability estimates: one for Auto Information (AI), and another for Shop Information (SI).

equated using an equipercentile method. For the '97 scale, ability estimates ($\hat{\theta}$) were equated using a linear equating method which matches the first two moments of the distributions of estimated θs. One issue that should be addressed is whether this linear method applied to scores at the subtest level on the '97 metric provides the same level of composite-distribution equivalence obtained from an equipercentile approach applied to subtest scores on the '80 metric. This issue was addressed by computing root-mean-squared-difference (RMSD) indices of agreement between composite distributions derived from different forms on the two different scales.

For a given score scale $S \in$ ('80, '97), the differences in qualification rates between test forms k and j can be measured using the index

$$\text{RMSD}(k,j|S) = 100\sqrt{\sum_x \frac{1}{2} \left[Q_{k|S}(x) - Q_{j|S}(x)\right]^2 \left[d_{k|S}(x) + d_{j|S}(x)\right]} \, ,$$

where $Q_{k|S}(x)$ is the proportion of scores at or above x calculated from the score distribution of form k on scale S, $Q_{j|S}(x)$ is the analogous proportion for form j, and $d_{k|S}(x)$ and $d_{j|S}(x)$ are the corresponding scale-specific densities of forms k and j. This statistic can be interpreted as the average (or typical) difference in qualification rates between test forms k and j when the forms are scored relative to scale S.

Table 3.10 displays the RMSD statistics between select pairs of ASVAB forms. For each pair, the statistic is calculated for composite distributions calculated from scores on both the '80 and '97 metrics. The selection of form pairs mirrors the pairs used in the chained equating analyses described in Section 3.2. RMSD values were calculated from one of three datasets, depending on the given comparison (see notes attached to Table 3.10), and composites were formed from a weighted linear combination of standardized subtest scores. Composite definitions are provided in Table 5.1.

Results indicate close agreement between composite distributions calculated from alternate test forms. On average, the difference between qualification rates of select pairs of CAT-ASVAB forms (01D, 02D, 03D, and 04D) is less than 1 percent (see bottom row of Table 3.10), and the degree of agreement tends to be independent of scale. The RMSD statistic for cross-medium comparisons (CAT-ASVAB 04D versus P&P-ASVAB 25B) tends to indicate a slightly higher dis-

crepancy between composite distributions, and differences between these forms on the '97 metric appear to be slightly larger than those observed on the '80 metric. However, all these differences are well within the tolerable range of 2 to 3 percent observed in past CAT-P&P equatings.

Note that the equivalence of composite distributions arising from alternate P&P-ASVAB forms (25A, 25B, 26A, and 26B) were not examined in this study, but were previously examined by Segall and Thomasson (2001). For both the '80 and '97 metrics, all P&P subtests are (or will be) scored by item response theory using the Bayes modal estimator $\hat{\theta}$, and composites will be formed from weighted linear combinations of subtest $\hat{\theta}$s. The ability estimates arising from alternate P&P forms can be treated as interchangeable, in part because the item response functions were precisely estimated from large samples of randomly equivalent applicant groups taking intact test forms,[4] and in part because all forms were constructed from the same stringent content specifications. This was verified by Segall and Thomasson (2001), who examined the equivalence of $\hat{\theta}$ distributions. Given equivalent $\hat{\theta}$ distributions across forms, it follows that linear combinations of $\hat{\theta}$s used to form composites will also have equivalent distributions across forms, regardless of the scale-specific weights (i.e., '80 weights or '97 weights) used to form the composite.

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[4]Note that this is in contrast to IRFs used in CAT-ASVAB, which were originally estimated from multiple non-operational administrations of P&P booklets assigned to non-equivalent groups.

TABLE 3.10. RMSD Indices Between Form Composite Distributions.

Composite	$03D^a - 04D^a$		$01D^b - 03D^b$		$02D^b - 03D^b$		$04D^c - 25B^c$	
	'80	'97	'80	'97	'80	'97	'80	'97
AFQT	0.7	0.6	0.8	0.4	0.8	0.2	1.0	1.8
Army-GT	0.6	0.6	0.5	0.6	0.7	0.4	0.9	1.7
Army-CL	0.8	1.0	0.8	0.4	0.8	0.3	0.7	2.2
Army-CO	0.4	0.4	0.9	0.4	1.2	0.8	0.4	1.9
Army-EL	0.5	0.4	0.8	0.5	1.2	0.6	0.9	1.8
Army-FA	0.5	0.4	0.9	0.4	1.2	0.7	0.4	2.0
Army-GM	0.4	0.3	0.9	0.7	1.2	1.0	0.7	1.6
Army-MM	0.3	0.4	0.8	0.8	1.2	0.6	1.1	1.3
Army-OF	0.3	0.3	0.7	0.6	1.1	0.6	0.5	1.6
Army-SC	0.6	0.6	0.9	0.5	1.2	0.6	1.1	2.1
Army-ST	0.6	0.5	0.7	0.4	1.0	0.4	0.7	1.9
Navy-GT	0.6	0.6	0.5	0.6	0.7	0.4	0.9	1.7
Navy-EL	0.8	0.9	1.1	0.8	1.2	1.7	2.0	2.1
Navy-BEE	0.8	1.4	1.2	0.8	0.6	0.7	0.6	1.9
Navy-ENG	0.4	0.3	1.2	1.1	1.5	1.1	0.4	1.4
Navy-MEC	0.3	0.4	0.5	0.7	0.7	0.6	1.7	1.5
Navy-MEC2	0.3	0.4	0.3	1.0	0.2	0.7	1.6	1.5
Navy-NUC	0.8	0.8	0.7	0.4	0.8	0.2	1.3	2.3
Navy-OPS	0.7	0.9	0.7	0.3	0.4	0.2	0.6	1.7
Navy-HM	0.6	0.5	1.1	0.4	0.6	1.2	0.7	1.3
Navy-ADM	0.7	0.8	0.8	0.7	0.8	0.5	1.1	1.7
MC-MM	0.4	0.5	0.8	1.2	1.1	0.8	1.6	1.5
MC-GT	0.4	0.4	0.3	0.9	0.6	0.6	1.5	1.9
MC-EL	0.8	0.9	1.1	0.8	1.2	1.7	2.0	2.1
MC-CL	0.7	0.8	0.8	0.7	0.8	0.5	1.1	1.7
AF-M	0.3	0.3	0.6	0.4	0.8	0.3	1.1	1.3
AF-A	0.7	0.8	0.8	0.7	0.8	0.5	1.1	1.7
AF-G	0.6	0.6	0.5	0.6	0.7	0.4	0.9	1.7
AF-E	0.8	0.9	1.1	0.8	1.2	1.7	2.0	2.1
Average	0.5	0.6	0.8	0.6	0.9	0.7	1.1	1.8

[a]Data obtained from IOT&E Study.

[b]Data obtained from CY2001 Sample.

[c]Data obtained from Anchoring Study.

4

Enlistment Impact

This chapter describes the impact of the '97 score scale on AFQT qualification rates. Section 4.1.1 describes the composition of the applicant sample used to estimate the impact. The overall impact of using cut scores associated with the '80 scale on scores produced by the '97 metric is described in Section 4.2. Section 4.3 provides a description of the process used to equate the two scales and the consequences of adjusting the '97 cut scores downward to maintain qualification rate and classification agreement across the '80 and '97 scales. The effects of the new score scale on the numbers of high-quality applicants (defined by a combination of AFQT score and education credential) is discussed in Section 4.4. Section 4.5 describes the effect of scale on subgroup qualification rates. The possibility and consequence (on expected Military performance) of using alternate definitions of AFQT Category boundary levels is discussed in the final Section 4.6.

4.1   Samples

Separate impact analyses were conducted for Regular, Reserve, and Guard applicants. The composition of these samples are detailed below.

TABLE 4.1. Sample Sizes of Regular CY2002 Cohort

Service	Frequency	Percent
Army	158,161	47.9
Navy	72,948	22.1
Air Force	54,987	16.6
Marine Corps	44,389	13.4
Total	330,485	100.0

4.1.1   CY2002 Cohort

When examining score-scale effects on enlistment rates, it is useful to define a cohort of individuals (rather than test-records) whose enlistment eligibility can be determined according to a specified criteria. For this study we define the CY2002 Cohort as "Regular Army, Navy, Air Force, and Marine Corps applicants taking an initial[1] ASVAB test during the calendar year 2002." These are applicants taking the ASVAB for the first time.[2] Table 4.1 provides the numbers of applicants by Service. All impact analyses were based AFQT scores calculated from initial tests of CY2002 applicants. Tests were scored two ways for each CY2002 applicant. These two scores included (a) $AFQT_{80}$, scores calculated on the 1980 score scale, and (b) $AFQT_{97}$, scores calculated on the 1997 score scale.

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[1] Note that an alternative CY2002 Cohort could have been defined on the basis of *most-recent* test scores rather than *initial* test scores. This cohort definition, however, would likely lead to a biased estimate of the difference in qualification rates between the two scales, one that is larger than likely to occur in practice. This is because applicant retest behavior, to a large extent, is dependent on the initial test score. Applicants falling just below an important cut score are more likely to retest than those falling just above. If CY2002 applicants' test records are rescored on the '97 scale, some applicants who previously qualified on the '80 scale would no longer qualify on the '97 scale. These applicants would (in the analysis) not have an opportunity to retest. In practice, a portion of these applicants would retest, and upon retesting, would qualify. Consequently, an analysis based on most-recent test scores would provide applicants (scored on the '80 scale) with the opportunity to retest but not provide the same opportunity to these same applicants scored on the '97 scale. By basing impact analyses on initial test scores only, the implicit assumption is that retest behavior would be scale independent and that any increase in qualification rates due to retesting would be the same for both the '80 and '97 scales.

[2] If a desired score level is not achieved on the first attempt, an applicant can take up to two additional ASVAB tests within a two-month period. After the third attempt, the applicant must wait six months for each subsequent retest attempt. Consequently when examining ASVAB test records for any fixed period of time (say a one-year interval), the same applicant can be represented more than once by any combination of the following test occurrences: (a) an initial test, (b) a second test, and (c) a third or subsequent test.

TABLE 4.2. Reserve and Guard CY2002 Sample Sizes

Service	Reserve		Guard	
	Frequency	Percent	Frequency	Percent
Army	35,262	62.0	51,929	85.2
Navy	9,649	17.0	—	—
Air Force	6,097	10.7	9,035	14.8
Marine Corps	5,822	10.2	—	—
Total	56,830	100.0	60,964	100.0

4.1.2 Reserve and Guard Samples

For this study we define the Reserve and Guard Samples as "Reserve and Guard Army, Navy, Air Force, and Marine Corps applicants taking an initial ASVAB test during the calendar year 2002." These are applicants taking the ASVAB for the first time. Table 4.2 provides the numbers of Reserve and Guard applicants by Service. As with Regular applicants, tests were scored two ways for each CY2002 applicant: (a) $AFQT_{80}$, scores calculated on the 1980 score scale, and (b) $AFQT_{97}$, scores calculated on the 1997 score scale.

4.2 Qualification Impact

Tables 4.3, 4.4, and 4.5 display the AFQT qualification percentages for the CY2002 Regular, Reserve, and Guard samples broken out by Service and score scale (1980 versus 1997). Qualification rates are displayed for select cut scores. For example in Table 4.3, 82.7% of the Regular Army applicants scored 31 or above on the 1980 score scale compared to 77.2% scoring 31 or above on the 1997 score scale. Thus, the Army could expect to qualify about 5.5% fewer Regular applicants using the '97 score scale (assuming a cut score of 31). On average, qualification rates differ by about 5 percentage points among the lower cut scores (e.g., $AFQT \geq 31$) and somewhat less towards the middle and upper ranges of the distribution. The last two columns of Table 4.3 display the qualification rates for the combined samples of Army, Navy, Air Force, and Marine Corps Regular applicants. The last two columns of Tables 4.4 and 4.5 display the qualification rates for the combined samples (across service) of Reserve and Guard applicants.

TABLE 4.3. Regular CY2002 AFQT Qualification Percentages (Unadjusted Cut Scores)

Cut		Army		Navy		Air Force		Marines		All	
'80	'97	'80	'97	'80	'97	'80	'97	'80	'97	'80	'97
93	93	5.6	5.6	4.9	5.0	5.6	5.4	4.2	4.1	5.2	5.2
65	65	35.1	33.9	34.1	32.4	43.4	41.2	37.2	34.7	36.5	34.9
50	50	56.7	53.4	55.4	51.5	67.4	63.4	60.9	56.6	58.7	55.1
45	45	63.6	60.3	62.3	58.6	74.1	70.6	68.0	64.2	65.6	62.1
40	40	71.3	66.8	70.0	65.4	81.2	76.9	75.6	71.0	73.2	68.8
35	35	77.9	72.8	77.0	71.8	86.7	82.4	82.2	77.3	79.7	74.8
31	31	82.7	77.2	81.9	76.3	90.3	86.0	86.6	81.7	84.3	79.1
21	21	92.7	87.2	92.7	87.1	96.9	93.5	95.3	91.1	93.8	88.8
10	10	98.3	95.5	98.3	95.9	99.4	98.4	99.2	97.7	98.6	96.4

Appendices A, B, C, and D display the full range of cut scores for AFQT qualification percentages. For each Service, these are calculated for the CY2002 Regular, Reserve, and Guard samples broken out by score scale (1980 versus 1997). Army Regular, Reserve, and Guard results are provided in Tables A.2, A.3, and A.4; Navy Regular and Reserve are provided in Tables B.1 and B.2; Air Force Regular, Reserve, and Guard results are provided in Tables C.5, C.6, and C.7; and Marine Corps Regular and Reserve results are provided in Tables D.1 and D.2. Each table displays distribution statistics for the specified CY2002 sample based on the 1980 and 1997 score scales, including (a) AFQT score (column 1), (b) the percentage at each score level according to the 1980 scale (column 2), (c) the percentage scoring at or above the given score (column 3) on the 1980 scale, (d) the percentage at each score level according to the 1997 scale (column 4), and (e) the percentage scoring at or above the given score on the 1997 scale (column 5).

Note that one option is to equalize qualification rates across score scales. This would require assigning new cut scores to the '97 scale that qualified the same percentage as the corresponding (current) cut scores on the '80 scale. These cut scores would be lower than the '80 cut scores; however, they would qualify applicants with the same expected performance in training as those qualified on the '80 scale. This option is discussed more fully in Section 4.3.

TABLE 4.4. Reserve CY2002 AFQT Qualification Percentages (Unadjusted Cut Scores)

Cut		Army		Navy		Air Force		Marines		All	
'80	'97	'80	'97	'80	'97	'80	'97	'80	'97	'80	'97
93	93	7.1	7.4	7.7	8.3	7.6	8.3	10.4	10.3	7.6	7.9
65	65	40.2	39.2	37.2	37.9	46.9	46.3	54.1	50.8	41.8	40.9
50	50	61.2	58.1	56.9	54.9	69.8	67.2	75.6	71.6	62.9	59.9
45	45	67.8	64.6	63.3	61.0	75.8	72.9	81.7	78.5	69.3	66.3
40	40	74.7	70.7	70.3	66.9	81.6	78.3	86.8	83.9	75.9	72.2
35	35	80.8	76.1	76.8	72.1	86.9	82.8	90.9	88.1	81.8	77.4
31	31	85.1	80.2	81.2	76.3	90.6	86.6	93.4	90.7	85.9	81.3
21	21	93.8	89.2	91.2	85.9	96.5	93.7	97.9	95.9	94.0	89.8
10	10	98.5	96.2	97.4	94.5	99.3	98.1	99.5	99.0	98.5	96.4

TABLE 4.5. Guard CY2002 AFQT Qualification Percentages (Unadjusted Cut Scores)

Cut		Army		Air Force		All	
'80	'97	'80	'97	'80	'97	'80	'97
93	93	5.6	5.5	9.5	9.5	6.2	6.1
65	65	32.6	31.7	50.4	49.3	35.2	34.3
50	50	50.8	47.8	70.4	67.8	53.7	50.7
45	45	56.8	53.9	75.7	73.3	59.6	56.8
40	40	63.9	59.7	81.7	78.4	66.6	62.5
35	35	70.7	65.5	86.0	82.9	73.0	68.0
31	31	75.6	69.9	89.1	85.6	77.6	72.2
21	21	87.4	80.4	95.6	92.2	88.6	82.2
10	10	95.9	91.0	98.9	97.2	96.3	91.9

4.3   Equating Enlistment Standards

As mentioned in Section 4.2, the same expected performance in training can be maintained across score scales by assigning new cut scores to the '97 scale. These new cut scores are designed to qualify about the same percentages of applicants as the corresponding cut scores based on the '80 scale.

Table 4.6 displays distribution statistics for the Regular CY2002 sample based on the 1980 and 1997 score scales, including (a) AFQT score (column 1), (b) the percentage at each score level according to the 1980 scale (column 2), (c) the percentage scoring at or above the given score (column 3) on the 1980 scale, (d) the percentage at each score level according to the 1997 scale (column 4), (e) the percentage scoring at or above the given score on the 1997 scale (column 5), and (f) the equating transformation providing the cut score on the 1997 scale that results in nearly the same qualification rate as the nominal score on the 1980 scale (column 6).

The rationale for the algorithm used in determining the equating transformation (Table 4.6, column 6) can be illustrated using the following example. From Table 4.6, column 3, we observe that 84.27 percent of the Regular CY2002 sample obtained an $AFQT_{80} \geq 31$. We also see, by scanning down column 5, that the most similar qualification rate on the 1997 scale is 83.66, which occurs for an $AFQT_{97} \geq 26$. Thus, a score of "31" on the '80 scale and a score of "26" on the '97 scale qualify nearly the same numbers of applicants (about 84%). This correspondence is noted in the last column of row 31. Transformation values for other score levels were determined according to the same approach.

Tables 4.7, 4.8, and 4.9 provide the qualification rates in the Regular, Reserve, and Guard CY2002 samples when different cut scores are applied across the '80 and '97 score scales. The cut scores applied to the '97 scale were specified by the equating transformation (described above, Table 4.6) to qualify about the same percentages as the corresponding cuts on the '80 scale. These cut-score pairs are listed in columns 1 and 2 of Tables 4.7, 4.8, and 4.9. For example, referring to Table 4.7, 86.6% of Regular Marine Corps applicants obtained an $AFQT_{80} \geq 31$ on the '80 scale, and 86.2% obtained an $AFQT_{97} \geq 26$ on the '97 scale. Thus by lowering the cut score on the '97 scale to 26, nearly the same numbers of applicants qualify.

TABLE 4.6. AFQT Distributions for 1980 and 1997 Scales

| AFQT | 1980 | | 1997 | | Trans. |
Score	%	Qual.	%	Qual.	'80 $\implies$ '97
1	0.15	100.00	0.11	100.00	1
2	0.06	99.85	0.17	99.89	2
3	0.08	99.78	0.22	99.72	3
4	0.15	99.70	0.57	99.50	3
5	0.15	99.55	0.36	98.93	4
6	0.19	99.40	0.44	98.57	4
7	0.15	99.22	0.57	98.13	4
8	0.26	99.07	0.33	97.56	5
9	0.20	98.81	0.85	97.22	5
10	0.24	98.61	0.50	96.37	6
11	0.26	98.36	0.82	95.87	6
12	0.32	98.10	0.31	95.04	7
13	0.55	97.78	0.67	94.73	8
14	0.21	97.23	0.37	94.06	9
15	0.46	97.02	0.80	93.69	9
16	0.49	96.56	0.90	92.89	10
17	0.58	96.07	0.99	91.99	11
18	0.66	95.50	0.52	91.00	11
19	0.70	94.84	1.12	90.48	13
20	0.38	94.14	0.60	89.36	14
21	0.83	93.76	0.65	88.76	15
22	0.92	92.93	1.35	88.11	16
23	1.04	92.01	0.70	86.76	17
24	0.55	90.97	0.76	86.05	18
25	1.20	90.42	1.63	85.30	19
26	0.62	89.22	0.85	83.66	20
27	1.34	88.61	0.91	82.82	21
28	0.72	87.27	0.92	81.90	23
29	1.48	86.55	0.92	80.98	23
30	0.80	85.07	0.99	80.06	25
31	0.85	84.27	1.02	79.08	26
32	1.77	83.42	1.05	78.05	26
33	0.94	81.64	1.09	77.00	28
34	0.97	80.70	1.12	75.92	29

TABLE 4.6. AFQT Distributions for 1980 and 1997 Scales (continued)

| AFQT | 1980 | | 1997 | | Trans. |
Score	%	Qual.	%	Qual.	'80 ⟹ '97
35	2.07	79.73	2.32	74.80	30
36	1.08	77.66	1.19	72.48	32
37	1.10	76.58	0.00	71.29	33
38	1.12	75.49	1.26	71.29	34
39	1.14	74.37	1.27	70.03	35
40	1.22	73.23	1.32	68.75	36
41	1.24	72.01	1.32	67.43	36
42	2.56	70.77	1.28	66.11	37
43	1.32	68.22	1.33	64.83	40
44	1.27	66.90	1.37	63.50	41
45	1.35	65.63	1.39	62.13	42
46	1.35	64.28	1.42	60.75	43
47	1.42	62.93	1.41	59.32	44
48	1.37	61.52	1.41	57.91	45
49	1.41	60.14	1.44	56.50	46
50	1.41	58.73	1.44	55.06	47
51	1.48	57.32	1.43	53.62	48
52	1.47	55.84	1.47	52.19	49
53	2.94	54.37	1.48	50.73	50
54	1.55	51.44	1.46	49.25	53
55	1.45	49.89	1.48	47.79	54
56	1.55	48.44	1.46	46.31	55
57	1.43	46.89	1.47	44.85	56
58	1.56	45.46	0.00	43.39	57
59	1.45	43.90	1.46	43.39	58
60	0.00	42.45	1.44	41.93	60
61	1.53	42.45	1.42	40.49	60
62	1.47	40.92	1.40	39.07	61
63	1.52	39.45	1.38	37.66	62
64	1.41	37.93	1.38	36.28	63
65	1.49	36.53	0.00	34.91	64
66	1.45	35.03	1.34	34.91	65
67	1.45	33.58	1.33	33.56	67
68	1.33	32.14	1.30	32.23	68
69	1.43	30.80	1.26	30.93	69

TABLE 4.6. AFQT Distributions for 1980 and 1997 Scales (continued)

AFQT	1980		1997		Trans.
Score	%	Qual.	%	Qual.	'80 $\Longrightarrow$ '97
70	1.35	29.37	2.47	29.67	70
71	1.33	28.02	1.21	27.20	71
72	1.25	26.69	1.17	25.99	71
73	1.29	25.43	1.13	24.82	72
74	1.21	24.15	1.12	23.69	74
75	1.24	22.93	1.10	22.57	75
76	1.14	21.70	1.06	21.47	76
77	1.16	20.55	1.00	20.41	77
78	1.15	19.40	1.01	19.41	78
79	1.05	18.25	0.95	18.40	79
80	2.11	17.19	0.93	17.45	80
81	1.01	15.08	0.90	16.52	82
82	0.98	14.07	1.73	15.62	83
83	0.00	13.09	0.81	13.89	84
84	1.86	13.09	0.80	13.08	84
85	0.89	11.24	1.48	12.28	86
86	0.81	10.35	0.69	10.81	87
87	0.83	9.54	0.67	10.11	88
88	0.76	8.71	1.20	9.45	89
89	0.77	7.95	0.57	8.25	90
90	0.66	7.18	1.08	7.68	90
91	0.67	6.52	0.49	6.60	91
92	0.60	5.84	0.88	6.11	92
93	0.62	5.24	1.20	5.23	93
94	0.55	4.62	0.67	4.03	94
95	0.58	4.07	0.84	3.36	94
96	0.48	3.49	0.67	2.52	95
97	0.53	3.02	0.69	1.85	95
98	0.37	2.48	0.55	1.16	96
99	2.11	2.11	0.61	0.61	97

TABLE 4.7. Regular CY2002 AFQT Qualification Percentages (Adjusted Cut Scores)

Cut		Army		Navy		Air Force		Marines		All	
'80	'97	'80	'97	'80	'97	'80	'97	'80	'97	'80	'97
93	93	5.6	5.6	4.9	5.0	5.6	5.4	4.2	4.1	5.2	5.2
65	64	35.1	35.3	34.1	33.6	43.4	42.7	37.2	36.1	36.5	36.3
50	47	56.7	57.4	55.4	55.8	67.4	67.9	60.9	61.2	58.7	59.3
45	42	63.6	64.2	62.3	62.7	74.1	74.5	68.0	68.3	65.6	66.1
40	36	71.3	70.5	70.0	69.3	81.2	80.4	75.6	75.0	73.2	72.5
35	30	77.9	78.2	77.0	77.5	86.7	86.9	82.2	82.7	79.7	80.1
31	26	82.7	81.9	81.9	81.4	90.3	89.7	86.6	86.2	84.3	83.7
21	15	92.7	92.5	92.7	92.8	96.9	96.8	95.3	95.5	93.8	93.7
10	6	98.3	98.2	98.3	98.4	99.4	99.5	99.2	99.2	98.6	98.6

TABLE 4.8. Reserve CY2002 AFQT Qualification Percentages (Adjusted Cut Scores)

Cut		Army		Navy		Air Force		Marines		All	
'80	'97	'80	'97	'80	'97	'80	'97	'80	'97	'80	'97
93	93	7.1	7.4	7.7	8.3	7.6	8.3	10.4	10.3	7.6	7.9
65	64	40.2	40.4	37.2	39.0	46.9	47.7	54.1	52.1	41.8	42.2
50	47	61.2	61.8	56.9	58.6	69.8	70.9	75.6	75.7	62.9	63.7
45	42	67.8	68.3	63.3	64.4	75.8	76.2	81.7	81.9	69.3	69.9
40	36	74.7	74.1	70.3	70.1	81.6	81.1	86.8	86.3	75.9	75.4
35	30	80.8	81.1	76.8	77.2	86.9	87.3	90.9	91.2	81.8	82.2
31	26	85.1	84.5	81.2	80.6	90.6	90.2	93.4	93.0	85.9	85.3
21	15	93.8	93.6	91.2	91.1	96.5	96.6	97.9	98.1	94.0	94.0
10	6	98.5	98.4	97.4	97.3	99.3	99.3	99.5	99.6	98.5	98.5

As indicated, the qualification rates for other Services (Regular, Reserve, and Guard) are very similar across score scales—in most cases the difference in qualification rates across scales is about one-half of one-percent (0.5%) or less.

4.4   High-Quality Applicants and Educational Attainment

Military applicants are classified into one of three Tiers according to their education credentials. (See USMEPCOM Reg 680-1.) Generally, applicants are classified as Tier 1 if they are high school graduates, as Tier 2 if they hold an alternate high school credential, and as Tier 3 if they are not currently attending high school and are neither a high school graduate nor an alternate high school credential holder. The Department of Defense further classifies applicants as

TABLE 4.9. Guard CY2002 AFQT Qualification Percentages (Adjusted Cut Scores)

Cut		Army		Air Force		All	
'80	'97	'80	'97	'80	'97	'80	'97
93	93	5.6	5.5	9.5	9.5	6.2	6.1
65	64	32.6	32.7	50.4	50.8	35.2	35.4
50	47	50.8	51.4	70.4	71.2	53.7	54.4
45	42	56.8	57.4	75.7	76.4	59.6	60.2
40	36	63.9	63.3	81.7	81.2	66.6	65.9
35	30	70.7	70.9	86.0	86.3	73.0	73.2
31	26	75.6	74.8	89.1	88.7	77.6	76.9
21	15	87.4	86.9	95.6	95.6	88.6	88.2
10	6	95.9	95.5	98.9	98.9	96.3	96.0

high-quality if they score 50 or above on the AFQT and have a Tier 1 educational credential. These high-quality applicants are among the easiest to train and are most likely to complete a full term of service.

Tables 4.10, 4.11, and 4.12 display the percentages of Regular, Reserve, and Guard CY2002 applicants classified as high-quality. These percentages are displayed separately for each Service and for each score-scale alternative. As indicated in Table 4.10, the numbers of high-quality Regular Army applicants would be reduced by about $2.7\% (= 48.1\% - 45.4\%)$ when high-quality on the '97 scale is defined by aptitude levels of $AFQT_{97} \geq 50$. Similar reductions were observed for the other Services, with reductions in the numbers of high-quality applicants ranging between 3 and 4 percent.

Tables 4.10, 4.11, and 4.12 also provide an impact assessment using a revised definition of high-quality applicants. This definition for the 1997 score scale classifies applicants as high-quality if $AFQT_{97} \geq 47$ and Educational Credential = Tier 1. As indicated, the revised definition provides percentages (using $AFQT_{97} \geq 47$) which are similar to those observed for the 1980 scale (with $AFQT_{80} \geq 50$). Across all Services (Table 4.10, bottom), 52.7% of Regular applicants were classified as high-quality when scored on the '80 scale (with $AFQT_{80} \geq 50$), and 53.1% were classified as high-quality when scored according to the '97 scale using a slightly modified definition of high-quality aptitude ($AFQT_{97} \geq 47$). Similar results were observed for Reserve and Guard classification rates (Tables 4.11 and 4.12). Consequently,

TABLE 4.10. Distribution of High-Quality Regular Applicants
Across Alternative Score Scales

Service	Score Scale	AFQT Cut	Percent High-Quality[a]
Army	1980	50	48.1
	1997	50	45.4
	1997	47	48.5
Navy	1980	50	49.5
	1997	50	46.1
	1997	47	49.8
Air Force	1980	50	65.3
	1997	50	61.5
	1997	47	65.8
Marine Corps	1980	50	58.6
	1997	50	54.4
	1997	47	58.9
All Services	1980	50	52.7
	1997	50	49.5
	1997	47	53.1

[a]High-quality applicants are defined as those applicants
possessing a Tier 1 educational credential and having
AFQT ≥ Cut.

TABLE 4.11. Distribution of High-Quality Reserve Applicants Across Alternative Score Scales

Service	Score Scale	AFQT Cut	Percent High-Quality[a]
Army	1980	50	57.0
	1997	50	54.2
	1997	47	57.5
Navy	1980	50	51.8
	1997	50	50.0
	1997	47	53.1
Air Force	1980	50	67.4
	1997	50	64.9
	1997	47	68.5
Marine Corps	1980	50	74.0
	1997	50	70.2
	1997	47	74.1
All Services	1980	50	59.0
	1997	50	56.3
	1997	47	59.6

[a]High-quality applicants are defined as those applicants possessing a Tier 1 educational credential and having AFQT ≥ Cut.

TABLE 4.12. Distribution of High-Quality Guard Applicants
Across Alternative Score Scales

Service	Score Scale	AFQT Cut	Percent High-Quality[a]
Army	1980	50	44.4
	1997	50	41.9
	1997	47	44.8
Air Force	1980	50	67.7
	1997	50	65.1
	1997	47	68.4
All Services	1980	50	47.9
	1997	50	45.3
	1997	47	48.3

[a]High-quality applicants are defined as those applicants
possessing a Tier 1 educational credential and having
AFQT $\geq$ Cut.

consistency of qualification rates can be maintained across score-scales by altering the definition of high-quality applicants (i.e., by using an AFQT cut of 47 rather than 50). In addition, this change in definition will also help maintain the consistency of performance across those selected by the new and old scales: *Applicants classified as high-quality using a criterion $AFQT_{97} \geq 47$ on the 1997 scale will have the same expected performance in training, and the same expected attrition rate, as those classified as high-quality using $AFQT_{80} \geq 50$ on the 1980 scale.*

4.5   Subgroup Effects

4.5.1   Groups Defined by Race

Score-scale effects are likely to be more severe among subgroups whose scores cluster tightly around key cut points. The degree of severity is displayed in Table 4.13 which provides AFQT qualification rates broken out by race (White, Black, Hispanic, and Other), and by score scale for select AFQT cut scores. These results were based on the initial test records of CY2002 Regular Army, Navy, Air Force, and Marine Corps applicants. For each cut score, three scales were evaluated: (a) the 1980 scale using the nominal 1980 cut score, (b) the 1997 scale using nominal 1980 cut-scores, and (c) the 1997 scale using adjusted (or equated) cut scores [designed to provide equivalent qualification rates in the entire sample of CY2002 Regular applicants (Table 4.6)].

The results in Table 4.13 indicate that the score scale impact tends to be more severe for Blacks and Hispanics than for Whites, especially over the middle and lower score ranges. For example, using an AFQT cut $= 31$, the difference in qualification rates between scales for Whites is about 4 percent: $(90.9 - 87.0)/90.9 = 4.3\%$. However, the comparable decrements in qualification rates for Blacks and Hispanics are more than double those for Whites: $(71.0 - 62.7)/71.0 = 11.7\%$ for Blacks, and $(72.9 - 65.7)/72.9 = 9.9\%$ for Hispanics. That is, the qualification rate would be expected to drop by 4.3 percent for Whites, but about 10 to 12 percent for Hispanics and Blacks.

Table 4.13 also displays the impact of the '97 scale when the cut scores are adjusted downward. These adjusted cut scores are designed to provide equivalent qualification rates in the entire sample

TABLE 4.13. Subgroup Qualification Rates (All Services)

Scale	Qualification Rates[a]							
White (N = 208,308)								
1980	7.2	(93)	45.4	(65)	68.9	(50)	75.5	(45)
1997	7.2	(93)	43.9	(65)	65.5	(50)	72.3	(45)
1997	7.2	(93)	45.4	(64)	69.7	(47)	76.0	(42)
1980	82.2	(40)	87.5	(35)	90.9	(31)	97.0	(21)
1997	78.4	(40)	83.6	(35)	87.0	(31)	93.9	(21)
1997	81.7	(36)	87.8	(30)	90.4	(26)	96.9	(15)
Black (N = 61,282)								
1980	1.2	(93)	17.3	(65)	37.0	(50)	44.5	(45)
1997	1.1	(93)	15.9	(65)	33.0	(50)	40.5	(45)
1997	1.1	(93)	16.9	(64)	37.4	(47)	45.1	(42)
1980	54.3	(40)	63.7	(35)	71.0	(31)	88.2	(21)
1997	48.3	(40)	56.3	(35)	62.7	(31)	78.7	(21)
1997	53.1	(36)	64.2	(30)	69.9	(26)	88.1	(15)
Hispanic (N = 36,899)								
1980	1.5	(93)	21.0	(65)	41.7	(50)	49.4	(45)
1997	1.4	(93)	18.8	(65)	37.0	(50)	44.9	(45)
1997	1.4	(93)	19.9	(64)	41.6	(47)	49.4	(42)
1980	58.2	(40)	66.5	(35)	72.9	(31)	87.3	(21)
1997	52.5	(40)	60.1	(35)	65.7	(31)	79.7	(21)
1997	57.2	(36)	67.1	(30)	72.3	(26)	87.4	(15)
Other (N = 23,996)								
1980	4.7	(93)	32.5	(65)	52.6	(50)	59.0	(45)
1997	4.7	(93)	30.4	(65)	48.8	(50)	55.4	(45)
1997	4.7	(93)	31.7	(64)	52.8	(47)	59.2	(42)
1980	66.6	(40)	73.5	(35)	78.3	(31)	89.9	(21)
1997	61.8	(40)	68.3	(35)	72.6	(31)	83.4	(21)
1997	65.7	(36)	73.7	(30)	77.6	(26)	89.8	(15)

[a]AFQT cut scores are provided in parentheses.

of CY2002 applicants (Section 4.3). Using the adjusted cut scores, the impact of the '97 score scale is in general much smaller than the impact observed using nominal cuts based on the '80 scale. For example, using an AFQT cut $= 31$ on the '80 scale, and an AFQT cut $= 26$ on the '97 scale, the difference in qualification rates between scales for Whites is less than 1 percent: $(90.9 - 90.4)/90.9 = 0.6\%$. The comparable decrements in qualification rates for Blacks and Hispanics are similar to those for Whites: $(71.0 - 69.9)/71.0 = 1.6\%$ for Blacks, and $(72.9 - 72.3)/72.9 = 0.8\%$ for Hispanics. That is, using the adjusted (rather than nominal AFQT cut score) the qualification rate would be expected to drop by about 2 percent or less for all groups: Whites, Blacks, and Hispanics. In general, small changes in qualification rates occur when the adjusted cut scores are applied to the '97 scale. Tables A.5, A.6, A.7, B.3, B.4, C.8, C.9, C.10, D.3, and D.4 provide the same qualification-rate subgroup analysis for each of the four Services. Results based on Regular, Reserve, and Guard applicants are reported separately.

Although the choice of score scale appears to impact the qualification rates of Blacks and Hispanics to a significant degree (as compared to Whites), this differential impact results in only a minor shift in the racial composition of qualified applicants. Table 4.14 displays the racial composition of Regular applicants qualifying at select AFQT cut scores for each of the three candidate scale options. For example, among those applicants with $\text{AFQT}_{80} \geq 31$ (where AFQT is scored on the '80 scale), 68% are White, 15.6% are Black, 9.7% are Hispanic, and 6.8% fall into the "Other" racial category. Note that among those with $\text{AFQT}_{97} \geq 31$ (where AFQT is scored on the '97 scale), the size of the White group is increased by about 1 percent $(69.3 - 68.0 = 1.3\%)$, and the percentages of Blacks and Hispanics are each reduced by less than 1 percent (Blacks: $15.6 - 14.7 = 0.9\%$; Hispanics: $9.7 - 9.3 = 0.4\%$). In general, only small shifts in the racial composition of the qualified applicant group appear across key AFQT cut scores.

Note that by lowering the cut score on the '97 scale (see the third line of each cut-score grouping in Table 4.14), the effects of the '97 scale on racial composition can be virtually eliminated. For example, among those with $\text{AFQT}_{97} \geq 26$, the percentages of Whites, Blacks, and Hispanics (68.1, 15.5, and 9.6, respectively) provide nearly identical matches to those observed among applicants with $\text{AFQT}_{80} \geq 31$

(68.0, 15.6, and 9.7). Results broken out by Service for Regular, Reserve, and Guard applicants are provided in Tables A.11, A.12, A.13, B.7, B.8, C.14, C.15, C.16, D.7, and D.8.

4.5.2   Groups Defined by Gender

The results in Table 4.15 (based on Regular applicants) indicate that the score-scale impact tends to be about the same for Males and Females, with qualification rates impacted slightly more for Females over the middle and lower score ranges. For example, using an AFQT cut $= 31$, the difference in qualification rates between scales for males is about 6 percent: $(84.9 - 79.9)/84.9 = 5.9\%$. The comparable decrements in qualification rates for Females are $(82.0 - 75.9)/82.0 = 7.4\%$. That is, the qualification rate would be expected to drop by 6 percent for Males and a little over 7 percent for Females.

   Table 4.15 also displays the impact of the '97 scale when the cut scores are adjusted downward. Using the adjusted cut scores, the impact of the '97 score scale is in general much smaller than the impact observed using cuts based on the nominal '80 values. In general, small qualification-rate changes (of about 1 percent or less) occur when the adjusted cut scores are applied to the '97 scale. Similar results are obtained when gender analyses are performed individually for each of the four services, for Regular, Reserve, and Guard applicants. (See Tables A.8, A.9, A.10, B.5, B.6, C.11, C.12, C.13, D.5, and D.6.)

   Table 4.16 displays the gender composition of Regular applicants qualifying at select AFQT cut scores for each of the three candidate scale options. In general, only small shifts in gender composition appear across key AFQT cut scores when the same nominal AFQT cut is applied to the '97 and '80 scales. When the '97 cut score is adjusted downward, the gender composition of qualified applicants is virtually identical across '80 and '97 scales. Results broken out by Service for Regular, Reserve, and Guard applicants are provided in Tables A.14, A.15, A.16, B.9, B.10, C.17, C.18, C.19, D.9, and D.10.

4.6   Maintaining Expected Performance

One implication of the equating between the '80 and '97 scales is that the impact of the new score scale can be eliminated by using

TABLE 4.14. Subgroup Qualification Distributions (All Services)

Score Scale	AFQT Cut	White	Black	Hispanic	Other
1980	93	86.3	4.1	3.2	6.4
1997	93	86.5	4.0	3.1	6.5
1997	93	86.5	4.0	3.1	6.5
1980	65	78.3	8.8	6.4	6.5
1997	65	79.2	8.5	6.0	6.3
1997	64	78.9	8.6	6.1	6.3
1980	50	73.9	11.7	7.9	6.5
1997	50	75.0	11.1	7.5	6.4
1997	47	74.0	11.7	7.8	6.5
1980	45	72.5	12.6	8.4	6.5
1997	45	73.4	12.1	8.1	6.5
1997	42	72.5	12.6	8.4	6.5
1980	40	70.8	13.8	8.9	6.6
1997	40	71.9	13.0	8.5	6.5
1997	36	71.0	13.6	8.8	6.6
1980	35	69.2	14.8	9.3	6.7
1997	35	70.4	14.0	9.0	6.6
1997	30	69.1	14.9	9.4	6.7
1980	31	68.0	15.6	9.7	6.8
1997	31	69.3	14.7	9.3	6.7
1997	26	68.1	15.5	9.6	6.7
1980	21	65.2	17.4	10.4	7.0
1997	21	66.7	16.5	10.0	6.8
1997	15	65.2	17.4	10.4	7.0

TABLE 4.15. Gender Qualification Rates (All Services)

Scale	Qualification Rates[a]							
Males (N = 260,600)								
1980	5.7	(93)	38.2	(65)	60.2	(50)	66.9	(45)
1997	5.7	(93)	36.6	(65)	56.6	(50)	63.5	(45)
1997	5.7	(93)	38.0	(64)	60.8	(47)	67.4	(42)
1980	74.2	(40)	80.5	(35)	84.9	(31)	93.9	(21)
1997	70.0	(40)	75.8	(35)	79.9	(31)	89.2	(21)
1997	73.6	(36)	80.9	(30)	84.3	(26)	93.9	(15)
Females (N = 69,876)								
1980	3.3	(93)	30.2	(65)	53.4	(50)	60.9	(45)
1997	3.3	(93)	28.7	(65)	49.4	(50)	57.0	(45)
1997	3.3	(93)	30.0	(64)	53.9	(47)	61.3	(42)
1980	69.5	(40)	76.8	(35)	82.0	(31)	93.2	(21)
1997	64.3	(40)	71.1	(35)	75.9	(31)	87.2	(21)
1997	68.5	(36)	77.1	(30)	81.2	(26)	93.1	(15)

[a]AFQT cut scores are provided in parentheses.

TABLE 4.16. Gender Qualification Distributions (All Services)

Score Scale	AFQT Cut	Males	Females
1980	93	86.5	13.5
1997	93	86.5	13.5
1997	93	86.5	13.5
1980	65	82.5	17.5
1997	65	82.6	17.4
1997	64	82.5	17.5
1980	50	80.8	19.2
1997	50	81.0	19.0
1997	47	80.8	19.2
1980	45	80.4	19.6
1997	45	80.6	19.4
1997	42	80.4	19.6
1980	40	79.9	20.1
1997	40	80.2	19.8
1997	36	80.0	20.0
1980	35	79.6	20.4
1997	35	79.9	20.1
1997	30	79.6	20.4
1980	31	79.4	20.6
1997	31	79.7	20.3
1997	26	79.5	20.5
1980	21	79.0	21.0
1997	21	79.2	20.8
1997	15	79.0	21.0

the adjusted cut scores (the '80 cut scores transformed to the '97 scale) in place of the nominal '80 cut scores. (See Table 4.6.) This approach could lead to two potentially desirable outcomes. First, the numbers of qualifying applicants remain constant across score scales. Second, individual applicant qualification decisions are virtually identical across the two scales. This latter assertion is supported by the nearly identical rank ordering of applicant scores on the '80 and '97 scales. The Spearman rank-order correlation coefficient[3] between $AFQT_{80}$ and $AFQT_{97}$ (AFQT scores computed on the 1980 and 1997 scales, respectively) is 0.998. This suggests that those qualifying on the basis of the adjusted '97 cut scores will be essentially the same individuals qualifying on the '80 scale (using the unadjusted cut scores).

Table 4.17 displays the AFQT Category boundaries defined according to the '80 score scale (column 2). These categories are often used to define applicant/recruit aptitude quality. Also displayed are the equated boundaries for the '97 scale obtained by taking the '80 cut scores and transforming them to the '97 metric using Table 4.6 (column 3). By using the adjusted boundaries in conjunction with $AFQT_{97}$ (scores on the '97 scale), nearly all applicants should be indifferent with regard to score scale, since each applicant would (with high probability) have the same Category classification, regardless of whether their Category calculations were performed on the '80 or '97 scales. As a consequence, the adjusted '97 boundaries would ensure that the same performance levels would be expected for applicants in a given Category, regardless of which score scale was used in their selection.

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[3] The Spearman ρ was based on a random sample of about 26,000 cases drawn from the CY2002 applicant group.

TABLE 4.17. Equated AFQT Category Boundaries

| Category | Percentile Boundary | |
	1980	1997
I	93–99	93–99
II	65–92	64–92
III	31–64	26–63
IIIA	50–64	47–63
IIIB	31–49	26–46
IV	10–30	6–25
IVA	21–30	15–25
IVB	16–20	10–14
IVC	10–15	6–9
V	1–9	1–5

5
Occupational Qualification Impact

5.1 Background

This section describes the impact of the '97 score scale on Service classification composite qualification rates. The Service classification composites, formed from weighted linear combinations of subtest standard scores, are used by the Services primarily to classify applicants into occupational specialties. (See Tables 5.1 and A.1.) Like the AFQT composite (Section 2.4), these composites display systematic differences in their score distributions across the '80 and '97 scales.

Each Service has at least two courses of action available regarding classification composite qualification standards. One course uses those standards based on the '80 scale and applies them to composite scores reported on the '97 scale. This approach could lead to an increase, a decrease, or no change in qualification rates. This course of action could also lead to higher, lower, or about the same expected performance in training and on-the-job performance. Note that (unlike AFQT scores which are generally lower on the '97 score scale) the sign of the difference between '80 and '97 composite scores is composite-dependent, and in some instances dependent on the score range (low, medium, or high) of the given composite.

TABLE 5.1. Integer-Weighted Service Classification Composite Definitions

Service	Composite		Standard Score Formula
Army	GT	=	AR + VE
Navy	GT	=	AR + VE
	EL	=	GS + AR + MK + EI
	BEE	=	GS + AR + 2 MK
	ENG	=	MK + AS
	MEC	=	AR + MC + AS
	MEC2	=	AR + MC + AO
	NUC	=	AR + MK + MC + VE
	OPS	=	AR + MK + AO + VE
	HM	=	GS + MK + VE
	ADM	=	MK + VE
Marine Corps	MM	=	AR + MC + EI + AS
	GT	=	AR + MC + VE
	EL	=	GS + AR + MK + EI
	CL	=	MK + VE
Air Force	M	=	AR + MC + AS + 2 VE
	A	=	MK + VE
	G	=	AR + VE
	E	=	GS + AR + MK + EI

The second course of action identifies cut scores on the '97 scale that qualify the same number of applicants as the existing cut scores on the '80 scale. This approach not only ensures that qualification rates remain constant across the '80 and '97 scales, but also helps ensure that those selected on the basis of their '97 composite scores would have about the same expected performance as those selected on the basis of their '80 scores (using the existing '80 cut scores). This approach was used by the Services when transitioning from the WWII scale to the current '80 scale (Maier & Sims, 1986).

5.2   Classification Composite Distribution Analysis

Table 5.2 provides means (m) and standard deviations (s) of each Service composite on each scale. Sample moments for each composite were estimated from the CY2002 cohort (see Section 4.1.1), where moments for Army composites were calculated from Regular Army applicants, moments for Navy composites were calculated from Regular Navy applicants, and so forth. The numbers of applicants by Service are provided in Table 4.1. From an examination of Table 5.2, a trend for integer-weighted (i.e., non-Army) composites emerges: Those composites consisting of one or more technical subtests tend to have higher '97 means (relative to '80 means) than those composites consisting of mainly math and verbal subtests. This finding is consistent with expectations based on the shift in performance among subtests between the PAY80 and PAY97 populations (Table 2.1). Note that non-integer weighted Army composites (all Army composites except GT) have about the same moments across the '80 and '97 scales. This is a result of the linear rescaling applied to the non-integer subtest weights—this rescaling was designed to maintain the composites' optimal prediction qualities on the '97 score scale (Section 2.5.3).

Appendix F provides tables displaying the qualification rates of each Service classification composite on each of the two score scales. These qualification rates were also based on the CY2002 cohort (Section 4.1.1), where rates for each Service composite were based on scores from the respective (Army, Navy, Air Force, or Marine Corps) applicant group.

TABLE 5.2. Composite Moments ('80 and '97 Scales)

Composite	1980		1997	
	m	s	m	s
Army				
GT	102.8	15.4	101.8	16.4
CL	103.0	15.2	102.2	16.1
CO	101.8	15.5	103.0	16.9
EL	101.8	15.3	102.9	17.0
FA	101.9	15.6	103.0	16.8
GM	101.2	15.6	103.0	17.3
MM	100.1	16.0	103.4	18.1
OF	101.3	15.7	103.1	17.3
SC	102.3	15.2	102.8	16.7
ST	102.4	15.3	102.7	16.6
Navy				
GT	101.7	14.2	100.7	15.1
EL	203.0	28.0	203.8	29.0
BEE	207.1	29.3	204.0	28.9
ENG	100.7	12.7	101.7	13.7
MEC	148.2	22.4	152.9	22.9
MEC2	151.7	23.4	155.3	22.5
NUC	204.9	27.7	204.2	28.0
OPS	205.8	27.2	204.9	27.5
HM	154.5	20.5	151.6	21.6
ADM	104.3	13.3	101.5	14.1
Marine Corps				
MM	101.9	14.9	106.2	16.1
GT	104.4	14.8	104.8	14.9
EL	104.1	14.3	104.7	15.0
CL	106.1	13.3	103.0	14.0
Air Force				
M	53.4	23.2	56.6	25.5
A	62.7	20.4	58.8	21.9
G	57.4	22.4	57.1	24.0
E	58.5	21.5	59.4	24.4

5.2.1   '80 Standard Impact

The tables in Appendix F can be used to determine the consequences on qualification rates of applying existing '80 cut scores to composite scores reported on the '97 scale. Each table displays the composite score C (column 1), the percentage P scoring at the given score on the '80 scale (column 2), the percentage Q scoring at or above the given score on the '80 scale (column 3), the percentage P scoring at the given score on the '97 scale (column 4), and the percentage Q scoring at or above the given score on the '97 scale (column 5).

Suppose for example that the Army uses a cut score on the '80 scale for its GT composite of "104". (See Table F.1.) As indicated, this cut score qualifies about 49.8 percent of Regular Army applicants on the '80 scale, but only qualifies about 46.6% of applicants on the '97 scale. Consequently, if the Army chose to apply the same cut of 104 across two groups scored on two different scales, it could expect to qualify about 3.2% fewer applicants on the '97 scale ($46.6 - 49.8 = -3.2\%$) than on the '80 scale. This same approach can be used to assess the impact of other '80 cut scores applied to the same or other composites.

5.2.2   '97 Standard Determination

The tables in Appendix F can also be used to determine the '97 cut scores that provide target qualification rates based on existing '80 cut scores. Continuing with the example of Section 5.2.1, suppose, as before, that the Army applies a cut score on the '80 scale for its GT composite of "104", qualifying about 49.8% of Army applicants (Table F.1). By examining the qualification rates associated with the '97 score scale (column 5), we see that a score of 103 on the '97 scale provides nearly the same qualification rate (49.3%) as a score of 104 on the '80 scale. This qualification-rate equivalence relation is indicated in the last column of row 104. Thus, the last column displays the '97 cut score that will provide nearly the same qualification rate (when applied to scores reported on the '97 scale) as the existing '80 cut score (column 1) applied to scores reported on the '80 scale. The remaining tables of Appendix F provide the same information for other Service classification composites.

6

Implementation Options

6.1 Implementation Option Overview

At least four options exist with regard to AFQT score reporting and standard (or cut score) specification (Table 6.1). These options differ along three dimensions. First, AFQT scores can be reported on either the '80 or '97 scales (denoted by $\text{AFQT}_{'80}$ and $\text{AFQT}_{'97}$, respectively). Second, cut or qualification scores can be either specified according to the '80 scale ($C_{'80}$) or translated from the '80 scale to the '97 scale ($C_{'80 \Longrightarrow '97}$). Third, quality goals can be defined in four ways, some ways raising predicted performance levels, and other ways keeping predicted performance at their current levels.

With regard to quality goals (Table 6.1, last column), the four options are summarized with probability notation, where:

TABLE 6.1. AFQT Reporting, Standards, and Quality-Goal Options

Option	Reported Scores	Cut Score Standards	Quality Goal
A	$\text{AFQT}_{'80}$	$C_{'80}$	$P(\text{AFQT}_{'80} \geq 50) \geq 0.60$
B	$\text{AFQT}_{'97}$	$C_{'80 \Longrightarrow '97}$	$P(\text{AFQT}_{'97} \geq 47) \geq 0.60$
C	$\text{AFQT}_{'97}$	$C_{'80}$	$P(\text{AFQT}_{'97} \geq 50) \geq 0.60$
D	$\text{AFQT}_{'97}$	$C_{'80}$	$P(\text{AFQT}_{'97} \geq 50) \geq 0.60 - X$

- $P(\text{AFQT}_{`80} \geq 50) \geq 0.60$

  indicates that the proportion of accessions scoring at or above 50 is greater than or equal to 0.60 (or 60%), with AFQT scores reported on the '80 scale;

- $P(\text{AFQT}_{`97} \geq 47) \geq 0.60$

  indicates that the proportion of accessions scoring at or above 47 is greater than or equal to 0.60 (or 60%), with AFQT scores reported on the '97 scale;

- $P(\text{AFQT}_{`97} \geq 50) \geq 0.60$

  indicates that the proportion of accessions scoring at or above 50 is greater than or equal to 0.60 (or 60%), with AFQT scores reported on the '97 scale; and

- $P(\text{AFQT}_{`97} \geq 50) \geq 0.60 - X$

  indicates that the proportion of accessions scoring at or above 50 is greater than or equal to $0.60 - X$ (where X is some non-zero proportion), with AFQT scores reported on the '97 scale.

6.2 Effects on Nominal and Predictive Standards

It is useful to make a distinction between two types of standards when characterizing the different implementation options.

- *Nominal Standards*

  These standards refer to the numerical values assigned to entrance cut scores and to upper mental group goals. For example, a score of "31" (used to qualify applicants for military Service) is a nominal entrance standard. The percentage "60%" is also a nominal standard, denoting the quality goal of the percentage scoring in the upper mental AFQT Categories I–IIIA (i.e., 50 and above). These values (31 and 60%) are nominal in the sense that they do not have any inherent meaning.

TABLE 6.2. Implementation Option Impact

	Nominal Standards		Predictive Standards	
Option	Entrance Standards	Upper Mental Group	Entrance Standards	Upper Mental Group
A	No Change	No Change	No Change	No Change
B	Lowered	Lowered	No Change	No Change
C	No Change	No Change	Higher Perf.	Higher Perf.
D	No Change	Lowered	Higher Perf.	No Change

Rather, their meaning must be interpreted relative to a specific score scale (in this instance relative to either the '80 or '97 scales). That is, by lowering the nominal cut score from 31 to 26 and applying each to scores reported on different scales, it is not possible to determine how future performance of qualifying applicants might change without first knowing how the corresponding score scales relate to one another.

- *Predictive Standards*

  These standards refer to the expected future performance of applicants or accessions. Typically, this expectation is made in regard to training performance, job performance, or attrition. Changing cut scores, quality goals, or score scales can have different effects on the expected performance of the qualifying or upper mental groups.

The impact of each implementation option on both nominal and predictive standards is summarized in Table 6.2 and is discussed in more detail below.

6.3   Option Examples and Outcomes

Options A through D differ in their impact on the quality of Service accessions and on the expected numbers of qualified applicants. Each option is further detailed below.

6.3.1   Option A

Option A (with reported $AFQT_{'80}$ and cut scores $C_{'80}$ both on the '80 scale) provides a useful baseline for assessing the consequences of

alternate scales and standards. This represents the current standards and reporting used by the Services. For example, this option would be represented by a Service with the following policy regarding scores reported on the '80 score scale:

- *Entrance Standard:* No applicants admitted with
  $\text{AFQT}_{'80} < 31$.

- *Quality Goal:* At least 60% of accessions with $\text{AFQT}_{'80} \geq 50$.

6.3.2   Option B

This option qualifies applicants with the same expected (or predicted) performance as those selected in Option A (Table 6.2). It also maintains the same expected performance levels of those classified in the upper mental groups. In order to qualify applicants with the same expected performance levels across the '80 and '97 scales, cuts applied to scores reported on the '97 scale must be adjusted downward (in most cases) from those applied to scores reported on the '80 scale. These adjustments are illustrated in Tables 4.6 and 4.7. Continuing with the example from Section 6.3.1, the new cut scores become

$$
\begin{aligned}
C_{'80 \Longrightarrow '97}(31) &= 26 \\
C_{'80 \Longrightarrow '97}(50) &= 47 \,,
\end{aligned}
$$

and the new entrance standard and quality goal are adjusted accordingly:

- *Entrance Standard:* No applicants admitted with
  $\text{AFQT}_{'97} < 26$.

- *Quality Goal:* At least 60% of accessions with $\text{AFQT}_{'97} \geq 47$.

In addition to maintaining equivalent (expected) performance levels across scales, this option has the added benefit of maintaining the same approximate numbers of qualified and high-mental group applicants as provided by Option A. Although the lower nominal standards associated with the '97 scale (26 versus 31; 47 versus 50) might appear at face value to represent a lowering of standards (Table 6.2), these cut scores in reality maintain the same predicted performance

levels of Option A. The '97 qualification scores must be lowered to compensate for the lower scores reported on the '97 scale.[1] (See Sections 4.3 and 4.6.)

6.3.3   Option C

This option applies the nominal qualification standards based on the '80 scale to scores reported on the '97 scale (Table 6.2). This option qualifies applicants with higher expected (or predicted) performance compared to those qualified in Options A and B (Table 6.2). It also increases the expected performance levels of those in the upper mental groups (i.e., I–IIIA). Continuing with the example from Section 6.3.1, the new entrance standard and quality-goal are as follows:

- *Entrance Standard:* No applicants admitted with $\text{AFQT}_{97} < 31$.

- *Quality Goal:* At least 60% of accessions with $\text{AFQT}_{97} \geq 50$.

Although this option provides increased (expected) performance levels (relative to the '80 scale), this comes at a cost: Fewer applicants will be expected to qualify, and fewer applicants would be expected to fall in the upper mental groups I–IIIA, as compared to either Option A or B. Although the equivalent nominal qualification scores associated with the '80 and '97 scales might appear at face value to represent equivalent standards across score scales (Table 6.2), these cut scores in reality increase predicted performance levels over those of Options A and B. Since applicant scores on the '97 scale have been lowered but the cut scores have not, those qualifying on the basis of their '97 scale-scores would have higher expected performance than those qualifying under Options A or B.

6.3.4   Option D

For entrance standards, this option applies the nominal qualification standards based on the '80 scale to scores reported on the '97 scale. Consequently, those qualifying for Service would have higher

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[1] This score decrement is a result of the increased performance levels of the PAY97 sample relative to the PAY80 sample. (See Section 2.1.)

expected (or predicted) performance compared to those qualified under either Option A or B (Table 6.2). However, this option maintains the existing (Option A) expected performance levels among those in the upper mental groups (i.e., I–IIIA). Continuing with the example from Section 6.3.1, the revised entrance standard and quality-goal are as follows:

- *Entrance Standard:* No applicants admitted with
  $AFQT_{97} < 31$.

- *Quality Goal:* At least $60 - X$ percent of accessions with
  $AFQT_{97} \geq 50$,

where X is some positive integer value. Although this option provides increased (expected) performance levels (relative to the '80 scale), this comes at a cost: Fewer applicants would be expected to qualify for entrance. However, the likelihood of satisfying the quality goal (based on the number of accessions in Categories I–IIIA) for any given applicant group would remain constant across this and the existing Option A. In addition, the expected performance levels of those in the upper mental groups (i.e., I–IIIA) would also remain constant across this and Option A. This would happen even though the nominal quality goal has been lowered by X percentage points. Note that in order to maintain existing expected performance levels among upper mental group applicants, this percentage goal must be lowered to compensate for the lower AFQT scores associated with the '97 score-scale.

6.4   Discussion

The choice between Options B, C, and D requires a consideration of cost-benefit trade offs between increased performance on the one hand, and a potentially smaller pool of qualified applicants on the other. Arguments in favor of higher expected performance gained under Options C and D can be made on the basis of two trends: one based on anticipated shifts in job-complexity levels, and the other based on past changes in youth aptitude levels. First, over the past two decades, the aptitude levels of American youth have increased, as evidenced by the shift in AFQT performance between 1980 and

1997 (Table 2.2). Second, in the near and mid terms, the complexity levels of military jobs are also likely to increase. In order to maintain a sufficient number of able personnel in increasingly complex military occupations, a larger number of high-quality youth should be recruited. With the finding that more high-aptitude youth exist in the youth population than was previously believed (based on a comparison between PAY80 and PAY97 performance levels), this course of action may be more feasible than previously believed.

As mentioned, Options C and D raise standards at the possible expense of reducing the size of the pool of qualified applicants, or at the expense of making the quality goal (based on the numbers of accessions in the categories I–IIIA) more difficult to meet. In addition to the analysis based on CY2002 applicants (Chapter 4), the degree of reduction can also be estimated from historical data using an approach described below.

If enlistment aptitude standards are effectively raised (Options C and D), then it is useful to assess the impact of these raised standards on the expected numbers of qualified applicants. One approach for conducting such an assessment takes proposed cut scores (to be applied to scores reported on the '97 scale) and translates them back to the '80 scale where they can be applied to a recent sample of applicants whose scores were reported on the '80 scale. This approach provides an estimate of the numbers of applicants who would have qualified had their scores been reported on the '97 scale and judged relative to the proposed cut scores.

Table E.1 (Appendix E) provides a conversion of AFQT scores from the '97 metric to the '80 metric. For example, the percentage of applicants with $\text{AFQT}_{'97} \geq 31$ is about 79.1% (column 5). By finding the closest percent value on the '80 scale (column 3), we see that about 79.7% of the applicants have $\text{AFQT}_{'80} \geq 35$. Thus, a cut score of 31 on the '97 scale would be expected to qualify about the same percentage of applicants as a cut score of 35 on the '80 scale. This is noted in the last column of row 31. Continuing with the example presented earlier, the impact of higher standards of Option C on qualification rates and quality goals can be assessed by applying the following cut scores to historical data reported on the '80 scale

$$C_{'97 \Longrightarrow '80}(31) \quad = \quad 35$$
$$C_{'97 \Longrightarrow '80}(50) \quad = \quad 53$$

as indicated below:

- *Entrance Standard:* No applicants admitted with
  $\text{AFQT}_{'80} < 35$.

- *Quality Goal:* At least 60% of accessions with $\text{AFQT}_{'80} > 52$.

An analysis of this type allows comparisons between Option B (which maintains qualification rates across '80 and '97 scales) and Option C (which raises expected performance but lowers qualification rates). By an examination of recent historical data, the Services can assess their ability to meet recruiting targets in the near and mid terms with the higher aptitude standards set by Option C. The Services may want to use this approach to examine the likelihood of meeting future recruiting goals by analyzing several years of historical data that span a range of economic and other trends affecting enlistment propensity. Note that this analysis would need to be tailored by each Service to include the full range of aptitude and other enlistment factors that uniquely define the respective Service's qualification standards. A similar approach using historical data can be used for assessing the impact of Option D.

References

Bock, R. D., & Moore, E. G. J. (1984). *1980 profile of American youth: Demographic influences on ASVAB test performance* (Tech. Rep.). Office of Assistant Secretary of Defense (Manpower, Installations, and Logistics).

Bock, R. D., & Zimowski, M. (in preparation). *1997 profile of American youth: Demographic influences on ASVAB test performance* (Tech. Rep.). Chicago, IL: National Opinion Research Center.

Frankel, M. R., & McWilliams, H. A. (1981). *The profile of American youth: Technical sampling report* (Tech. Rep.). Chicago, IL: National Opinion Research Center.

Hetter, R. D., Segall, D. O., & Bloxom, B. M. (1997). Evaluating item calibration medium in computerized adaptive testing. In W. A. Sands, B. K. Waters, & J. R. McBride (Eds.), *Computerized adaptive testing: From inquiry to operation* (pp. 161–167). Washington, DC: American Psychological Association.

Kolen, M. J., & Brennan, R. L. (1995). *Test equating: Methods and practices.* New York: Springer-Verlag.

Lord, F. M. (1980). *Applications of item response theory to practical testing problems.* Hillsdale, NJ: Lawrence Erlbaum Associates.

MaCurdy, T., & Vytlacil, E. (2003). *Establishing new norms for the AFQT using data from PAY97* (Tech. Rep.). Stanford, CA: Stanford University, Department of Economics.

Maier, M. H. (1993). *Military aptitude testing: The past fifty years* (Tech. Rep. No. 93-007). Seaside, CA: Defense Manpower Data Center.

Maier, M. H., & Sims, W. H. (1986). *The ASVAB score scales: 1980 and World War II* (Tech. Rep. No. CNR 116). Alexandria, VA: Center for Naval Analyses.

Moore, W., Pedlow, S., & Wolter, K. (1999). *Profile of American youth 1997 (PAY97): Technical sampling report* (Tech. Rep.). Chicago, IL: National Opinion Research Center.

Moreno, K. E., & Segall, D. O. (1997). Reliability and construct validity of CAT-ASVAB. In W. A. Sands, B. K. Waters, & J. R. McBride (Eds.), *Computerized adaptive testing: From inquiry to operation* (pp. 169–174). Washington, DC: American Psychological Association.

Sands, W. A., Waters, B. K., & McBride, J. R. (Eds.). (1997). *Computerized adaptive testing: From inquiry to operation.* Washington, DC: American Psychological Association.

Segall, D. O. (1997). Equating the CAT-ASVAB. In W. A. Sands, B. K. Waters, & J. R. McBride (Eds.), *Computerized adaptive testing: From inquiry to operation* (pp. 181–198). Washington, DC: American Psychological Association.

Segall, D. O. (1999, September). *IOT&E results: CAT-ASVAB forms 03d & 04d.* Briefing presented at the meeting of the Defense Advisory Committee on Military Personnel Testing, Washington, D.C.

Segall, D. O. (2000, September). *Anchoring study status.* Briefing presented at the meeting of the Defense Advisory Committee on Military Personnel Testing, Newport, RI.

Segall, D. O., & Moreno, K. E. (1999). Development of the computerized adaptive testing version of the Armed Services Vocational Aptitude Battery. In F. Drasgow & J. B. Olson-Buchanan (Eds.), *Innovations in computerized assessment.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Segall, D. O., Moreno, K. E., Bloxom, B. M., & Hetter, R. D. (1997). Psychometric procedures for administering CAT-ASVAB. In W. A. Sands, B. K. Waters, & J. R. McBride (Eds.), *Computerized adaptive testing: From inquiry to operation* (pp. 131–140). Washington, DC: American Psychological Association.

Segall, D. O., Moreno, K. E., & Hetter, R. D. (1997). Item pool development and evaluation. In W. A. Sands, B. K. Waters, & J. R. McBride (Eds.), *Computerized adaptive testing: From inquiry to operation* (pp. 117–130). Washington, DC: American Psychological Association.

Segall, D. O., & Thomasson, G. L. (2001, October). *Scoring, equating, and scaling analyses: P&P-ASVAB forms 23-27.* Briefing presented at the meeting of the Defense Advisory Committee on Military Personnel Testing, San Diego, CA.

Sims, W. H. (in preparation). *Development of the 1997 student testing program norms* (Tech. Rep.). Seaside, CA: Defense Manpower Data Center.

van der Linden, W. J., & Glas, C. A. W. (Eds.). (2000). *Computerized adaptive testing: Theory and practice.* Boston: Kluwer.

Wainer, H. (Ed.). (2000). *Computerized adaptive testing: A primer* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

Wolfe, J. H., Moreno, K. E., & Segall, D. O. (1997). Evaluating the predictive validity of CAT-ASVAB. In W. A. Sands, B. K. Waters, & J. R. McBride (Eds.), *Computerized adaptive testing: From inquiry to operation* (pp. 175–179). Washington, DC: American Psychological Association.

Appendix A
Army Supplement

TABLE A.1. Army Composite Weights ('80 Metric)

	GS	AR	AS	MK	MC	EI	VE	Constant
CL	.00000	.72448	.07998	.55550	.10706	.07994	.71014	−12.85471
CO	.18428	.31335	.43199	.58940	.35082	.20235	.31154	−19.18658
EL	.07647	.41509	.38240	.45180	.23783	.30353	.50746	−18.72901
FA	.14019	.40246	.37852	.56254	.39385	.16691	.32991	−18.71933
GM	.21608	.43480	.52538	.41700	.26436	.30311	.21889	−18.98138
MM	.05343	.30138	.88831	.25702	.35001	.30237	.21049	−18.15045
OF	.13160	.50414	.52394	.31436	.33310	.19771	.37426	−18.95577
SC	.01142	.40419	.25777	.58996	.22784	.32507	.54009	−17.81739
ST	.12016	.46735	.22971	.44773	.28646	.14781	.64276	−17.09884

TABLE A.2. Army Regular AFQT Distributions for 1980 and 1997 Scales

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
1	0.17	100.00	0.13	100.00
2	0.08	99.83	0.22	99.87
3	0.09	99.75	0.28	99.65
4	0.20	99.65	0.75	99.37
5	0.18	99.45	0.43	98.62
6	0.23	99.27	0.54	98.19
7	0.19	99.04	0.71	97.65
8	0.33	98.85	0.41	96.94
9	0.25	98.52	1.02	96.53
10	0.28	98.27	0.57	95.51
11	0.32	97.99	0.94	94.94
12	0.37	97.67	0.34	94.00
13	0.67	97.30	0.75	93.66
14	0.24	96.63	0.41	92.91
15	0.54	96.39	0.87	92.50
16	0.57	95.85	0.96	91.63
17	0.65	95.28	1.10	90.66
18	0.72	94.63	0.54	89.57
19	0.80	93.91	1.19	89.03
20	0.41	93.12	0.63	87.84
21	0.89	92.70	0.68	87.21
22	0.99	91.81	1.40	86.52
23	1.11	90.82	0.72	85.13
24	0.58	89.71	0.80	84.40
25	1.30	89.13	1.69	83.60
26	0.63	87.83	0.89	81.91
27	1.41	87.20	0.95	81.02
28	0.77	85.79	0.96	80.07
29	1.55	85.02	0.94	79.11
30	0.83	83.48	0.96	78.17
31	0.89	82.65	1.04	77.20
32	1.88	81.76	1.07	76.17
33	0.99	79.88	1.12	75.09
34	0.99	78.89	1.13	73.98

Note. See Section 4.2 for explaination of contents.

TABLE A.2. Regular Army AFQT Distributions for 1980 and 1997 Scales (continued)

| AFQT | 1980 | | 1997 | |
Score	%	Qual.	%	Qual.
35	2.11	77.90	2.35	72.84
36	1.12	75.79	1.17	70.50
37	1.10	74.67	0.00	69.33
38	1.14	73.57	1.23	69.33
39	1.16	72.43	1.28	68.09
40	1.25	71.27	1.32	66.82
41	1.25	70.02	1.32	65.50
42	2.59	68.76	1.25	64.18
43	1.35	66.17	1.32	62.94
44	1.26	64.83	1.36	61.62
45	1.35	63.56	1.40	60.25
46	1.37	62.21	1.43	58.85
47	1.43	60.84	1.34	57.42
48	1.35	59.41	1.34	56.08
49	1.39	58.05	1.36	54.74
50	1.40	56.66	1.42	53.38
51	1.43	55.26	1.40	51.96
52	1.44	53.82	1.42	50.55
53	2.87	52.39	1.42	49.13
54	1.48	49.52	1.42	47.71
55	1.44	48.04	1.40	46.29
56	1.54	46.60	1.39	44.89
57	1.43	45.06	1.40	43.49
58	1.51	43.63	0.00	42.09
59	1.41	42.12	1.41	42.09
60	0.00	40.72	1.39	40.68
61	1.47	40.72	1.34	39.29
62	1.39	39.24	1.32	37.95
63	1.45	37.85	1.33	36.63
64	1.35	36.40	1.37	35.31
65	1.41	35.05	0.00	33.93
66	1.39	33.64	1.27	33.93
67	1.36	32.25	1.25	32.66
68	1.30	30.89	1.23	31.41
69	1.37	29.59	1.17	30.18

Note. See Section 4.2 for explaination of contents.

TABLE A.2. Regular Army AFQT Distributions for 1980 and 1997 Scales (continued)

AFQT Score	1980 %	1980 Qual.	1997 %	1997 Qual.
70	1.27	28.22	2.38	29.01
71	1.27	26.94	1.19	26.64
72	1.20	25.67	1.12	25.44
73	1.21	24.47	1.08	24.32
74	1.16	23.26	1.07	23.24
75	1.16	22.10	1.04	22.17
76	1.08	20.94	1.00	21.13
77	1.12	19.86	0.95	20.13
78	1.06	18.74	0.97	19.18
79	0.99	17.67	0.89	18.21
80	1.97	16.69	0.89	17.32
81	0.91	14.71	0.84	16.44
82	0.90	13.80	1.66	15.59
83	0.00	12.90	0.75	13.93
84	1.74	12.90	0.74	13.18
85	0.83	11.16	1.42	12.44
86	0.77	10.34	0.67	11.02
87	0.71	9.57	0.61	10.35
88	0.71	8.85	1.17	9.74
89	0.73	8.15	0.55	8.57
90	0.64	7.41	1.06	8.02
91	0.63	6.78	0.49	6.96
92	0.58	6.14	0.87	6.47
93	0.60	5.56	1.20	5.60
94	0.57	4.96	0.71	4.40
95	0.58	4.39	0.87	3.69
96	0.50	3.80	0.75	2.82
97	0.55	3.30	0.76	2.07
98	0.41	2.76	0.60	1.31
99	2.35	2.35	0.71	0.71

Note. See Section 4.2 for explaination of contents.

TABLE A.3. Army Reserve AFQT Distributions for 1980 and 1997 Scales

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
1	0.14	100.00	0.11	100.00
2	0.10	99.86	0.19	99.89
3	0.09	99.76	0.23	99.70
4	0.15	99.67	0.65	99.47
5	0.18	99.52	0.38	98.82
6	0.20	99.34	0.46	98.44
7	0.12	99.15	0.54	97.98
8	0.30	99.03	0.34	97.44
9	0.22	98.73	0.87	97.10
10	0.28	98.51	0.48	96.23
11	0.24	98.24	0.81	95.75
12	0.34	98.00	0.33	94.94
13	0.55	97.66	0.63	94.61
14	0.26	97.11	0.35	93.99
15	0.47	96.85	0.70	93.63
16	0.48	96.38	0.77	92.94
17	0.50	95.90	0.87	92.17
18	0.58	95.39	0.51	91.30
19	0.71	94.81	1.08	90.79
20	0.33	94.10	0.50	89.71
21	0.78	93.77	0.60	89.21
22	0.88	92.99	1.20	88.61
23	0.92	92.10	0.64	87.40
24	0.49	91.18	0.75	86.76
25	1.08	90.69	1.56	86.01
26	0.53	89.61	0.74	84.46
27	1.20	89.07	0.82	83.71
28	0.67	87.87	0.84	82.89
29	1.34	87.20	0.92	82.05
30	0.77	85.85	0.97	81.14
31	0.84	85.08	0.95	80.16
32	1.68	84.24	0.97	79.21
33	0.94	82.56	1.03	78.24
34	0.86	81.62	1.07	77.22

Note. See Section 4.2 for explaination of contents.

TABLE A.3. Army Reserve AFQT Distributions for 1980 and 1997 Scales (continued)

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
35	1.91	80.76	2.08	76.15
36	1.04	78.86	1.12	74.07
37	1.00	77.82	0.00	72.95
38	1.11	76.82	1.10	72.95
39	1.02	75.71	1.12	71.85
40	1.11	74.69	1.23	70.73
41	1.15	73.58	1.16	69.51
42	2.29	72.43	1.17	68.34
43	1.12	70.14	1.29	67.17
44	1.22	69.02	1.27	65.88
45	1.32	67.80	1.39	64.61
46	1.22	66.49	1.42	63.22
47	1.48	65.27	1.18	61.80
48	1.31	63.78	1.24	60.62
49	1.30	62.48	1.31	59.38
50	1.24	61.18	1.24	58.08
51	1.31	59.93	1.43	56.83
52	1.34	58.62	1.30	55.41
53	2.75	57.29	1.37	54.10
54	1.42	54.54	1.43	52.73
55	1.41	53.11	1.42	51.30
56	1.54	51.70	1.40	49.88
57	1.35	50.16	1.37	48.48
58	1.46	48.81	0.00	47.11
59	1.26	47.35	1.29	47.11
60	0.00	46.09	1.39	45.82
61	1.46	46.09	1.31	44.44
62	1.40	44.62	1.33	43.13
63	1.51	43.22	1.40	41.80
64	1.52	41.70	1.24	40.41
65	1.40	40.19	0.00	39.17
66	1.20	38.78	1.28	39.17
67	1.48	37.58	1.29	37.88
68	1.32	36.10	1.39	36.59
69	1.40	34.79	1.28	35.21

Note. See Section 4.2 for explaination of contents.

TABLE A.3. Army Reserve AFQT Distributions for 1980 and 1997 Scales (continued)

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
70	1.39	33.39	2.41	33.92
71	1.30	32.00	1.21	31.51
72	1.30	30.70	1.14	30.31
73	1.32	29.40	1.11	29.16
74	1.21	28.08	1.17	28.05
75	1.26	26.87	1.11	26.89
76	1.25	25.61	1.23	25.78
77	1.23	24.35	1.06	24.56
78	1.04	23.13	1.04	23.50
79	1.19	22.08	1.07	22.46
80	2.25	20.89	1.02	21.39
81	1.09	18.63	0.95	20.37
82	1.17	17.54	1.79	19.42
83	0.00	16.37	0.94	17.63
84	2.02	16.37	0.92	16.69
85	1.04	14.35	1.60	15.77
86	0.96	13.31	0.88	14.17
87	0.93	12.35	0.77	13.29
88	0.91	11.42	1.42	12.53
89	0.84	10.51	0.70	11.11
90	0.85	9.67	1.36	10.41
91	0.95	8.82	0.66	9.05
92	0.77	7.88	1.02	8.39
93	0.76	7.11	1.47	7.37
94	0.68	6.35	0.84	5.90
95	0.64	5.67	1.23	5.06
96	0.67	5.03	0.94	3.83
97	0.76	4.35	0.97	2.90
98	0.49	3.59	0.87	1.92
99	3.10	3.10	1.05	1.05

Note. See Section 4.2 for explaination of contents.

TABLE A.4. Army Guard AFQT Distributions for 1980 and 1997 Scales

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
1	0.31	100.00	0.25	100.00
2	0.19	99.69	0.52	99.75
3	0.21	99.50	0.76	99.23
4	0.43	99.29	1.88	98.47
5	0.44	98.85	1.07	96.60
6	0.61	98.42	1.15	95.52
7	0.48	97.80	1.28	94.37
8	0.84	97.32	0.69	93.09
9	0.58	96.49	1.37	92.40
10	0.59	95.91	0.80	91.03
11	0.63	95.31	1.32	90.23
12	0.77	94.69	0.47	88.91
13	1.19	93.92	1.01	88.44
14	0.39	92.73	0.53	87.43
15	0.79	92.34	1.08	86.90
16	0.79	91.55	1.16	85.81
17	0.86	90.76	1.33	84.65
18	0.96	89.90	0.66	83.33
19	1.06	88.95	1.48	82.67
20	0.53	87.88	0.78	81.19
21	1.23	87.36	0.76	80.41
22	1.25	86.12	1.51	79.65
23	1.32	84.87	0.80	78.13
24	0.72	83.56	0.85	77.33
25	1.54	82.84	1.69	76.48
26	0.73	81.30	0.84	74.79
27	1.58	80.57	1.02	73.95
28	0.75	78.99	1.00	72.93
29	1.81	78.24	0.98	71.93
30	0.87	76.43	1.05	70.95
31	0.86	75.56	1.02	69.90
32	1.91	74.70	1.06	68.88
33	1.05	72.80	1.19	67.82
34	1.04	71.75	1.17	66.63

Note. See Section 4.2 for explaination of contents.

TABLE A.4. Army Guard AFQT Distributions for 1980 and 1997 Scales (continued)

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
35	2.06	70.71	2.20	65.46
36	1.17	68.65	1.15	63.25
37	1.14	67.47	0.00	62.11
38	1.21	66.34	1.21	62.11
39	1.22	65.13	1.17	60.89
40	1.17	63.92	1.13	59.72
41	1.19	62.74	1.18	58.59
42	2.30	61.56	1.19	57.40
43	1.28	59.26	1.15	56.22
44	1.17	57.97	1.20	55.07
45	1.20	56.80	1.23	53.87
46	1.15	55.61	1.20	52.64
47	1.22	54.46	1.20	51.44
48	1.28	53.24	1.18	50.24
49	1.17	51.96	1.28	49.06
50	1.23	50.79	1.19	47.78
51	1.25	49.56	1.16	46.59
52	1.23	48.31	1.13	45.44
53	2.35	47.07	1.17	44.31
54	1.20	44.72	1.11	43.14
55	1.20	43.52	1.23	42.03
56	1.30	42.33	1.15	40.80
57	1.21	41.02	1.14	39.65
58	1.24	39.81	0.00	38.51
59	1.15	38.57	1.16	38.51
60	0.00	37.42	1.24	37.35
61	1.27	37.42	1.09	36.11
62	1.13	36.15	1.17	35.02
63	1.20	35.02	1.12	33.85
64	1.21	33.83	1.05	32.73
65	1.19	32.61	0.00	31.68
66	1.11	31.42	1.10	31.68
67	1.25	30.31	1.10	30.58
68	1.11	29.06	1.13	29.48
69	1.16	27.95	1.11	28.36

Note. See Section 4.2 for explaination of contents.

TABLE A.4. Army Guard AFQT Distributions for 1980 and 1997 Scales (continued)

| AFQT | 1980 | | 1997 | |
Score	%	Qual.	%	Qual.
70	1.07	26.79	2.02	27.25
71	1.17	25.72	0.97	25.23
72	1.04	24.55	1.00	24.26
73	1.08	23.51	1.02	23.26
74	0.97	22.43	0.92	22.24
75	1.06	21.47	0.86	21.32
76	0.97	20.41	0.91	20.46
77	1.03	19.43	0.83	19.55
78	0.96	18.40	0.87	18.72
79	0.95	17.44	0.78	17.85
80	1.79	16.48	0.80	17.07
81	0.90	14.69	0.84	16.27
82	0.87	13.79	1.63	15.43
83	0.00	12.92	0.73	13.80
84	1.68	12.92	0.73	13.07
85	0.83	11.23	1.28	12.34
86	0.74	10.40	0.65	11.06
87	0.72	9.66	0.66	10.40
88	0.78	8.94	1.25	9.74
89	0.70	8.16	0.58	8.49
90	0.62	7.46	0.96	7.91
91	0.65	6.84	0.47	6.95
92	0.54	6.19	0.94	6.48
93	0.69	5.64	1.19	5.54
94	0.54	4.95	0.68	4.35
95	0.55	4.42	0.88	3.67
96	0.45	3.87	0.75	2.79
97	0.56	3.42	0.70	2.04
98	0.39	2.86	0.65	1.33
99	2.47	2.47	0.68	0.68

Note. See Section 4.2 for explaination of contents.

TABLE A.5. Subgroup Qualification Rates (Army Regular)

Scale	Qualification Rates[a]						
	White (N = 99,355)						
1980	7.7	(93)	44.3	(65)	67.4	(50)	74.1	(45)
1997	7.8	(93)	43.3	(65)	64.3	(50)	71.1	(45)
1997	7.8	(93)	44.9	(64)	68.4	(47)	74.9	(42)
1980	81.0	(40)	86.4	(35)	90.0	(31)	96.4	(21)
1997	77.3	(40)	82.4	(35)	85.9	(31)	93.1	(21)
1997	80.5	(36)	86.6	(30)	89.4	(26)	96.3	(15)
	Black (N = 31,034)						
1980	1.2	(93)	17.1	(65)	36.4	(50)	43.9	(45)
1997	1.2	(93)	15.9	(65)	32.7	(50)	40.1	(45)
1997	1.2	(93)	16.9	(64)	37.0	(47)	44.5	(42)
1980	53.5	(40)	62.9	(35)	70.3	(31)	87.8	(21)
1997	47.5	(40)	55.6	(35)	61.9	(31)	78.0	(21)
1997	52.3	(36)	63.3	(30)	69.1	(26)	87.5	(15)
	Hispanic (N = 18,892)						
1980	1.4	(93)	18.8	(65)	38.0	(50)	45.3	(45)
1997	1.3	(93)	17.0	(65)	34.0	(50)	41.2	(45)
1997	1.3	(93)	18.0	(64)	38.1	(47)	45.5	(42)
1980	54.0	(40)	62.4	(35)	69.0	(31)	84.1	(21)
1997	48.5	(40)	56.0	(35)	61.7	(31)	75.7	(21)
1997	53.0	(36)	63.0	(30)	68.2	(26)	83.9	(15)
	Other (N = 8,880)						
1980	5.2	(93)	29.4	(65)	47.1	(50)	52.9	(45)
1997	5.2	(93)	28.0	(65)	44.0	(50)	49.7	(45)
1997	5.2	(93)	29.0	(64)	47.3	(47)	53.4	(42)
1980	60.6	(40)	67.8	(35)	72.9	(31)	86.4	(21)
1997	55.8	(40)	62.0	(35)	66.8	(31)	78.3	(21)
1997	59.7	(36)	67.7	(30)	71.8	(26)	86.1	(15)

Note. See Section 4.5 for explaination of contents.

[a]AFQT cut-scores are provided in parentheses.

TABLE A.6. Subgroup Qualification Rates (Army Reserve)

Scale	Qualification Rates[a]							
White (N = 20,864)								
1980	10.1	(93)	50.7	(65)	72.2	(50)	78.0	(45)
1997	10.6	(93)	50.0	(65)	69.5	(50)	75.5	(45)
1997	10.6	(93)	51.4	(64)	73.0	(47)	78.6	(42)
1980	83.8	(40)	88.4	(35)	91.5	(31)	97.0	(21)
1997	80.6	(40)	85.0	(35)	88.0	(31)	94.2	(21)
1997	83.3	(36)	88.8	(30)	91.1	(26)	96.9	(15)
Black (N = 8,022)								
1980	1.4	(93)	22.5	(65)	44.2	(50)	52.6	(45)
1997	1.4	(93)	21.3	(65)	40.6	(50)	48.6	(45)
1997	1.4	(93)	22.3	(64)	44.8	(47)	53.2	(42)
1980	61.8	(40)	71.0	(35)	77.6	(31)	91.6	(21)
1997	56.5	(40)	63.8	(35)	69.9	(31)	84.1	(21)
1997	61.0	(36)	71.3	(30)	76.4	(26)	91.3	(15)
Hispanic (N = 4,251)								
1980	2.2	(93)	22.4	(65)	41.8	(50)	49.3	(45)
1997	2.2	(93)	20.8	(65)	37.8	(50)	44.6	(45)
1997	2.2	(93)	21.7	(64)	41.9	(47)	49.6	(42)
1980	57.4	(40)	64.5	(35)	70.9	(31)	84.5	(21)
1997	52.3	(40)	59.1	(35)	64.1	(31)	77.4	(21)
1997	56.4	(36)	65.3	(30)	70.2	(26)	84.5	(15)
Other (N = 2,125)								
1980	8.7	(93)	39.5	(65)	55.8	(50)	61.7	(45)
1997	8.5	(93)	37.3	(65)	52.8	(50)	58.6	(45)
1997	8.5	(93)	38.4	(64)	56.0	(47)	62.4	(42)
1980	68.7	(40)	75.3	(35)	78.9	(31)	88.6	(21)
1997	64.4	(40)	70.1	(35)	74.4	(31)	82.5	(21)
1997	68.3	(36)	75.1	(30)	78.4	(26)	88.3	(15)

Note. See Section 4.5 for explaination of contents.

[a]AFQT cut-scores are provided in parentheses.

TABLE A.7. Subgroup Qualification Rates (Army Guard)

Scale	Qualification Rates[a]							
White (N = 33,979)								
1980	7.8	(93)	42.0	(65)	62.4	(50)	68.6	(45)
1997	7.6	(93)	40.9	(65)	59.3	(50)	65.8	(45)
1997	7.6	(93)	42.2	(64)	63.3	(47)	69.4	(42)
1980	75.6	(40)	81.7	(35)	85.9	(31)	94.3	(21)
1997	71.7	(40)	77.2	(35)	81.2	(31)	89.7	(21)
1997	75.0	(36)	82.1	(30)	85.4	(26)	94.1	(15)
Black (N = 9,195)								
1980	1.1	(93)	13.8	(65)	28.9	(50)	35.4	(45)
1997	1.1	(93)	13.1	(65)	25.8	(50)	31.9	(45)
1997	1.1	(93)	13.9	(64)	29.1	(47)	35.7	(42)
1980	43.3	(40)	52.4	(35)	59.7	(31)	80.4	(21)
1997	38.3	(40)	45.1	(35)	51.1	(31)	67.9	(21)
1997	42.4	(36)	52.6	(30)	58.3	(26)	79.7	(15)
Hispanic (N = 6,174)								
1980	0.8	(93)	10.9	(65)	22.8	(50)	27.2	(45)
1997	0.8	(93)	10.3	(65)	20.1	(50)	24.8	(45)
1997	0.8	(93)	10.7	(64)	22.8	(47)	27.5	(42)
1980	33.9	(40)	41.0	(35)	46.0	(31)	61.9	(21)
1997	29.5	(40)	34.9	(35)	39.4	(31)	51.1	(21)
1997	33.0	(36)	40.6	(30)	44.9	(26)	60.3	(15)
Other (N = 2,581)								
1980	5.4	(93)	28.4	(65)	43.5	(50)	48.5	(45)
1997	5.3	(93)	27.3	(65)	41.2	(50)	45.3	(45)
1997	5.3	(93)	28.1	(64)	43.6	(47)	49.0	(42)
1980	55.9	(40)	61.7	(35)	66.8	(31)	81.9	(21)
1997	51.1	(40)	56.6	(35)	60.8	(31)	72.7	(21)
1997	54.7	(36)	62.0	(30)	65.7	(26)	81.2	(15)

Note. See Section 4.5 for explaination of contents.

[a]AFQT cut-scores are provided in parentheses.

TABLE A.8. Gender Qualification Rates (Army Regular)

Scale	Qualification Rates[a]							
	Males (N = 122,451)							
1980	6.2	(93)	37.1	(65)	58.6	(50)	65.4	(45)
1997	6.2	(93)	35.9	(65)	55.4	(50)	62.2	(45)
1997	6.2	(93)	37.3	(64)	59.5	(47)	66.0	(42)
1980	72.8	(40)	79.2	(35)	83.7	(31)	93.0	(21)
1997	68.6	(40)	74.4	(35)	78.5	(31)	87.9	(21)
1997	72.1	(36)	79.4	(30)	83.0	(26)	92.8	(15)
	Females (N = 35,707)							
1980	3.4	(93)	28.2	(65)	49.9	(50)	57.4	(45)
1997	3.4	(93)	27.2	(65)	46.3	(50)	53.6	(45)
1997	3.4	(93)	28.4	(64)	50.4	(47)	57.8	(42)
1980	66.0	(40)	73.6	(35)	79.2	(31)	91.6	(21)
1997	60.8	(40)	67.6	(35)	72.7	(31)	84.7	(21)
1997	65.0	(36)	73.9	(30)	78.2	(26)	91.4	(15)

Note. See Section 4.5 for explaination of contents.

[a] AFQT cut-scores are provided in parentheses.

TABLE A.9. Gender Qualification Rates (Army Reserve)

Scale	Qualification Rates[a]							
	Males (N = 24,599)							
1980	8.3	(93)	43.3	(65)	63.8	(50)	70.0	(45)
1997	8.7	(93)	42.4	(65)	61.0	(50)	67.1	(45)
1997	8.7	(93)	43.7	(64)	64.5	(47)	70.5	(42)
1980	76.5	(40)	82.1	(35)	86.2	(31)	94.0	(21)
1997	72.7	(40)	77.9	(35)	81.6	(31)	89.9	(21)
1997	76.0	(36)	82.5	(30)	85.6	(26)	93.9	(15)
	Females (N = 10,663)							
1980	4.2	(93)	33.0	(65)	55.1	(50)	62.8	(45)
1997	4.3	(93)	31.7	(65)	51.4	(50)	58.8	(45)
1997	4.3	(93)	32.9	(64)	55.5	(47)	63.3	(42)
1980	70.5	(40)	77.6	(35)	82.4	(31)	93.1	(21)
1997	66.2	(40)	72.1	(35)	76.8	(31)	87.6	(21)
1997	69.7	(36)	78.0	(30)	81.8	(26)	93.1	(15)

Note. See Section 4.5 for explaination of contents.

[a]AFQT cut-scores are provided in parentheses.

TABLE A.10. Gender Qualification Rates (Army Guard)

Scale	Qualification Rates[a]							
	Males (N = 39,018)							
1980	6.4	(93)	35.2	(65)	53.1	(50)	59.0	(45)
1997	6.3	(93)	34.2	(65)	50.2	(50)	56.2	(45)
1997	6.3	(93)	35.2	(64)	53.8	(47)	59.6	(42)
1980	65.9	(40)	72.3	(35)	76.8	(31)	87.6	(21)
1997	61.8	(40)	67.4	(35)	71.5	(31)	81.2	(21)
1997	65.3	(36)	72.5	(30)	76.1	(26)	87.1	(15)
	Females (N = 12,911)							
1980	3.3	(93)	24.9	(65)	43.9	(50)	50.2	(45)
1997	3.2	(93)	24.1	(65)	40.5	(50)	46.9	(45)
1997	3.2	(93)	25.2	(64)	44.4	(47)	50.7	(42)
1980	58.1	(40)	65.9	(35)	71.9	(31)	86.7	(21)
1997	53.5	(40)	59.6	(35)	65.2	(31)	78.0	(21)
1997	57.2	(36)	66.3	(30)	70.9	(26)	86.3	(15)

Note. See Section 4.5 for explaination of contents.

[a]AFQT cut-scores are provided in parentheses.

TABLE A.11. Subgroup Qualification Distributions (Army Regular)

Score-Scale	AFQT Cut	White	Black	Hispanic	Other
1980	93	87.4	4.3	2.9	5.3
1997	93	87.7	4.3	2.8	5.2
1997	93	87.7	4.3	2.8	5.2
1980	65	79.3	9.6	6.4	4.7
1997	65	80.2	9.2	6.0	4.6
1997	64	79.9	9.4	6.1	4.6
1980	50	74.7	12.6	8.0	4.7
1997	50	75.7	12.0	7.6	4.6
1997	47	74.8	12.6	7.9	4.6
1980	45	73.3	13.5	8.5	4.7
1997	45	74.2	13.0	8.2	4.6
1997	42	73.3	13.6	8.5	4.7
1980	40	71.4	14.7	9.1	4.8
1997	40	72.7	14.0	8.7	4.7
1997	36	71.7	14.6	9.0	4.8
1980	35	69.7	15.8	9.6	4.9
1997	35	71.1	15.0	9.2	4.8
1997	30	69.6	15.9	9.6	4.9
1980	31	68.4	16.7	10.0	5.0
1997	31	69.9	15.7	9.5	4.9
1997	26	68.6	16.6	9.9	4.9
1980	21	65.3	18.6	10.8	5.2
1997	21	67.0	17.6	10.4	5.0
1997	15	65.4	18.6	10.8	5.2

TABLE A.12. Subgroup Qualification Distributions (Army Reserve)

Score-Scale	AFQT Cut	White	Black	Hispanic	Other
1980	93	84.4	4.5	3.7	7.4
1997	93	85.1	4.3	3.6	7.0
1997	93	85.1	4.3	3.6	7.0
1980	65	74.6	12.8	6.7	5.9
1997	65	75.5	12.4	6.4	5.7
1997	64	75.2	12.6	6.5	5.7
1980	50	69.8	16.4	8.2	5.5
1997	50	70.8	15.9	7.8	5.5
1997	47	69.9	16.5	8.2	5.5
1980	45	68.1	17.7	8.8	5.5
1997	45	69.1	17.1	8.3	5.5
1997	42	68.0	17.7	8.7	5.5
1980	40	66.4	18.8	9.3	5.5
1997	40	67.4	18.2	8.9	5.5
1997	36	66.5	18.7	9.2	5.6
1980	35	64.8	20.0	9.6	5.6
1997	35	66.1	19.0	9.4	5.5
1997	30	64.7	20.0	9.7	5.6
1980	31	63.6	20.8	10.0	5.6
1997	31	65.0	19.8	9.6	5.6
1997	26	63.8	20.6	10.0	5.6
1980	21	61.2	22.2	10.9	5.7
1997	21	62.5	21.5	10.5	5.6
1997	15	61.3	22.2	10.9	5.7

TABLE A.13. Subgroup Qualification Distributions (Army Guard)

Score-Scale	AFQT Cut	White	Black	Hispanic	Other
1980	93	90.1	3.4	1.7	4.7
1997	93	89.9	3.6	1.7	4.8
1997	93	89.9	3.6	1.7	4.8
1980	65	84.2	7.5	4.0	4.3
1997	65	84.5	7.3	3.8	4.3
1997	64	84.3	7.5	3.9	4.3
1980	50	80.3	10.1	5.3	4.3
1997	50	81.1	9.6	5.0	4.3
1997	47	80.5	10.0	5.3	4.2
1980	45	79.0	11.0	5.7	4.2
1997	45	79.9	10.5	5.5	4.2
1997	42	79.1	11.0	5.7	4.2
1980	40	77.4	12.0	6.3	4.3
1997	40	78.5	11.3	5.9	4.3
1997	36	77.6	11.9	6.2	4.3
1980	35	75.6	13.1	6.9	4.3
1997	35	77.2	12.2	6.3	4.3
1997	30	75.7	13.1	6.8	4.3
1980	31	74.4	14.0	7.2	4.4
1997	31	76.0	13.0	6.7	4.3
1997	26	74.7	13.8	7.1	4.4
1980	21	70.6	16.3	8.4	4.7
1997	21	73.0	15.0	7.6	4.5
1997	15	70.9	16.2	8.3	4.6

TABLE A.14. Gender Qualification Distributions (Army Regular)

Score-Scale	AFQT Cut	Males	Females
1980	93	86.0	14.0
1997	93	86.2	13.8
1997	93	86.2	13.8
1980	65	81.8	18.2
1997	65	81.9	18.1
1997	64	81.8	18.2
1980	50	80.1	19.9
1997	50	80.4	19.6
1997	47	80.2	19.8
1980	45	79.6	20.4
1997	45	79.9	20.1
1997	42	79.7	20.3
1980	40	79.1	20.9
1997	40	79.5	20.5
1997	36	79.2	20.8
1980	35	78.7	21.3
1997	35	79.0	21.0
1997	30	78.7	21.3
1980	31	78.4	21.6
1997	31	78.7	21.3
1997	26	78.4	21.6
1980	21	77.7	22.3
1997	21	78.1	21.9
1997	15	77.7	22.3

TABLE A.15. Gender Qualification Distributions (Army Reserve)

Score-Scale	AFQT Cut	Males	Females
1980	93	81.9	18.1
1997	93	82.3	17.7
1997	93	82.3	17.7
1980	65	75.2	24.8
1997	65	75.5	24.5
1997	64	75.4	24.6
1980	50	72.8	27.2
1997	50	73.2	26.8
1997	47	72.8	27.2
1980	45	72.0	28.0
1997	45	72.5	27.5
1997	42	72.0	28.0
1980	40	71.5	28.5
1997	40	71.7	28.3
1997	36	71.5	28.5
1980	35	70.9	29.1
1997	35	71.4	28.6
1997	30	70.9	29.1
1980	31	70.7	29.3
1997	31	71.0	29.0
1997	26	70.7	29.3
1980	21	70.0	30.0
1997	21	70.3	29.7
1997	15	69.9	30.1

TABLE A.16. Gender Qualification Distributions (Army Guard)

Score-Scale	AFQT Cut	Males	Females
1980	93	85.4	14.6
1997	93	85.8	14.2
1997	93	85.8	14.2
1980	65	81.0	19.0
1997	65	81.1	18.9
1997	64	80.9	19.1
1980	50	78.5	21.5
1997	50	78.9	21.1
1997	47	78.5	21.5
1980	45	78.0	22.0
1997	45	78.3	21.7
1997	42	78.0	22.0
1980	40	77.4	22.6
1997	40	77.7	22.3
1997	36	77.5	22.5
1980	35	76.8	23.2
1997	35	77.4	22.6
1997	30	76.8	23.2
1980	31	76.3	23.7
1997	31	76.8	23.2
1997	26	76.4	23.6
1980	21	75.3	24.7
1997	21	75.9	24.1
1997	15	75.3	24.7

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TABLE B.1. Navy Regular AFQT Distributions for 1980 and 1997 Scales

AFQT Score	1980 %	1980 Qual.	1997 %	1997 Qual.
1	0.22	100.00	0.17	100.00
2	0.09	99.78	0.20	99.83
3	0.10	99.69	0.25	99.64
4	0.17	99.58	0.61	99.38
5	0.19	99.42	0.42	98.78
6	0.23	99.23	0.52	98.35
7	0.16	99.00	0.63	97.83
8	0.29	98.84	0.37	97.20
9	0.23	98.55	0.96	96.83
10	0.30	98.32	0.56	95.88
11	0.31	98.03	0.93	95.32
12	0.36	97.72	0.37	94.39
13	0.66	97.35	0.77	94.02
14	0.26	96.70	0.43	93.26
15	0.49	96.44	0.94	92.83
16	0.52	95.95	1.07	91.88
17	0.66	95.42	1.11	90.81
18	0.80	94.76	0.61	89.69
19	0.83	93.96	1.29	89.09
20	0.45	93.13	0.71	87.79
21	0.98	92.68	0.77	87.08
22	1.07	91.70	1.55	86.31
23	1.27	90.62	0.79	84.76
24	0.60	89.36	0.78	83.97
25	1.35	88.75	1.76	83.18
26	0.72	87.40	0.93	81.43
27	1.54	86.68	1.03	80.49
28	0.80	85.14	1.00	79.46
29	1.59	84.34	1.00	78.46
30	0.89	82.75	1.13	77.46
31	0.91	81.85	1.08	76.32
32	1.92	80.94	1.09	75.24
33	0.98	79.02	1.14	74.15
34	1.08	78.04	1.22	73.01

Note. See Section 4.2 for explaination of contents.

TABLE B.1. Navy Regular AFQT Distributions for 1980 and 1997 Scales (continued)

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
35	2.18	76.96	2.45	71.80
36	1.19	74.77	1.30	69.34
37	1.19	73.58	0.00	68.05
38	1.14	72.39	1.31	68.05
39	1.20	71.24	1.30	66.74
40	1.22	70.04	1.38	65.44
41	1.32	68.82	1.39	64.06
42	2.54	67.50	1.32	62.67
43	1.37	64.97	1.33	61.34
44	1.32	63.59	1.41	60.01
45	1.38	62.27	1.39	58.60
46	1.33	60.89	1.37	57.20
47	1.42	59.56	1.50	55.84
48	1.39	58.14	1.42	54.34
49	1.39	56.75	1.44	52.91
50	1.45	55.36	1.38	51.48
51	1.47	53.91	1.37	50.10
52	1.42	52.44	1.43	48.73
53	2.83	51.01	1.41	47.30
54	1.55	48.19	1.39	45.89
55	1.29	46.63	1.44	44.50
56	1.49	45.34	1.36	43.06
57	1.36	43.85	1.40	41.70
58	1.48	42.49	0.00	40.30
59	1.38	41.01	1.41	40.30
60	0.00	39.63	1.32	38.89
61	1.34	39.63	1.32	37.57
62	1.35	38.28	1.30	36.24
63	1.44	36.93	1.32	34.94
64	1.35	35.49	1.20	33.62
65	1.37	34.14	0.00	32.42
66	1.36	32.77	1.26	32.42
67	1.33	31.41	1.22	31.16
68	1.19	30.08	1.14	29.93
69	1.28	28.89	1.19	28.79

Note. See Section 4.2 for explaination of contents.

TABLE B.1. Navy Regular AFQT Distributions for 1980 and 1997 Scales (continued)

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
70	1.25	27.61	2.34	27.60
71	1.26	26.36	1.05	25.26
72	1.19	25.10	1.05	24.20
73	1.19	23.91	1.07	23.16
74	1.10	22.72	1.02	22.08
75	1.11	21.62	0.93	21.07
76	1.05	20.51	0.97	20.13
77	0.99	19.46	0.92	19.17
78	1.07	18.47	0.92	18.24
79	0.99	17.41	0.90	17.32
80	2.01	16.41	0.90	16.42
81	0.97	14.40	0.90	15.52
82	0.95	13.44	1.58	14.62
83	0.00	12.49	0.73	13.04
84	1.72	12.49	0.76	12.31
85	0.85	10.77	1.31	11.55
86	0.77	9.92	0.64	10.24
87	0.83	9.15	0.63	9.61
88	0.75	8.31	1.09	8.97
89	0.76	7.56	0.54	7.88
90	0.62	6.81	1.06	7.34
91	0.68	6.18	0.46	6.28
92	0.60	5.51	0.86	5.81
93	0.58	4.90	1.09	4.96
94	0.47	4.32	0.63	3.87
95	0.57	3.85	0.80	3.24
96	0.44	3.29	0.60	2.44
97	0.51	2.84	0.65	1.84
98	0.33	2.33	0.55	1.19
99	2.00	2.00	0.64	0.64

Note. See Section 4.2 for explaination of contents.

TABLE B.2. Navy Reserve AFQT Distributions for 1980 and 1997 Scales

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
1	0.32	100.00	0.26	100.00
2	0.17	99.68	0.38	99.74
3	0.23	99.51	0.37	99.36
4	0.32	99.28	1.10	98.98
5	0.41	98.96	0.54	97.89
6	0.34	98.55	0.53	97.35
7	0.20	98.21	0.97	96.82
8	0.36	98.01	0.34	95.84
9	0.28	97.65	0.99	95.50
10	0.34	97.37	0.58	94.51
11	0.42	97.03	1.13	93.93
12	0.50	96.60	0.45	92.80
13	0.74	96.10	0.84	92.35
14	0.28	95.37	0.37	91.51
15	0.47	95.09	0.99	91.14
16	0.60	94.62	0.82	90.14
17	0.78	94.02	1.11	89.33
18	0.74	93.24	0.60	88.22
19	0.85	92.51	1.12	87.62
20	0.47	91.66	0.58	86.50
21	0.84	91.19	0.80	85.92
22	1.07	90.35	1.42	85.12
23	0.91	89.28	0.83	83.70
24	0.44	88.37	0.70	82.87
25	1.30	87.94	1.61	82.16
26	0.80	86.64	0.77	80.56
27	1.59	85.84	0.84	79.79
28	0.81	84.26	0.70	78.95
29	1.49	83.45	1.03	78.25
30	0.75	81.96	0.95	77.22
31	0.68	81.21	0.94	76.27
32	1.72	80.53	1.08	75.32
33	0.97	78.81	1.09	74.25
34	0.98	77.83	1.09	73.16

Note. See Section 4.2 for explaination of contents.

TABLE B.2. Navy Reserve AFQT Distributions for 1980 and 1997 Scales
(continued)

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
35	2.07	76.85	2.01	72.07
36	0.98	74.77	1.01	70.06
37	1.14	73.79	0.00	69.05
38	1.11	72.65	1.14	69.05
39	1.24	71.54	1.01	67.91
40	1.30	70.30	1.16	66.91
41	1.08	69.00	1.34	65.75
42	2.39	67.92	1.06	64.41
43	1.07	65.53	1.21	63.35
44	1.14	64.46	1.13	62.14
45	1.19	63.32	1.25	61.01
46	1.35	62.13	1.20	59.76
47	1.31	60.78	1.15	58.56
48	1.27	59.48	1.33	57.40
49	1.25	58.20	1.16	56.08
50	1.44	56.95	1.24	54.92
51	1.36	55.51	1.32	53.67
52	1.33	54.15	1.20	52.36
53	2.70	52.82	1.17	51.16
54	1.23	50.12	1.20	49.98
55	1.26	48.89	1.23	48.78
56	1.41	47.62	1.21	47.55
57	1.31	46.21	1.09	46.34
58	1.44	44.91	0.00	45.25
59	1.35	43.47	1.37	45.25
60	0.00	42.12	1.29	43.88
61	1.11	42.12	1.24	42.60
62	1.18	41.01	1.13	41.35
63	1.34	39.83	1.22	40.22
64	1.34	38.49	1.09	39.00
65	1.27	37.15	0.00	37.91
66	1.33	35.88	1.07	37.91
67	1.34	34.55	1.23	36.84
68	1.41	33.22	1.06	35.61
69	1.37	31.81	1.30	34.55

Note. See Section 4.2 for explaination of
contents.

TABLE B.2. Navy Reserve AFQT Distributions for 1980 and 1997 Scales (continued)

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
70	1.24	30.44	2.38	33.26
71	1.14	29.19	1.16	30.87
72	1.16	28.05	1.12	29.71
73	1.01	26.89	0.99	28.59
74	0.82	25.89	0.84	27.60
75	1.16	25.07	1.06	26.76
76	1.08	23.91	1.07	25.70
77	1.12	22.83	0.80	24.63
78	0.96	21.71	0.84	23.84
79	1.09	20.75	0.93	23.00
80	2.01	19.66	0.98	22.06
81	0.78	17.65	1.01	21.08
82	0.90	16.87	1.92	20.07
83	0.00	15.97	0.82	18.16
84	1.99	15.97	0.85	17.34
85	1.02	13.98	1.50	16.49
86	0.87	12.97	0.74	14.99
87	0.76	12.09	0.56	14.25
88	0.77	11.34	1.46	13.69
89	0.66	10.57	0.83	12.23
90	0.91	9.91	1.46	11.40
91	0.73	9.00	0.60	9.94
92	0.59	8.27	0.99	9.34
93	0.80	7.68	1.51	8.34
94	0.57	6.88	0.94	6.83
95	0.55	6.31	1.21	5.89
96	0.57	5.76	1.08	4.67
97	0.62	5.19	1.25	3.60
98	0.53	4.57	1.02	2.34
99	4.04	4.04	1.33	1.33

Note. See Section 4.2 for explaination of contents.

TABLE B.3. Subgroup Qualification Rates (Navy Regular)

Scale	Qualification Rates[a]							
	White (N = 40,200)							
1980	7.2	(93)	44.8	(65)	67.7	(50)	74.3	(45)
1997	7.3	(93)	43.0	(65)	64.1	(50)	71.0	(45)
1997	7.3	(93)	44.4	(64)	68.4	(47)	74.8	(42)
1980	81.1	(40)	86.7	(35)	90.3	(31)	96.9	(21)
1997	77.3	(40)	82.6	(35)	86.3	(31)	93.7	(21)
1997	80.6	(36)	87.2	(30)	90.0	(26)	96.9	(15)
	Black (N = 15,966)							
1980	1.0	(93)	14.7	(65)	32.5	(50)	39.8	(45)
1997	0.9	(93)	13.4	(65)	28.5	(50)	35.7	(45)
1997	0.9	(93)	14.2	(64)	32.8	(47)	40.2	(42)
1980	49.5	(40)	59.2	(35)	66.7	(31)	85.6	(21)
1997	43.6	(40)	51.6	(35)	58.2	(31)	75.5	(21)
1997	48.3	(36)	59.7	(30)	65.9	(26)	86.0	(15)
	Hispanic (N = 8,543)							
1980	1.9	(93)	21.8	(65)	41.9	(50)	49.8	(45)
1997	1.8	(93)	19.7	(65)	37.2	(50)	45.0	(45)
1997	1.8	(93)	20.7	(64)	42.1	(47)	49.9	(42)
1980	59.1	(40)	67.0	(35)	73.2	(31)	88.3	(21)
1997	53.0	(40)	61.0	(35)	66.3	(31)	80.5	(21)
1997	58.1	(36)	67.9	(30)	73.0	(26)	88.8	(15)
	Other (N = 8,239)							
1980	4.2	(93)	32.7	(65)	53.4	(50)	60.2	(45)
1997	4.5	(93)	30.9	(65)	49.5	(50)	56.5	(45)
1997	4.5	(93)	32.1	(64)	53.6	(47)	60.2	(42)
1980	67.5	(40)	74.1	(35)	78.8	(31)	90.2	(21)
1997	63.0	(40)	69.3	(35)	73.4	(31)	84.1	(21)
1997	66.8	(36)	74.5	(30)	78.6	(26)	90.1	(15)

Note. See Section 4.5 for explaination of contents.

[a]AFQT cut-scores are provided in parentheses.

TABLE B.4. Subgroup Qualification Rates (Navy Reserve)

Scale	Qualification Rates[a]							
White (N = 5,222)								
1980	12.0	(93)	50.8	(65)	71.2	(50)	76.8	(45)
1997	13.1	(93)	52.1	(65)	69.8	(50)	75.2	(45)
1997	13.1	(93)	53.4	(64)	73.1	(47)	78.3	(42)
1980	83.3	(40)	87.9	(35)	90.7	(31)	96.3	(21)
1997	80.5	(40)	84.7	(35)	87.5	(31)	93.4	(21)
1997	83.2	(36)	88.1	(30)	90.1	(26)	96.2	(15)
Black (N = 2,249)								
1980	1.6	(93)	18.1	(65)	37.3	(50)	45.4	(45)
1997	1.5	(93)	18.3	(65)	34.9	(50)	42.3	(45)
1997	1.5	(93)	19.0	(64)	39.0	(47)	46.0	(42)
1980	54.1	(40)	63.6	(35)	70.0	(31)	86.4	(21)
1997	49.4	(40)	56.6	(35)	62.5	(31)	77.4	(21)
1997	53.6	(36)	64.1	(30)	69.2	(26)	86.1	(15)
Hispanic (N = 1,290)								
1980	1.6	(93)	17.7	(65)	36.6	(50)	44.0	(45)
1997	1.8	(93)	18.0	(65)	33.4	(50)	40.2	(45)
1997	1.8	(93)	18.8	(64)	37.5	(47)	44.4	(42)
1980	50.8	(40)	60.2	(35)	66.9	(31)	81.8	(21)
1997	46.7	(40)	53.3	(35)	59.8	(31)	73.8	(21)
1997	50.5	(36)	60.9	(30)	66.0	(26)	82.3	(15)
Other (N = 888)								
1980	6.3	(93)	33.7	(65)	52.8	(50)	57.7	(45)
1997	7.1	(93)	33.1	(65)	49.2	(50)	55.4	(45)
1997	7.1	(93)	34.2	(64)	53.2	(47)	58.6	(42)
1980	63.5	(40)	69.5	(35)	74.7	(31)	86.8	(21)
1997	60.6	(40)	64.3	(35)	68.8	(31)	81.1	(21)
1997	63.1	(36)	70.0	(30)	74.3	(26)	86.7	(15)

Note. See Section 4.5 for explaination of contents.

[a]AFQT cut-scores are provided in parentheses.

TABLE B.5. Gender Qualification Rates (Navy Regular)

Scale	Qualification Rates[a]							
	Males (N = 57,831)							
1980	5.3	(93)	35.2	(65)	55.7	(50)	62.5	(45)
1997	5.4	(93)	33.4	(65)	52.0	(50)	59.0	(45)
1997	5.4	(93)	34.6	(64)	56.2	(47)	62.9	(42)
1980	70.1	(40)	76.9	(35)	81.7	(31)	92.4	(21)
1997	65.6	(40)	71.8	(35)	76.2	(31)	86.9	(21)
1997	69.4	(36)	77.4	(30)	81.3	(26)	92.6	(15)
	Females (N = 15,114)							
1980	3.3	(93)	30.3	(65)	53.9	(50)	61.6	(45)
1997	3.4	(93)	28.6	(65)	49.5	(50)	57.2	(45)
1997	3.4	(93)	29.9	(64)	54.3	(47)	61.9	(42)
1980	70.0	(40)	77.3	(35)	82.3	(31)	93.6	(21)
1997	64.9	(40)	71.7	(35)	76.7	(31)	87.9	(21)
1997	69.1	(36)	77.9	(30)	81.9	(26)	93.7	(15)

Note. See Section 4.5 for explaination of contents.

[a]AFQT cut-scores are provided in parentheses.

TABLE B.6. Gender Qualification Rates (Navy Reserve)

Scale	Qualification Rates[a]							
	Males (N = 6,373)							
1980	9.2	(93)	40.7	(65)	60.2	(50)	65.6	(45)
1997	10.0	(93)	41.4	(65)	58.2	(50)	63.8	(45)
1997	10.0	(93)	42.5	(64)	61.5	(47)	66.7	(42)
1980	72.0	(40)	78.0	(35)	82.2	(31)	91.4	(21)
1997	69.0	(40)	73.7	(35)	77.5	(31)	86.5	(21)
1997	71.8	(36)	78.4	(30)	81.5	(26)	91.2	(15)
	Females (N = 3,276)							
1980	4.8	(93)	30.3	(65)	50.6	(50)	58.8	(45)
1997	5.2	(93)	31.1	(65)	48.6	(50)	55.6	(45)
1997	5.2	(93)	32.2	(64)	52.8	(47)	59.9	(42)
1980	66.9	(40)	74.7	(35)	79.3	(31)	90.8	(21)
1997	62.9	(40)	69.0	(35)	74.0	(31)	84.9	(21)
1997	66.7	(36)	74.9	(30)	78.8	(26)	91.0	(15)

Note. See Section 4.5 for explaination of contents.

[a]AFQT cut-scores are provided in parentheses.

TABLE B.7. Subgroup Qualification Distributions (Navy Regular)

Score-Scale	AFQT Cut	White	Black	Hispanic	Other
1980	93	81.4	4.4	4.5	9.7
1997	93	81.3	4.2	4.3	10.3
1997	93	81.3	4.2	4.3	10.3
1980	65	72.3	9.4	7.5	10.8
1997	65	73.1	9.0	7.1	10.7
1997	64	72.8	9.2	7.2	10.8
1980	50	67.4	12.8	8.9	10.9
1997	50	68.6	12.1	8.5	10.9
1997	47	67.5	12.9	8.8	10.8
1980	45	65.7	14.0	9.4	10.9
1997	45	66.8	13.3	9.0	10.9
1997	42	65.8	14.0	9.3	10.9
1980	40	63.8	15.5	9.9	10.9
1997	40	65.1	14.6	9.5	10.9
1997	36	64.1	15.3	9.8	10.9
1980	35	62.1	16.8	10.2	10.9
1997	35	63.4	15.7	9.9	10.9
1997	30	62.0	16.9	10.3	10.9
1980	31	60.8	17.8	10.5	10.9
1997	31	62.3	16.7	10.2	10.9
1997	26	60.9	17.7	10.5	10.9
1980	21	57.6	20.2	11.2	11.0
1997	21	59.3	19.0	10.8	10.9
1997	15	57.5	20.3	11.2	11.0

TABLE B.8. Subgroup Qualification Distributions (Navy Reserve)

Score-Scale	AFQT Cut	White	Black	Hispanic	Other
1980	93	84.8	4.9	2.8	7.6
1997	93	85.1	4.2	2.9	7.8
1997	93	85.1	4.2	2.9	7.8
1980	65	74.0	11.3	6.4	8.3
1997	65	74.4	11.2	6.3	8.0
1997	64	74.1	11.4	6.5	8.1
1980	50	67.6	15.3	8.6	8.5
1997	50	68.8	14.8	8.1	8.2
1997	47	67.6	15.5	8.6	8.4
1980	45	65.6	16.7	9.3	8.4
1997	45	66.7	16.2	8.8	8.4
1997	42	65.8	16.7	9.2	8.4
1980	40	64.1	17.9	9.7	8.3
1997	40	65.1	17.2	9.3	8.3
1997	36	64.2	17.8	9.6	8.3
1980	35	61.9	19.3	10.5	8.3
1997	35	63.6	18.3	9.9	8.2
1997	30	61.8	19.3	10.5	8.3
1980	31	60.4	20.1	11.0	8.5
1997	31	62.1	19.1	10.5	8.3
1997	26	60.5	20.0	10.9	8.5
1980	21	57.2	22.1	12.0	8.8
1997	21	58.8	21.0	11.5	8.7
1997	15	57.2	22.0	12.1	8.8

TABLE B.9. Gender Qualification Distributions (Navy Regular)

Score-Scale	AFQT Cut	Males	Females
1980	93	86.0	14.0
1997	93	85.7	14.3
1997	93	85.7	14.3
1980	65	81.6	18.4
1997	65	81.7	18.3
1997	64	81.6	18.4
1980	50	79.8	20.2
1997	50	80.1	19.9
1997	47	79.9	20.1
1980	45	79.5	20.5
1997	45	79.8	20.2
1997	42	79.5	20.5
1980	40	79.3	20.7
1997	40	79.4	20.6
1997	36	79.4	20.6
1980	35	79.2	20.8
1997	35	79.3	20.7
1997	30	79.2	20.8
1980	31	79.2	20.8
1997	31	79.2	20.8
1997	26	79.2	20.8
1980	21	79.1	20.9
1997	21	79.1	20.9
1997	15	79.1	20.9

TABLE B.10. Gender Qualification Distributions (Navy Reserve)

Score-Scale	AFQT Cut	Males	Females
1980	93	78.8	21.2
1997	93	78.9	21.1
1997	93	78.9	21.1
1980	65	72.3	27.7
1997	65	72.2	27.8
1997	64	71.9	28.1
1980	50	69.8	30.2
1997	50	69.9	30.1
1997	47	69.4	30.6
1980	45	68.5	31.5
1997	45	69.1	30.9
1997	42	68.4	31.6
1980	40	67.7	32.3
1997	40	68.1	31.9
1997	36	67.7	32.3
1980	35	67.0	33.0
1997	35	67.5	32.5
1997	30	67.1	32.9
1980	31	66.8	33.2
1997	31	67.1	32.9
1997	26	66.8	33.2
1980	21	66.2	33.8
1997	21	66.5	33.5
1997	15	66.1	33.9

Appendix C
Air Force Supplement

TABLE C.1. '97 Air Force Mechanical (M) Percentile Conversion

M_S	%	Cum. %	$M_\%$	M_S	%	Cum. %	$M_\%$
≤144	0.06	1.50	1	184	0.22	7.42	7
145	0.01	1.51	2	185	0.31	7.74	8
146	0.12	1.63	2	186	0.21	7.95	8
147	0.10	1.73	2	187	0.19	8.14	8
148	0.07	1.80	2	188	0.39	8.53	9
149	0.12	1.92	2	189	0.28	8.81	9
150	0.08	1.99	2	190	0.22	9.03	9
151	0.13	2.13	2	191	0.22	9.25	9
152	0.19	2.32	2	192	0.37	9.62	10
153	0.04	2.36	2	193	0.36	9.99	10
154	0.07	2.43	2	194	0.33	10.31	10
155	0.02	2.45	2	195	0.30	10.61	11
156	0.12	2.57	3	196	0.33	10.94	11
157	0.16	2.73	3	197	0.40	11.34	11
158	0.05	2.78	3	198	0.37	11.71	12
159	0.10	2.88	3	199	0.59	12.29	12
160	0.05	2.93	3	200	0.50	12.79	13
161	0.21	3.14	3	201	0.37	13.16	13
162	0.20	3.34	3	202	0.45	13.61	14
163	0.12	3.46	3	203	0.27	13.88	14
164	0.21	3.67	4	204	0.47	14.35	14
165	0.18	3.85	4	205	0.36	14.70	15
166	0.11	3.96	4	206	0.45	15.15	15
167	0.10	4.06	4	207	0.33	15.48	15
168	0.15	4.21	4	208	0.53	16.00	16
169	0.19	4.40	4	209	0.46	16.47	16
170	0.27	4.68	5	210	0.49	16.96	17
171	0.22	4.90	5	211	0.58	17.54	18
172	0.16	5.06	5	212	0.63	18.17	18
173	0.18	5.25	5	213	0.48	18.65	19
174	0.16	5.40	5	214	0.75	19.40	19
175	0.18	5.59	6	215	0.63	20.03	20
176	0.18	5.77	6	216	0.64	20.67	21
177	0.10	5.87	6	217	0.56	21.22	21
178	0.19	6.06	6	218	0.44	21.66	22
179	0.25	6.31	6	219	0.68	22.35	22
180	0.25	6.56	7	220	0.56	22.90	23
181	0.24	6.79	7	221	0.65	23.56	24
182	0.20	6.99	7	222	0.80	24.36	24
183	0.21	7.20	7	223	0.53	24.88	25

TABLE C.1. '97 Air Force Mechanical (M) Percentile Conversion (continued)

M_S	%	Cum. %	$M_\%$	M_S	%	Cum. %	$M_\%$
224	0.72	25.61	26	264	1.17	59.95	60
225	0.89	26.49	26	265	1.23	61.17	61
226	0.53	27.03	27	266	0.87	62.05	62
227	0.55	27.57	28	267	1.11	63.16	63
228	0.44	28.01	28	268	0.96	64.13	64
229	0.86	28.87	29	269	1.05	65.18	65
230	0.58	29.44	29	270	1.01	66.19	66
231	0.81	30.26	30	271	0.71	66.90	67
232	0.49	30.75	31	272	0.84	67.74	68
233	0.71	31.46	31	273	0.93	68.67	69
234	1.08	32.54	33	274	1.32	69.99	70
235	0.67	33.21	33	275	1.10	71.09	71
236	0.67	33.89	34	276	0.90	72.00	72
237	0.89	34.78	35	277	0.89	72.89	73
238	0.94	35.72	36	278	0.79	73.68	74
239	0.81	36.52	37	279	0.92	74.60	75
240	0.93	37.45	37	280	1.20	75.80	76
241	0.76	38.21	38	281	0.76	76.56	77
242	0.89	39.10	39	282	0.98	77.54	78
243	0.93	40.03	40	283	0.85	78.39	78
244	0.80	40.83	41	284	0.78	79.18	79
245	1.00	41.84	42	285	0.95	80.12	80
246	1.00	42.84	43	286	0.69	80.81	81
247	0.88	43.72	44	287	0.53	81.34	81
248	1.08	44.80	45	288	1.13	82.47	82
249	0.78	45.57	46	289	0.58	83.05	83
250	1.04	46.62	47	290	1.05	84.10	84
251	0.68	47.30	47	291	0.99	85.09	85
252	0.92	48.22	48	292	0.78	85.87	86
253	1.16	49.38	49	293	0.53	86.40	86
254	0.98	50.36	50	294	0.40	86.80	87
255	0.79	51.16	51	295	0.58	87.39	87
256	1.08	52.23	52	296	0.46	87.85	88
257	0.73	52.96	53	297	0.63	88.49	88
258	0.90	53.86	54	298	0.63	89.12	89
259	0.93	54.79	55	299	0.65	89.77	90
260	0.87	55.66	56	300	0.45	90.23	90
261	0.95	56.61	57	301	0.47	90.70	91
262	1.12	57.73	58	302	0.58	91.28	91
263	1.04	58.78	59	303	0.35	91.63	92

TABLE C.1. '97 Air Force Mechanical (M) Percentile Conversion (continued)

M_S	%	Cum. %	$M_\%$	M_S	%	Cum. %	$M_\%$
304	0.53	92.16	92	317	0.23	96.54	97
305	0.46	92.61	93	318	0.21	96.75	97
306	0.33	92.95	93	319	0.21	96.96	97
307	0.42	93.36	93	320	0.17	97.13	97
308	0.54	93.91	94	321	0.10	97.23	97
309	0.29	94.20	94	322	0.31	97.53	98
310	0.38	94.58	95	323	0.17	97.70	98
311	0.18	94.77	95	324	0.13	97.83	98
312	0.17	94.94	95	325	0.20	98.03	98
313	0.19	95.13	95	326	0.22	98.25	98
314	0.41	95.54	96	327	0.22	98.47	98
315	0.23	95.78	96	328	0.02	98.49	98
316	0.54	96.32	96	$\geq$329	0.20	98.69	99

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TABLE C.2. '97 Air Force Administrative (A) Percentile Conversion

A_S	%	Cum. %	$A_\%$	A_S	%	Cum. %	$A_\%$
≤55	0.14	1.50	1	95	1.62	38.97	39
56	0.22	1.71	2	96	1.86	40.83	41
57	0.23	1.94	2	97	1.99	42.82	43
58	0.24	2.18	2	98	1.90	44.73	45
59	0.28	2.47	2	99	1.95	46.67	47
60	0.15	2.61	3	100	1.85	48.52	49
61	0.22	2.83	3	101	1.72	50.25	50
62	0.20	3.03	3	102	2.17	52.42	52
63	0.22	3.25	3	103	2.12	54.54	55
64	0.35	3.60	4	104	1.93	56.46	56
65	0.28	3.88	4	105	2.23	58.69	59
66	0.61	4.50	4	106	2.17	60.86	61
67	0.22	4.72	5	107	2.13	62.99	63
68	0.40	5.12	5	108	1.99	64.99	65
69	0.52	5.64	6	109	1.92	66.90	67
70	0.50	6.14	6	110	1.96	68.87	69
71	0.61	6.75	7	111	1.82	70.68	71
72	0.59	7.34	7	112	1.71	72.39	72
73	0.72	8.06	8	113	1.92	74.31	74
74	0.66	8.72	9	114	2.02	76.33	76
75	0.86	9.58	10	115	1.63	77.96	78
76	0.92	10.49	10	116	1.93	79.89	80
77	0.98	11.48	11	117	1.98	81.86	82
78	1.12	12.59	13	118	1.74	83.60	84
79	1.09	13.68	14	119	1.72	85.32	85
80	1.14	14.81	15	120	1.47	86.79	87
81	1.48	16.29	16	121	1.59	88.39	88
82	1.13	17.42	17	122	1.35	89.73	90
83	1.10	18.52	19	123	1.20	90.94	91
84	1.32	19.84	20	124	1.22	92.16	92
85	1.30	21.14	21	125	0.93	93.09	93
86	1.85	22.99	23	126	1.09	94.18	94
87	1.77	24.76	25	127	0.80	94.98	95
88	1.93	26.68	27	128	0.72	95.70	96
89	1.69	28.38	28	129	0.59	96.29	96
90	1.80	30.18	30	130	0.57	96.86	97
91	1.76	31.94	32	131	0.57	97.43	97
92	1.69	33.63	34	132	0.34	97.77	98
93	1.59	35.23	35	133	0.40	98.17	98
94	2.11	37.34	37	≥134	0.43	98.60	99

TABLE C.3. '97 Air Force General (G) Percentile Conversion

G_S	%	Cum. %	$G_\%$	G_S	%	Cum. %	$G_\%$
≤51	0.12	1.42	1	94	2.23	35.64	36
52	0.11	1.53	2	95	1.96	37.60	38
53	0.19	1.72	2	96	2.22	39.82	40
54	0.26	1.98	2	97	2.11	41.93	42
55	0.11	2.09	2	98	2.48	44.42	44
56	0.25	2.33	2	99	2.20	46.62	47
57	0.15	2.48	2	100	2.08	48.70	49
58	0.22	2.70	3	101	1.98	50.68	51
59	0.28	2.98	3	102	2.18	52.86	53
60	0.15	3.13	3	103	2.20	55.06	55
61	0.30	3.43	3	104	2.05	57.12	57
62	0.15	3.58	4	105	1.56	58.67	59
63	0.25	3.83	4	106	2.83	61.50	62
64	0.30	4.13	4	107	2.11	63.61	64
65	0.36	4.49	4	108	2.43	66.03	66
66	0.47	4.96	5	109	2.39	68.43	68
67	0.45	5.41	5	110	1.93	70.35	70
68	0.45	5.85	6	111	1.80	72.15	72
69	0.52	6.38	6	112	2.30	74.45	74
70	0.44	6.82	7	113	1.55	75.99	76
71	0.46	7.28	7	114	2.17	78.16	78
72	0.37	7.65	8	115	1.59	79.75	80
73	0.52	8.17	8	116	1.66	81.41	81
74	0.91	9.08	9	117	1.35	82.76	83
75	0.51	9.59	10	118	1.42	84.18	84
76	0.73	10.32	10	119	1.29	85.47	85
77	0.82	11.14	11	120	1.25	86.72	87
78	0.83	11.97	12	121	1.53	88.25	88
79	0.79	12.76	13	122	1.20	89.45	89
80	0.79	13.55	14	123	1.33	90.78	91
81	1.37	14.92	15	124	1.01	91.79	92
82	1.30	16.22	16	125	0.97	92.76	93
83	1.14	17.36	17	126	0.84	93.60	94
84	1.42	18.78	19	127	0.91	94.51	95
85	1.06	19.85	20	128	0.63	95.13	95
86	1.55	21.40	21	129	0.71	95.84	96
87	1.43	22.83	23	130	0.40	96.25	96
88	1.66	24.49	24	131	0.63	96.88	97
89	1.45	25.93	26	132	0.45	97.33	97
90	1.64	27.57	28	133	0.39	97.71	98
91	1.96	29.53	30	134	0.47	98.18	98
92	1.98	31.51	32	≥ 135	0.37	98.56	99
93	1.90	33.41	33				

TABLE C.4. '97 Air Force Electrical (E) Percentile Conversion

E_S	%	Cum. %	$E_\%$	E_S	%	Cum. %	$E_\%$
≤119	0.08	1.48	1	159	0.33	12.44	12
120	0.14	1.62	2	160	0.53	12.97	13
121	0.05	1.67	2	161	0.49	13.46	13
122	0.20	1.87	2	162	0.38	13.84	14
123	0.14	2.01	2	163	0.64	14.47	14
124	0.12	2.14	2	164	0.65	15.13	15
125	0.15	2.29	2	165	0.56	15.68	16
126	0.10	2.39	2	166	0.49	16.17	16
127	0.10	2.49	2	167	0.48	16.65	17
128	0.15	2.64	3	168	0.63	17.28	17
129	0.11	2.75	3	169	0.65	17.94	18
130	0.19	2.94	3	170	0.89	18.82	19
131	0.13	3.06	3	171	0.64	19.47	19
132	0.13	3.20	3	172	0.90	20.37	20
133	0.24	3.43	3	173	0.84	21.21	21
134	0.26	3.69	4	174	0.77	21.98	22
135	0.20	3.89	4	175	0.64	22.62	23
136	0.26	4.14	4	176	0.82	23.44	23
137	0.23	4.38	4	177	0.90	24.34	24
138	0.21	4.58	5	178	1.09	25.44	25
139	0.22	4.80	5	179	0.74	26.18	26
140	0.16	4.96	5	180	1.32	27.50	27
141	0.38	5.34	5	181	0.87	28.37	28
142	0.26	5.60	6	182	1.20	29.56	30
143	0.32	5.92	6	183	0.95	30.51	31
144	0.25	6.17	6	184	0.97	31.48	31
145	0.37	6.54	7	185	1.06	32.53	33
146	0.15	6.69	7	186	1.05	33.58	34
147	0.31	6.99	7	187	0.94	34.53	35
148	0.35	7.35	7	188	1.24	35.77	36
149	0.31	7.66	8	189	1.16	36.93	37
150	0.44	8.09	8	190	1.14	38.08	38
151	0.41	8.50	9	191	1.07	39.14	39
152	0.37	8.87	9	192	1.03	40.17	40
153	0.36	9.24	9	193	1.13	41.30	41
154	0.52	9.76	10	194	1.28	42.58	43
155	0.53	10.29	10	195	1.17	43.75	44
156	0.51	10.80	11	196	1.12	44.87	45
157	0.46	11.26	11	197	1.48	46.35	46
158	0.85	12.12	12	198	1.10	47.45	47

TABLE C.4. '97 Air Force Electrical (E) Percentile Conversion (continued)

E_S	%	Cum. %	$E_\%$	E_S	%	Cum. %	$E_\%$
199	1.07	48.53	49	236	0.76	86.04	86
200	1.12	49.64	50	237	0.53	86.57	87
201	1.38	51.02	51	238	0.69	87.26	87
202	1.11	52.13	52	239	0.74	88.00	88
203	1.15	53.28	53	240	0.47	88.47	88
204	0.97	54.25	54	241	0.37	88.84	89
205	1.11	55.36	55	242	0.60	89.44	89
206	1.10	56.46	56	243	0.47	89.91	90
207	1.19	57.65	58	244	0.69	90.61	91
208	0.92	58.57	59	245	0.40	91.00	91
209	1.17	59.74	60	246	0.19	91.19	91
210	1.23	60.98	61	247	0.55	91.75	92
211	1.26	62.24	62	248	0.42	92.17	92
212	1.33	63.57	64	249	0.47	92.64	93
213	1.23	64.80	65	250	0.47	93.11	93
214	1.25	66.05	66	251	0.43	93.54	94
215	1.22	67.27	67	252	0.52	94.06	94
216	1.04	68.31	68	253	0.33	94.39	94
217	0.86	69.17	69	254	0.32	94.71	95
218	0.95	70.12	70	255	0.29	95.00	95
219	0.88	70.99	71	256	0.25	95.26	95
220	0.88	71.87	72	257	0.30	95.56	96
221	1.19	73.06	73	258	0.36	95.92	96
222	1.11	74.17	74	259	0.37	96.29	96
223	0.87	75.04	75	260	0.20	96.49	96
224	0.79	75.84	76	261	0.20	96.69	97
225	0.54	76.38	76	262	0.20	96.89	97
226	1.00	77.37	77	263	0.19	97.08	97
227	1.19	78.56	79	264	0.20	97.28	97
228	1.06	79.62	80	265	0.26	97.54	98
229	1.04	80.66	81	266	0.22	97.76	98
230	0.79	81.45	81	267	0.12	97.88	98
231	0.79	82.24	82	268	0.11	97.99	98
232	0.92	83.16	83	269	0.20	98.19	98
233	0.65	83.81	84	270	0.12	98.31	98
234	0.69	84.49	84	271	0.15	98.46	98
235	0.79	85.28	85	$\geq$272	0.12	98.58	99

TABLE C.5. Air Force Regular AFQT Distributions for 1980 and 1997 Scales

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
1	0.05	100.00	0.04	100.00
2	0.01	99.95	0.05	99.96
3	0.03	99.94	0.06	99.91
4	0.07	99.91	0.24	99.85
5	0.06	99.85	0.15	99.61
6	0.07	99.79	0.20	99.46
7	0.06	99.71	0.27	99.26
8	0.11	99.65	0.17	98.99
9	0.09	99.54	0.42	98.83
10	0.11	99.45	0.28	98.40
11	0.11	99.34	0.47	98.12
12	0.16	99.24	0.19	97.65
13	0.25	99.07	0.40	97.46
14	0.10	98.83	0.23	97.07
15	0.27	98.73	0.49	96.83
16	0.26	98.46	0.60	96.34
17	0.29	98.20	0.66	95.75
18	0.35	97.90	0.34	95.09
19	0.40	97.55	0.78	94.75
20	0.21	97.16	0.44	93.97
21	0.56	96.94	0.49	93.53
22	0.57	96.38	0.96	93.04
23	0.67	95.81	0.55	92.08
24	0.37	95.13	0.61	91.54
25	0.82	94.76	1.26	90.93
26	0.40	93.94	0.68	89.66
27	0.98	93.54	0.69	88.98
28	0.53	92.56	0.70	88.30
29	1.15	92.03	0.73	87.60
30	0.61	90.89	0.85	86.86
31	0.70	90.28	0.87	86.01
32	1.33	89.58	0.86	85.15
33	0.76	88.25	0.93	84.29
34	0.79	87.48	0.98	83.35

Note. See Section 4.2 for explaination of contents.

TABLE C.5. Air Force Regular AFQT Distributions for 1980 and 1997 Scales (continued)

| AFQT | 1980 | | 1997 | |
Score	%	Qual.	%	Qual.
35	1.70	86.70	2.02	82.38
36	0.86	85.00	1.07	80.35
37	0.98	84.14	0.00	79.28
38	0.97	83.16	1.17	79.28
39	1.01	82.20	1.18	78.10
40	1.13	81.19	1.24	76.93
41	1.13	80.06	1.21	75.68
42	2.38	78.94	1.25	74.47
43	1.20	76.55	1.27	73.22
44	1.21	75.35	1.35	71.95
45	1.27	74.14	1.30	70.60
46	1.34	72.87	1.42	69.30
47	1.37	71.54	1.43	67.88
48	1.38	70.17	1.48	66.45
49	1.40	68.79	1.54	64.97
50	1.43	67.38	1.49	63.43
51	1.50	65.96	1.48	61.94
52	1.51	64.46	1.58	60.46
53	3.16	62.94	1.59	58.88
54	1.61	59.78	1.55	57.28
55	1.55	58.17	1.61	55.73
56	1.65	56.62	1.64	54.13
57	1.52	54.98	1.62	52.49
58	1.69	53.45	0.00	50.87
59	1.58	51.76	1.61	50.87
60	0.00	50.18	1.67	49.26
61	1.70	50.18	1.64	47.60
62	1.74	48.48	1.67	45.96
63	1.70	46.74	1.55	44.29
64	1.65	45.04	1.53	42.74
65	1.73	43.39	0.00	41.21
66	1.64	41.66	1.57	41.21
67	1.71	40.02	1.55	39.64
68	1.54	38.31	1.60	38.09
69	1.73	36.77	1.49	36.49

Note. See Section 4.2 for explaination of contents.

TABLE C.5. Air Force Regular AFQT Distributions for 1980 and 1997 Scales (continued)

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
70	1.61	35.04	2.84	35.00
71	1.52	33.43	1.35	32.16
72	1.47	31.91	1.47	30.81
73	1.54	30.44	1.33	29.34
74	1.49	28.90	1.30	28.00
75	1.55	27.41	1.40	26.70
76	1.39	25.86	1.35	25.29
77	1.39	24.48	1.22	23.95
78	1.40	23.08	1.21	22.72
79	1.29	21.68	1.17	21.51
80	2.62	20.39	1.13	20.34
81	1.29	17.77	1.07	19.21
82	1.22	16.48	2.13	18.14
83	0.00	15.25	1.05	16.01
84	2.37	15.25	1.00	14.96
85	1.11	12.89	1.84	13.96
86	0.96	11.78	0.83	12.11
87	1.07	10.83	0.84	11.28
88	0.92	9.76	1.47	10.45
89	0.88	8.84	0.71	8.98
90	0.83	7.95	1.26	8.26
91	0.79	7.12	0.55	7.00
92	0.70	6.33	1.03	6.45
93	0.74	5.63	1.43	5.42
94	0.63	4.89	0.76	4.00
95	0.63	4.26	0.94	3.24
96	0.53	3.63	0.67	2.30
97	0.58	3.09	0.67	1.63
98	0.39	2.51	0.53	0.96
99	2.12	2.12	0.43	0.43

Note. See Section 4.2 for explaination of contents.

TABLE C.6. Air Force Reserve AFQT Distributions for 1980 and 1997 Scales

AFQT Score	1980 %	1980 Qual.	1997 %	1997 Qual.
1	0.11	100.00	0.10	100.00
2	0.05	99.89	0.08	99.90
3	0.00	99.84	0.08	99.82
4	0.08	99.84	0.23	99.74
5	0.08	99.75	0.25	99.51
6	0.07	99.67	0.16	99.26
7	0.05	99.61	0.36	99.10
8	0.10	99.56	0.20	98.74
9	0.11	99.46	0.44	98.54
10	0.10	99.34	0.34	98.10
11	0.16	99.25	0.34	97.75
12	0.21	99.08	0.18	97.41
13	0.33	98.87	0.36	97.23
14	0.15	98.54	0.25	96.87
15	0.28	98.39	0.46	96.62
16	0.31	98.11	0.56	96.16
17	0.34	97.80	0.62	95.60
18	0.39	97.46	0.26	94.98
19	0.34	97.06	0.62	94.72
20	0.23	96.72	0.36	94.10
21	0.38	96.49	0.46	93.73
22	0.64	96.11	0.71	93.28
23	0.56	95.47	0.41	92.57
24	0.34	94.92	0.66	92.16
25	0.62	94.57	1.26	91.50
26	0.28	93.95	0.62	90.24
27	0.89	93.67	0.66	89.62
28	0.51	92.78	0.82	88.96
29	1.25	92.27	0.82	88.14
30	0.41	91.03	0.74	87.32
31	0.75	90.62	0.85	86.58
32	1.34	89.86	0.98	85.73
33	0.75	88.52	1.02	84.75
34	0.84	87.76	0.97	83.73

Note. See Section 4.2 for explaination of contents.

TABLE C.6. Air Force Reserve AFQT Distributions for 1980 and 1997 Scales (continued)

AFQT Score	1980 %	1980 Qual.	1997 %	1997 Qual.
35	1.67	86.93	1.67	82.76
36	0.87	85.26	1.03	81.09
37	0.97	84.39	0.00	80.06
38	0.93	83.42	0.85	80.06
39	0.89	82.48	0.92	79.20
40	1.02	81.60	1.00	78.28
41	1.05	80.58	1.07	77.28
42	1.74	79.53	1.03	76.22
43	0.90	77.79	1.02	75.18
44	1.12	76.89	1.25	74.17
45	1.23	75.77	1.02	72.92
46	1.28	74.54	0.98	71.90
47	1.25	73.27	1.28	70.92
48	1.18	72.02	1.20	69.64
49	1.03	70.84	1.28	68.44
50	1.25	69.80	1.26	67.16
51	1.46	68.56	1.49	65.90
52	1.25	67.10	1.18	64.41
53	2.95	65.85	1.49	63.23
54	1.36	62.90	1.36	61.74
55	1.61	61.54	1.30	60.37
56	1.66	59.93	1.64	59.08
57	1.54	58.27	1.33	57.44
58	1.43	56.73	0.00	56.11
59	1.62	55.31	1.82	56.11
60	0.00	53.68	1.79	54.29
61	1.64	53.68	1.57	52.50
62	1.75	52.04	1.62	50.93
63	1.80	50.29	1.59	49.30
64	1.56	48.48	1.41	47.71
65	1.56	46.92	0.00	46.30
66	1.89	45.37	1.56	46.30
67	1.66	43.48	1.57	44.74
68	1.46	41.82	1.48	43.17
69	1.75	40.36	1.57	41.69

Note. See Section 4.2 for explaination of contents.

TABLE C.6. Air Force Reserve AFQT Distributions for 1980 and 1997 Scales (continued)

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
70	1.26	38.61	3.20	40.12
71	1.66	37.35	1.39	36.92
72	1.56	35.69	1.16	35.53
73	1.48	34.13	1.66	34.36
74	1.43	32.66	1.31	32.70
75	1.36	31.23	1.39	31.39
76	1.54	29.87	1.12	30.00
77	1.57	28.33	1.23	28.88
78	1.18	26.75	1.13	27.65
79	1.25	25.57	1.12	26.52
80	2.84	24.32	0.92	25.41
81	1.34	21.49	1.26	24.49
82	1.44	20.14	2.16	23.22
83	0.00	18.70	1.02	21.06
84	2.54	18.70	1.05	20.04
85	1.13	16.16	2.25	18.99
86	1.34	15.02	1.28	16.75
87	1.16	13.68	1.07	15.47
88	0.85	12.51	1.79	14.40
89	1.08	11.66	0.72	12.61
90	1.21	10.58	1.56	11.89
91	0.97	9.37	0.66	10.33
92	0.75	8.40	1.39	9.68
93	0.95	7.64	2.00	8.28
94	0.72	6.69	1.23	6.28
95	0.64	5.97	1.26	5.05
96	0.71	5.33	1.00	3.79
97	0.85	4.63	1.05	2.79
98	0.62	3.77	0.80	1.74
99	3.15	3.15	0.93	0.93

Note. See Section 4.2 for explaination of contents.

TABLE C.7. Air Force Guard AFQT Distributions for 1980 and 1997 Scales

| AFQT | 1980 | | 1997 | |
Score	%	Qual.	%	Qual.
1	0.06	100.00	0.06	100.00
2	0.13	99.94	0.19	99.94
3	0.07	99.81	0.11	99.76
4	0.11	99.75	0.44	99.65
5	0.13	99.63	0.32	99.20
6	0.10	99.50	0.35	98.88
7	0.15	99.40	0.51	98.53
8	0.21	99.25	0.28	98.02
9	0.15	99.04	0.53	97.74
10	0.18	98.88	0.27	97.21
11	0.24	98.71	0.52	96.95
12	0.18	98.46	0.17	96.43
13	0.46	98.28	0.31	96.26
14	0.19	97.82	0.32	95.95
15	0.30	97.63	0.52	95.63
16	0.25	97.33	0.65	95.11
17	0.29	97.08	0.75	94.45
18	0.54	96.79	0.41	93.70
19	0.38	96.25	0.74	93.29
20	0.31	95.87	0.39	92.55
21	0.64	95.56	0.32	92.16
22	0.64	94.92	0.90	91.84
23	0.68	94.28	0.68	90.95
24	0.30	93.60	0.54	90.27
25	0.85	93.30	1.01	89.73
26	0.39	92.45	0.63	88.72
27	0.95	92.06	0.52	88.09
28	0.62	91.11	0.56	87.57
29	0.93	90.49	0.69	87.01
30	0.44	89.56	0.68	86.32
31	0.64	89.12	0.59	85.64
32	1.26	88.48	0.55	85.06
33	0.61	87.22	0.81	84.50
34	0.59	86.61	0.80	83.70

Note. See Section 4.2 for explaination of contents.

TABLE C.7. Air Force Guard AFQT Distributions for 1980 and 1997 Scales (continued)

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
35	1.17	86.02	1.70	82.90
36	0.79	84.85	1.00	81.20
37	0.82	84.06	0.00	80.20
38	0.80	83.24	0.82	80.20
39	0.75	82.45	0.95	79.38
40	0.85	81.69	1.06	78.43
41	0.89	80.84	0.95	77.37
42	2.35	79.96	0.95	76.41
43	0.85	77.61	1.10	75.46
44	1.06	76.76	1.02	74.37
45	1.23	75.69	1.16	73.35
46	1.00	74.47	1.03	72.19
47	1.02	73.47	1.20	71.16
48	0.92	72.45	1.21	69.96
49	1.13	71.53	0.97	68.75
50	1.14	70.40	1.18	67.78
51	1.10	69.26	1.24	66.60
52	1.15	68.17	1.23	65.36
53	2.47	67.02	1.11	64.13
54	1.59	64.55	1.34	63.02
55	1.26	62.96	1.41	61.68
56	1.26	61.69	1.34	60.28
57	1.20	60.43	1.27	58.94
58	1.53	59.24	0.00	57.66
59	1.23	57.71	1.28	57.66
60	0.00	56.48	1.32	56.38
61	1.54	56.48	1.22	55.06
62	1.42	54.94	1.52	53.85
63	1.47	53.53	1.49	52.33
64	1.67	52.05	1.56	50.84
65	1.47	50.38	0.00	49.28
66	1.44	48.91	1.48	49.28
67	1.51	47.47	1.41	47.79
68	1.58	45.97	1.27	46.39
69	1.60	44.38	1.36	45.11

Note. See Section 4.2 for explaination of contents.

TABLE C.7. Air Force Guard AFQT Distributions for 1980 and 1997 Scales (continued)

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
70	1.36	42.78	2.94	43.75
71	1.82	41.42	1.51	40.81
72	1.55	39.60	1.29	39.30
73	1.46	38.05	1.18	38.01
74	1.15	36.59	1.37	36.82
75	1.43	35.44	1.41	35.45
76	1.54	34.01	1.29	34.05
77	1.35	32.47	1.33	32.75
78	1.51	31.12	1.31	31.42
79	1.54	29.62	1.31	30.12
80	3.21	28.08	1.32	28.81
81	1.36	24.87	1.37	27.49
82	1.53	23.51	2.62	26.12
83	0.00	21.98	1.02	23.50
84	2.77	21.98	1.34	22.48
85	1.25	19.21	2.25	21.14
86	1.05	17.96	1.01	18.89
87	1.44	16.91	0.90	17.89
88	1.15	15.47	2.19	16.99
89	1.28	14.32	1.06	14.80
90	1.23	13.04	1.64	13.74
91	1.23	11.81	0.85	12.10
92	1.12	10.58	1.73	11.25
93	1.01	9.46	2.01	9.52
94	0.87	8.46	1.26	7.50
95	1.01	7.58	1.74	6.24
96	0.89	6.57	1.26	4.50
97	1.02	5.69	1.22	3.24
98	0.74	4.67	1.05	2.03
99	3.93	3.93	0.97	0.97

Note. See Section 4.2 for explaination of contents.

TABLE C.8. Subgroup Qualification Rates (Air Force Regular)

Scale	Qualification Rates[a]							
White (N = 38,692)								
1980	7.1	(93)	50.3	(65)	74.7	(50)	81.0	(45)
1997	6.8	(93)	48.3	(65)	71.1	(50)	77.9	(45)
1997	6.8	(93)	49.9	(64)	75.3	(47)	81.4	(42)
1980	87.1	(40)	91.4	(35)	94.1	(31)	98.4	(21)
1997	83.5	(40)	88.1	(35)	90.9	(31)	96.3	(21)
1997	86.5	(36)	91.6	(30)	93.7	(26)	98.4	(15)
Black (N = 9,482)								
1980	1.3	(93)	21.7	(65)	45.4	(50)	53.8	(45)
1997	1.2	(93)	20.0	(65)	40.6	(50)	49.1	(45)
1997	1.2	(93)	21.1	(64)	45.8	(47)	54.1	(42)
1980	63.9	(40)	73.0	(35)	79.1	(31)	93.0	(21)
1997	57.8	(40)	65.5	(35)	71.8	(31)	85.4	(21)
1997	62.4	(36)	73.0	(30)	77.8	(26)	92.7	(15)
Hispanic (N = 3,493)								
1980	1.8	(93)	29.1	(65)	51.7	(50)	59.7	(45)
1997	1.7	(93)	25.9	(65)	46.8	(50)	54.7	(45)
1997	1.7	(93)	27.4	(64)	51.4	(47)	59.8	(42)
1980	68.2	(40)	76.3	(35)	82.3	(31)	93.4	(21)
1997	62.6	(40)	69.8	(35)	74.8	(31)	87.9	(21)
1997	67.1	(36)	76.4	(30)	81.5	(26)	93.1	(15)
Other (N = 3,320)								
1980	5.1	(93)	39.4	(65)	60.9	(50)	67.8	(45)
1997	4.9	(93)	35.9	(65)	56.4	(50)	63.6	(45)
1997	4.9	(93)	37.3	(64)	61.2	(47)	67.6	(42)
1980	75.6	(40)	82.0	(35)	86.4	(31)	94.8	(21)
1997	70.2	(40)	76.9	(35)	81.1	(31)	90.2	(21)
1997	74.4	(36)	82.1	(30)	85.0	(26)	94.8	(15)

Note. See Section 4.5 for explaination of contents.

[a]AFQT cut-scores are provided in parentheses.

TABLE C.9. Subgroup Qualification Rates (Air Force Reserve)

Scale	Qualification Rates[a]							
White (N = 3,789)								
1980	10.7	(93)	57.9	(65)	79.5	(50)	84.4	(45)
1997	11.6	(93)	57.3	(65)	77.5	(50)	82.1	(45)
1997	11.6	(93)	58.7	(64)	80.5	(47)	84.7	(42)
1980	88.8	(40)	92.6	(35)	94.9	(31)	98.2	(21)
1997	86.6	(40)	89.7	(35)	92.4	(31)	96.9	(21)
1997	88.4	(36)	92.9	(30)	94.6	(26)	98.3	(15)
Black (N = 1,494)								
1980	1.2	(93)	23.6	(65)	48.7	(50)	57.0	(45)
1997	1.7	(93)	22.6	(65)	44.9	(50)	53.0	(45)
1997	1.7	(93)	24.4	(64)	49.9	(47)	58.0	(42)
1980	66.5	(40)	75.2	(35)	81.9	(31)	93.0	(21)
1997	60.8	(40)	68.3	(35)	74.6	(31)	87.3	(21)
1997	65.6	(36)	75.8	(30)	81.3	(26)	93.0	(15)
Hispanic (N = 343)								
1980	3.5	(93)	32.4	(65)	61.2	(50)	67.1	(45)
1997	4.1	(93)	31.8	(65)	58.6	(50)	65.0	(45)
1997	4.1	(93)	32.4	(64)	63.6	(47)	67.3	(42)
1980	75.8	(40)	83.7	(35)	87.5	(31)	95.0	(21)
1997	69.4	(40)	77.8	(35)	83.4	(31)	89.8	(21)
1997	74.9	(36)	83.4	(30)	86.9	(26)	95.6	(15)
Other (N = 471)								
1980	6.6	(93)	43.5	(65)	65.2	(50)	72.4	(45)
1997	5.5	(93)	43.3	(65)	60.9	(50)	68.2	(45)
1997	5.5	(93)	44.8	(64)	65.8	(47)	72.2	(42)
1980	76.0	(40)	80.9	(35)	85.8	(31)	94.7	(21)
1997	73.7	(40)	76.6	(35)	79.8	(31)	91.5	(21)
1997	75.6	(36)	81.7	(30)	85.8	(26)	95.1	(15)

Note. See Section 4.5 for explaination of contents.

[a]AFQT cut-scores are provided in parentheses.

TABLE C.10. Subgroup Qualification Rates (Air Force Guard)

Scale	Qualification Rates[a]							
	White (N = 6,548)							
1980	11.8	(93)	58.7	(65)	78.6	(50)	83.6	(45)
1997	11.8	(93)	57.7	(65)	76.5	(50)	81.6	(45)
1997	11.8	(93)	59.2	(64)	79.4	(47)	84.4	(42)
1980	88.7	(40)	92.1	(35)	94.3	(31)	98.5	(21)
1997	86.1	(40)	89.6	(35)	91.7	(31)	96.5	(21)
1997	88.3	(36)	92.3	(30)	94.1	(26)	98.5	(15)
	Black (N = 1,105)							
1980	2.2	(93)	24.7	(65)	46.4	(50)	54.0	(45)
1997	2.3	(93)	23.2	(65)	43.1	(50)	50.0	(45)
1997	2.3	(93)	24.9	(64)	48.1	(47)	54.8	(42)
1980	63.5	(40)	70.5	(35)	76.8	(31)	90.4	(21)
1997	58.1	(40)	66.0	(35)	70.1	(31)	82.5	(21)
1997	63.2	(36)	71.6	(30)	75.7	(26)	90.5	(15)
	Hispanic (N = 693)							
1980	2.0	(93)	22.9	(65)	41.1	(50)	46.5	(45)
1997	1.9	(93)	21.5	(65)	36.2	(50)	43.4	(45)
1997	1.9	(93)	23.2	(64)	40.5	(47)	46.6	(42)
1980	54.7	(40)	60.6	(35)	65.7	(31)	79.7	(21)
1997	49.5	(40)	55.8	(35)	60.3	(31)	71.1	(21)
1997	53.4	(36)	61.0	(30)	65.1	(26)	79.8	(15)
	Other (N = 689)							
1980	6.7	(93)	40.2	(65)	60.1	(50)	65.2	(45)
1997	7.0	(93)	39.5	(65)	56.6	(50)	62.8	(45)
1997	7.0	(93)	40.8	(64)	60.5	(47)	65.2	(42)
1980	71.7	(40)	78.7	(35)	82.9	(31)	92.3	(21)
1997	67.5	(40)	73.3	(35)	78.1	(31)	87.5	(21)
1997	70.4	(36)	78.8	(30)	82.4	(26)	92.6	(15)

Note. See Section 4.5 for explaination of contents.

[a]AFQT cut-scores are provided in parentheses.

TABLE C.11. Gender Qualification Rates (Air Force Regular)

Scale	Qualification Rates[a]							
Males (N = 39,542)								
1980	6.6	(93)	47.0	(65)	70.4	(50)	76.8	(45)
1997	6.3	(93)	44.8	(65)	66.6	(50)	73.5	(45)
1997	6.3	(93)	46.4	(64)	70.9	(47)	77.1	(42)
1980	83.3	(40)	88.3	(35)	91.5	(31)	97.3	(21)
1997	79.3	(40)	84.4	(35)	87.7	(31)	94.4	(21)
1997	82.5	(36)	88.5	(30)	91.0	(26)	97.2	(15)
Females (N = 15,444)								
1980	3.2	(93)	34.0	(65)	59.7	(50)	67.4	(45)
1997	3.1	(93)	31.9	(65)	55.2	(50)	63.3	(45)
1997	3.1	(93)	33.4	(64)	60.2	(47)	67.7	(42)
1980	75.8	(40)	82.6	(35)	87.0	(31)	95.9	(21)
1997	70.7	(40)	77.2	(35)	81.7	(31)	91.4	(21)
1997	74.8	(36)	82.7	(30)	86.2	(26)	95.8	(15)

Note. See Section 4.5 for explaination of contents.

[a]AFQT cut-scores are provided in parentheses.

TABLE C.12. Gender Qualification Rates (Air Force Reserve)

Scale	Qualification Rates[a]							
	Males (N = 4,174)							
1980	9.5	(93)	52.2	(65)	74.8	(50)	80.1	(45)
1997	10.2	(93)	51.5	(65)	72.7	(50)	77.4	(45)
1997	10.2	(93)	53.1	(64)	75.8	(47)	80.5	(42)
1980	85.4	(40)	90.2	(35)	93.0	(31)	97.2	(21)
1997	82.3	(40)	86.4	(35)	89.8	(31)	95.2	(21)
1997	84.7	(36)	90.4	(30)	92.7	(26)	97.4	(15)
	Females (N = 1,923)							
1980	3.7	(93)	35.5	(65)	59.0	(50)	66.5	(45)
1997	4.2	(93)	35.1	(65)	55.2	(50)	63.1	(45)
1997	4.2	(93)	36.1	(64)	60.4	(47)	67.0	(42)
1980	73.4	(40)	79.9	(35)	85.5	(31)	95.0	(21)
1997	69.5	(40)	74.9	(35)	79.6	(31)	90.5	(21)
1997	73.2	(36)	80.6	(30)	84.9	(26)	95.0	(15)

Note. See Section 4.5 for explaination of contents.

[a]AFQT cut-scores are provided in parentheses.

TABLE C.13. Gender Qualification Rates (Air Force Guard)

Scale	Qualification Rates[a]							
	Males (N = 6,757)							
1980	10.9	(93)	53.8	(65)	73.3	(50)	78.3	(45)
1997	10.8	(93)	52.7	(65)	70.9	(50)	76.3	(45)
1997	10.8	(93)	54.3	(64)	74.1	(47)	79.1	(42)
1980	83.5	(40)	87.6	(35)	90.2	(31)	95.8	(21)
1997	80.7	(40)	84.7	(35)	87.2	(31)	92.8	(21)
1997	83.1	(36)	87.7	(30)	89.9	(26)	95.9	(15)
	Females (N = 2,278)							
1980	5.2	(93)	40.2	(65)	61.7	(50)	68.0	(45)
1997	5.6	(93)	39.1	(65)	58.5	(50)	64.6	(45)
1997	5.6	(93)	40.6	(64)	62.4	(47)	68.5	(42)
1980	76.2	(40)	81.5	(35)	85.8	(31)	94.8	(21)
1997	71.6	(40)	77.7	(35)	81.1	(31)	90.2	(21)
1997	75.5	(36)	82.1	(30)	85.2	(26)	94.9	(15)

Note. See Section 4.5 for explaination of contents.

[a]AFQT cut-scores are provided in parentheses.

TABLE C.14. Subgroup Qualification Distributions (Air Force Regular)

Score-Scale	AFQT Cut	White	Black	Hispanic	Other
1980	93	88.6	4.0	2.0	5.4
1997	93	88.7	3.9	1.9	5.5
1997	93	88.7	3.9	1.9	5.5
1980	65	81.6	8.6	4.3	5.5
1997	65	82.4	8.4	4.0	5.3
1997	64	82.2	8.5	4.1	5.3
1980	50	78.0	11.6	4.9	5.5
1997	50	78.9	11.0	4.7	5.4
1997	47	78.1	11.6	4.8	5.4
1980	45	76.9	12.5	5.1	5.5
1997	45	77.7	12.0	4.9	5.4
1997	42	76.9	12.5	5.1	5.5
1980	40	75.5	13.6	5.3	5.6
1997	40	76.4	13.0	5.2	5.5
1997	36	75.7	13.4	5.3	5.6
1980	35	74.2	14.5	5.6	5.7
1997	35	75.3	13.7	5.4	5.6
1997	30	74.2	14.5	5.6	5.7
1980	31	73.3	15.1	5.8	5.8
1997	31	74.4	14.4	5.5	5.7
1997	26	73.5	15.0	5.8	5.7
1980	21	71.4	16.5	6.1	5.9
1997	21	72.5	15.7	6.0	5.8
1997	15	71.5	16.5	6.1	5.9

TABLE C.15. Subgroup Qualification Distributions (Air Force Reserve)

Score-Scale	AFQT Cut	White	Black	Hispanic	Other
1980	93	86.9	3.9	2.6	6.7
1997	93	87.1	5.0	2.8	5.1
1997	93	87.1	5.0	2.8	5.1
1980	65	76.6	12.3	3.9	7.2
1997	65	76.9	12.0	3.9	7.2
1997	64	76.4	12.5	3.8	7.3
1980	50	70.8	17.1	4.9	7.2
1997	50	71.7	16.4	4.9	7.0
1997	47	70.6	17.2	5.0	7.2
1980	45	69.2	18.4	5.0	7.4
1997	45	70.0	17.8	5.0	7.2
1997	42	69.1	18.6	5.0	7.3
1980	40	67.6	20.0	5.2	7.2
1997	40	68.7	19.0	5.0	7.3
1997	36	67.8	19.8	5.2	7.2
1980	35	66.2	21.2	5.4	7.2
1997	35	67.3	20.2	5.3	7.2
1997	30	66.1	21.3	5.4	7.2
1980	31	65.1	22.2	5.4	7.3
1997	31	66.3	21.1	5.4	7.1
1997	26	65.2	22.1	5.4	7.3
1980	21	63.3	23.6	5.5	7.6
1997	21	64.2	22.8	5.4	7.5
1997	15	63.2	23.6	5.6	7.6

TABLE C.16. Subgroup Qualification Distributions (Air Force Guard)

Score-Scale	AFQT Cut	White	Black	Hispanic	Other
1980	93	90.2	2.8	1.6	5.4
1997	93	90.0	2.9	1.5	5.6
1997	93	90.0	2.9	1.5	5.6
1980	65	84.4	6.0	3.5	6.1
1997	65	84.8	5.8	3.3	6.1
1997	64	84.4	6.0	3.5	6.1
1980	50	80.9	8.1	4.5	6.5
1997	50	81.8	7.8	4.1	6.4
1997	47	80.9	8.3	4.4	6.5
1980	45	80.0	8.7	4.7	6.6
1997	45	80.6	8.3	4.5	6.5
1997	42	80.1	8.8	4.7	6.5
1980	40	78.7	9.5	5.1	6.7
1997	40	79.5	9.1	4.8	6.6
1997	36	78.8	9.5	5.0	6.6
1980	35	77.6	10.0	5.4	7.0
1997	35	78.4	9.7	5.2	6.7
1997	30	77.5	10.1	5.4	7.0
1980	31	76.7	10.5	5.7	7.1
1997	31	77.6	10.0	5.4	7.0
1997	26	76.8	10.4	5.6	7.1
1980	21	74.7	11.6	6.4	7.4
1997	21	75.9	11.0	5.9	7.2
1997	15	74.6	11.6	6.4	7.4

TABLE C.17. Gender Qualification Distributions (Air Force Regular)

Score-Scale	AFQT Cut	Males	Females
1980	93	83.9	16.1
1997	93	83.7	16.3
1997	93	83.7	16.3
1980	65	78.0	22.0
1997	65	78.2	21.8
1997	64	78.1	21.9
1980	50	75.1	24.9
1997	50	75.5	24.5
1997	47	75.1	24.9
1980	45	74.5	25.5
1997	45	74.8	25.2
1997	42	74.5	25.5
1980	40	73.8	26.2
1997	40	74.2	25.8
1997	36	73.9	26.1
1980	35	73.2	26.8
1997	35	73.7	26.3
1997	30	73.3	26.7
1980	31	72.9	27.1
1997	31	73.3	26.7
1997	26	73.0	27.0
1980	21	72.2	27.8
1997	21	72.6	27.4
1997	15	72.2	27.8

TABLE C.18. Gender Qualification Distributions (Air Force Reserve)

Score-Scale	AFQT Cut	Males	Females
1980	93	84.8	15.2
1997	93	84.0	16.0
1997	93	84.0	16.0
1980	65	76.1	23.9
1997	65	76.1	23.9
1997	64	76.1	23.9
1980	50	73.3	26.7
1997	50	74.1	25.9
1997	47	73.1	26.9
1980	45	72.3	27.7
1997	45	72.7	27.3
1997	42	72.3	27.7
1980	40	71.6	28.4
1997	40	72.0	28.0
1997	36	71.5	28.5
1980	35	71.0	29.0
1997	35	71.4	28.6
1997	30	70.9	29.1
1980	31	70.2	29.8
1997	31	71.0	29.0
1997	26	70.3	29.7
1980	21	68.9	31.1
1997	21	69.5	30.5
1997	15	69.0	31.0

TABLE C.19. Gender Qualification Distributions (Air Force Guard)

Score-Scale	AFQT Cut	Males	Females
1980	93	86.2	13.8
1997	93	85.2	14.8
1997	93	85.2	14.8
1980	65	79.9	20.1
1997	65	80.0	20.0
1997	64	79.8	20.2
1980	50	77.9	22.1
1997	50	78.2	21.8
1997	47	77.9	22.1
1980	45	77.4	22.6
1997	45	77.8	22.2
1997	42	77.4	22.6
1980	40	76.5	23.5
1997	40	77.0	23.0
1997	36	76.6	23.4
1980	35	76.1	23.9
1997	35	76.4	23.6
1997	30	76.0	24.0
1980	31	75.7	24.3
1997	31	76.1	23.9
1997	26	75.8	24.2
1980	21	75.0	25.0
1997	21	75.3	24.7
1997	15	75.0	25.0

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TABLE D.1. Marine Corps Regular AFQT Distributions for 1980 and 1997 Scales

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
1	0.10	100.00	0.07	100.00
2	0.03	99.90	0.08	99.93
3	0.04	99.87	0.11	99.85
4	0.08	99.83	0.31	99.74
5	0.08	99.75	0.24	99.43
6	0.10	99.67	0.26	99.19
7	0.06	99.57	0.37	98.93
8	0.15	99.51	0.23	98.55
9	0.14	99.36	0.62	98.32
10	0.18	99.22	0.45	97.70
11	0.18	99.04	0.66	97.26
12	0.24	98.86	0.28	96.60
13	0.35	98.62	0.56	96.31
14	0.17	98.27	0.28	95.75
15	0.33	98.10	0.68	95.47
16	0.44	97.77	0.76	94.79
17	0.51	97.33	0.84	94.03
18	0.59	96.81	0.52	93.18
19	0.50	96.22	0.99	92.66
20	0.37	95.72	0.52	91.67
21	0.68	95.35	0.53	91.15
22	0.82	94.66	1.36	90.61
23	0.91	93.84	0.67	89.25
24	0.55	92.94	0.75	88.58
25	1.05	92.39	1.67	87.84
26	0.66	91.33	0.76	86.16
27	1.21	90.67	0.86	85.40
28	0.63	89.46	0.93	84.55
29	1.46	88.83	0.95	83.61
30	0.80	87.37	0.99	82.66
31	0.81	86.56	1.09	81.67
32	1.71	85.75	1.13	80.59
33	0.95	84.04	1.08	79.46
34	0.92	83.09	1.08	78.38

Note. See Section 4.2 for explaination of contents.

TABLE D.1. Marine Corps Regular AFQT Distributions for 1980 and 1997 Scales (continued)

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
35	2.20	82.18	2.35	77.30
36	0.99	79.97	1.26	74.96
37	1.09	78.99	0.00	73.70
38	1.16	77.90	1.39	73.70
39	1.13	76.73	1.34	72.30
40	1.18	75.60	1.35	70.96
41	1.22	74.41	1.36	69.61
42	2.68	73.20	1.35	68.25
43	1.30	70.52	1.42	66.90
44	1.27	69.22	1.32	65.48
45	1.39	67.95	1.44	64.16
46	1.30	66.56	1.50	62.72
47	1.40	65.26	1.51	61.23
48	1.41	63.85	1.53	59.72
49	1.51	62.45	1.59	58.19
50	1.34	60.94	1.56	56.60
51	1.63	59.60	1.55	55.03
52	1.61	57.97	1.55	53.49
53	3.09	56.35	1.65	51.94
54	1.70	53.27	1.59	50.29
55	1.63	51.56	1.66	48.69
56	1.57	49.93	1.61	47.03
57	1.42	48.36	1.60	45.42
58	1.71	46.94	0.00	43.82
59	1.53	45.22	1.52	43.82
60	0.00	43.69	1.56	42.29
61	1.79	43.69	1.58	40.74
62	1.63	41.90	1.54	39.16
63	1.66	40.26	1.48	37.62
64	1.41	38.60	1.49	36.14
65	1.69	37.19	0.00	34.65
66	1.58	35.50	1.47	34.65
67	1.62	33.93	1.51	33.18
68	1.42	32.30	1.43	31.67
69	1.53	30.88	1.40	30.25

Note. See Section 4.2 for explaination of contents.

TABLE D.1. Marine Corps Regular AFQT Distributions for 1980 and 1997 Scales (continued)

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
70	1.46	29.35	2.57	28.85
71	1.44	27.89	1.34	26.27
72	1.29	26.45	1.20	24.93
73	1.41	25.16	1.17	23.73
74	1.24	23.75	1.20	22.56
75	1.35	22.51	1.18	21.36
76	1.21	21.17	1.10	20.17
77	1.25	19.95	1.01	19.07
78	1.29	18.70	1.08	18.07
79	1.08	17.41	0.96	16.98
80	2.14	16.33	0.89	16.02
81	1.09	14.18	0.88	15.13
82	1.00	13.09	1.71	14.25
83	0.00	12.09	0.86	12.54
84	1.85	12.09	0.80	11.68
85	0.94	10.23	1.52	10.88
86	0.84	9.30	0.71	9.36
87	0.92	8.45	0.69	8.65
88	0.76	7.53	1.15	7.96
89	0.77	6.78	0.55	6.81
90	0.60	6.00	0.92	6.26
91	0.66	5.40	0.50	5.34
92	0.57	4.75	0.73	4.85
93	0.57	4.17	1.07	4.12
94	0.52	3.60	0.53	3.05
95	0.52	3.08	0.69	2.52
96	0.39	2.57	0.51	1.83
97	0.46	2.17	0.52	1.32
98	0.30	1.71	0.37	0.80
99	1.42	1.42	0.43	0.43

Note. See Section 4.2 for explaination of contents.

TABLE D.2. Marine Corps Reserve AFQT Distributions for 1980 and 1997
Scales

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
1	0.10	100.00	0.07	100.00
2	0.02	99.90	0.14	99.93
3	0.02	99.88	0.03	99.79
4	0.07	99.86	0.14	99.76
5	0.07	99.79	0.03	99.62
6	0.05	99.73	0.14	99.59
7	0.02	99.67	0.15	99.45
8	0.05	99.66	0.03	99.30
9	0.07	99.60	0.24	99.26
10	0.03	99.54	0.22	99.02
11	0.03	99.50	0.22	98.80
12	0.19	99.47	0.15	98.57
13	0.12	99.28	0.29	98.42
14	0.07	99.16	0.07	98.13
15	0.12	99.09	0.36	98.06
16	0.14	98.97	0.33	97.70
17	0.22	98.83	0.31	97.37
18	0.21	98.61	0.26	97.06
19	0.33	98.40	0.57	96.81
20	0.15	98.08	0.29	96.24
21	0.24	97.92	0.27	95.95
22	0.40	97.68	0.52	95.67
23	0.41	97.29	0.43	95.16
24	0.27	96.87	0.70	94.73
25	0.52	96.60	1.00	94.02
26	0.31	96.08	0.41	93.03
27	0.67	95.77	0.31	92.61
28	0.38	95.10	0.50	92.31
29	0.93	94.73	0.64	91.81
30	0.43	93.80	0.52	91.17
31	0.60	93.37	0.65	90.66
32	1.01	92.77	0.72	90.00
33	0.50	91.76	0.55	89.28
34	0.36	91.26	0.65	88.73

Note. See Section 4.2 for explaination of
contents.

TABLE D.2. Marine Corps Reserve AFQT Distributions for 1980 and 1997
Scales (continued)

| AFQT | 1980 | | 1997 | |
Score	%	Qual.	%	Qual.
35	1.37	90.90	1.77	88.08
36	0.60	89.52	0.79	86.31
37	0.58	88.92	0.00	85.52
38	0.77	88.34	0.70	85.52
39	0.74	87.56	0.91	84.82
40	0.88	86.83	0.94	83.91
41	0.89	85.95	1.08	82.96
42	1.53	85.06	1.06	81.88
43	0.88	83.53	1.05	80.81
44	1.00	82.65	1.27	79.77
45	1.22	81.66	1.31	78.50
46	1.22	80.44	1.44	77.19
47	1.10	79.22	1.44	75.75
48	1.15	78.12	1.51	74.30
49	1.41	76.97	1.15	72.79
50	1.53	75.56	1.51	71.64
51	1.36	74.03	1.48	70.13
52	1.27	72.67	1.22	68.65
53	2.59	71.40	1.31	67.43
54	1.44	68.81	1.17	66.13
55	1.43	67.37	1.55	64.96
56	1.43	65.94	1.49	63.41
57	1.27	64.51	1.60	61.92
58	1.58	63.24	0.00	60.32
59	1.41	61.66	1.87	60.32
60	0.00	60.25	1.44	58.45
61	1.63	60.25	1.58	57.01
62	1.67	58.62	1.68	55.43
63	1.31	56.96	1.61	53.74
64	1.58	55.65	1.34	52.13
65	1.68	54.07	0.00	50.79
66	1.61	52.39	1.44	50.79
67	1.75	50.77	1.41	49.35
68	1.44	49.02	1.61	47.94
69	1.63	47.58	1.46	46.32

Note. See Section 4.2 for explaination of
contents.

TABLE D.2. Marine Corps Reserve AFQT Distributions for 1980 and 1997
Scales (continued)

AFQT	1980		1997	
Score	%	Qual.	%	Qual.
70	1.44	45.95	2.94	44.86
71	1.77	44.50	1.43	41.93
72	1.67	42.73	1.17	40.50
73	1.56	41.07	1.53	39.33
74	1.37	39.51	1.51	37.80
75	1.91	38.13	1.72	36.29
76	1.70	36.22	1.56	34.58
77	1.48	34.52	1.39	33.01
78	1.92	33.05	1.37	31.62
79	1.55	31.12	1.25	30.25
80	3.06	29.58	1.44	28.99
81	1.43	26.52	1.27	27.55
82	1.51	25.09	2.28	26.28
83	0.00	23.58	1.13	24.00
84	2.80	23.58	1.19	22.86
85	1.44	20.78	2.16	21.68
86	1.36	19.34	1.15	19.51
87	1.48	17.98	0.81	18.36
88	1.37	16.51	1.72	17.55
89	0.98	15.13	1.15	15.84
90	1.19	14.15	1.89	14.69
91	1.24	12.97	1.03	12.80
92	1.32	11.73	1.44	11.77
93	1.36	10.41	2.04	10.32
94	1.01	9.05	1.25	8.28
95	1.12	8.04	1.80	7.03
96	1.17	6.92	1.37	5.22
97	1.03	5.75	1.37	3.85
98	0.79	4.72	1.15	2.47
99	3.93	3.93	1.32	1.32

Note. See Section 4.2 for explaination of
contents.

TABLE D.3. Subgroup Qualification Rates (Marine Corps Regular)

Scale	Qualification Rates[a]							
White (N = 30,061)								
1980	5.3	(93)	43.6	(65)	67.8	(50)	74.4	(45)
1997	5.3	(93)	41.2	(65)	63.9	(50)	71.0	(45)
1997	5.3	(93)	42.8	(64)	68.4	(47)	74.8	(42)
1980	81.3	(40)	87.0	(35)	90.5	(31)	97.1	(21)
1997	77.3	(40)	83.0	(35)	86.6	(31)	94.0	(21)
1997	80.9	(36)	87.5	(30)	90.2	(26)	97.2	(15)
Black (N = 4,800)								
1980	0.9	(93)	18.3	(65)	38.5	(50)	46.2	(45)
1997	0.8	(93)	16.5	(65)	34.3	(50)	41.9	(45)
1997	0.8	(93)	17.5	(64)	38.6	(47)	46.9	(42)
1980	56.9	(40)	66.1	(35)	73.1	(31)	89.5	(21)
1997	50.5	(40)	58.5	(35)	65.1	(31)	81.2	(21)
1997	55.7	(36)	66.7	(30)	72.2	(26)	89.7	(15)
Hispanic (N = 5,971)								
1980	1.2	(93)	22.1	(65)	46.8	(50)	55.4	(45)
1997	1.1	(93)	18.9	(65)	40.4	(50)	50.5	(45)
1997	1.1	(93)	20.2	(64)	46.1	(47)	55.2	(42)
1980	64.3	(40)	72.9	(35)	79.6	(31)	92.5	(21)
1997	58.2	(40)	66.3	(35)	72.5	(31)	86.5	(21)
1997	63.2	(36)	73.6	(30)	79.0	(26)	92.8	(15)
Other (N = 3,557)								
1980	3.8	(93)	33.7	(65)	56.7	(50)	63.6	(45)
1997	3.7	(93)	30.5	(65)	52.2	(50)	59.5	(45)
1997	3.7	(93)	32.0	(64)	56.8	(47)	63.5	(42)
1980	71.2	(40)	78.8	(35)	83.3	(31)	93.4	(21)
1997	66.4	(40)	73.4	(35)	77.7	(31)	88.2	(21)
1997	70.5	(36)	78.9	(30)	82.8	(26)	93.4	(15)

Note. See Section 4.5 for explaination of contents.

[a]AFQT cut-scores are provided in parentheses.

TABLE D.4. Subgroup Qualification Rates (Marine Corps Reserve)

Scale	Qualification Rates[a]							
White (N = 3,999)								
1980	12.4	(93)	59.9	(65)	80.5	(50)	86.1	(45)
1997	12.3	(93)	56.8	(65)	76.8	(50)	83.2	(45)
1997	12.3	(93)	58.2	(64)	80.8	(47)	86.2	(42)
1980	90.4	(40)	93.3	(35)	95.2	(31)	98.7	(21)
1997	88.1	(40)	91.4	(35)	93.3	(31)	97.2	(21)
1997	90.1	(36)	93.6	(30)	95.0	(26)	98.7	(15)
Black (N = 579)								
1980	2.4	(93)	35.8	(65)	58.5	(50)	64.9	(45)
1997	2.4	(93)	32.6	(65)	54.1	(50)	62.2	(45)
1997	2.4	(93)	34.5	(64)	58.4	(47)	66.0	(42)
1980	73.6	(40)	81.9	(35)	86.2	(31)	94.8	(21)
1997	68.2	(40)	75.6	(35)	80.7	(31)	91.2	(21)
1997	72.4	(36)	82.0	(30)	85.5	(26)	95.5	(15)
Hispanic (N = 677)								
1980	3.5	(93)	34.7	(65)	61.2	(50)	69.3	(45)
1997	3.2	(93)	30.6	(65)	55.4	(50)	64.7	(45)
1997	3.2	(93)	31.5	(64)	60.6	(47)	69.6	(42)
1980	76.5	(40)	83.3	(35)	87.9	(31)	95.7	(21)
1997	72.4	(40)	78.6	(35)	82.4	(31)	91.9	(21)
1997	75.8	(36)	83.6	(30)	87.4	(26)	95.9	(15)
Other (N = 567)								
1980	13.1	(93)	54.7	(65)	75.5	(50)	82.0	(45)
1997	13.1	(93)	51.1	(65)	72.3	(50)	78.3	(45)
1997	13.1	(93)	52.2	(64)	76.0	(47)	82.0	(42)
1980	87.5	(40)	92.2	(35)	94.2	(31)	98.4	(21)
1997	84.0	(40)	88.7	(35)	91.9	(31)	96.5	(21)
1997	86.6	(36)	92.4	(30)	93.7	(26)	98.6	(15)

Note. See Section 4.5 for explaination of contents.

[a]AFQT cut-scores are provided in parentheses.

TABLE D.5. Gender Qualification Rates (Marine Corps Regular)

Scale	Qualification Rates[a]							
	Males (N = 40,776)							
1980	4.3	(93)	37.5	(65)	61.1	(50)	68.1	(45)
1997	4.2	(93)	35.0	(65)	56.8	(50)	64.3	(45)
1997	4.2	(93)	36.5	(64)	61.4	(47)	68.5	(42)
1980	75.7	(40)	82.2	(35)	86.6	(31)	95.3	(21)
1997	71.2	(40)	77.4	(35)	81.8	(31)	91.1	(21)
1997	75.1	(36)	82.8	(30)	86.2	(26)	95.5	(15)
	Females (N = 3,611)							
1980	3.1	(93)	33.2	(65)	59.2	(50)	65.8	(45)
1997	3.1	(93)	30.5	(65)	54.5	(50)	62.2	(45)
1997	3.1	(93)	32.1	(64)	59.4	(47)	65.8	(42)
1980	74.0	(40)	81.4	(35)	86.2	(31)	95.4	(21)
1997	68.7	(40)	75.9	(35)	80.4	(31)	91.4	(21)
1997	73.2	(36)	81.4	(30)	85.5	(26)	95.5	(15)

Note. See Section 4.5 for explaination of contents.

[a]AFQT cut-scores are provided in parentheses.

TABLE D.6. Gender Qualification Rates (Marine Corps Reserve)

Scale	Qualification Rates[a]						
	Males (N = 5,428)							
1980	10.7	(93)	54.7	(65)	75.7	(50)	81.9	(45)
1997	10.6	(93)	51.4	(65)	71.9	(50)	78.7	(45)
1997	10.6	(93)	52.7	(64)	75.9	(47)	82.0	(42)
1980	87.0	(40)	91.0	(35)	93.3	(31)	98.0	(21)
1997	84.1	(40)	88.2	(35)	90.7	(31)	95.9	(21)
1997	86.4	(36)	91.2	(30)	93.0	(26)	98.1	(15)
	Females (N = 394)							
1980	5.8	(93)	45.7	(65)	73.1	(50)	78.9	(45)
1997	6.6	(93)	41.9	(65)	67.8	(50)	75.1	(45)
1997	6.6	(93)	44.2	(64)	73.1	(47)	79.9	(42)
1980	84.8	(40)	89.6	(35)	94.2	(31)	97.5	(21)
1997	81.5	(40)	86.8	(35)	89.8	(31)	96.4	(21)
1997	84.8	(36)	90.6	(30)	93.1	(26)	97.2	(15)

Note. See Section 4.5 for explaination of contents.

[a]AFQT cut-scores are provided in parentheses.

TABLE D.7. Subgroup Qualification Distributions (Marine Corps Regular)

Score-Scale	AFQT Cut	White	Black	Hispanic	Other
1980	93	86.6	2.3	3.8	7.3
1997	93	87.1	2.0	3.7	7.2
1997	93	87.1	2.0	3.7	7.2
1980	65	79.4	5.3	8.0	7.3
1997	65	80.5	5.1	7.3	7.1
1997	64	80.2	5.2	7.5	7.1
1980	50	75.4	6.8	10.3	7.5
1997	50	76.4	6.6	9.6	7.4
1997	47	75.6	6.8	10.1	7.4
1980	45	74.2	7.4	11.0	7.5
1997	45	74.9	7.1	10.6	7.4
1997	42	74.2	7.4	10.9	7.5
1980	40	72.9	8.1	11.4	7.5
1997	40	73.8	7.7	11.0	7.5
1997	36	73.1	8.0	11.3	7.5
1980	35	71.7	8.7	11.9	7.7
1997	35	72.7	8.2	11.5	7.6
1997	30	71.7	8.7	12.0	7.6
1980	31	70.8	9.1	12.4	7.7
1997	31	71.8	8.6	11.9	7.6
1997	26	70.9	9.1	12.3	7.7
1980	21	68.9	10.1	13.1	7.9
1997	21	69.8	9.6	12.8	7.8
1997	15	68.9	10.2	13.1	7.8

TABLE D.8. Subgroup Qualification Distributions (Marine Corps Reserve)

Score-Scale	AFQT Cut	White	Black	Hispanic	Other
1980	93	81.5	2.3	4.0	12.2
1997	93	81.7	2.3	3.7	12.3
1997	93	81.7	2.3	3.7	12.3
1980	65	76.1	6.6	7.5	9.8
1997	65	76.8	6.4	7.0	9.8
1997	64	76.6	6.6	7.0	9.8
1980	50	73.2	7.7	9.4	9.7
1997	50	73.7	7.5	9.0	9.8
1997	47	73.3	7.7	9.3	9.8
1980	45	72.4	7.9	9.9	9.8
1997	45	72.8	7.9	9.6	9.7
1997	42	72.4	8.0	9.9	9.8
1980	40	71.5	8.4	10.2	9.8
1997	40	72.1	8.1	10.0	9.7
1997	36	71.7	8.3	10.2	9.8
1980	35	70.5	9.0	10.7	9.9
1997	35	71.3	8.5	10.4	9.8
1997	30	70.5	8.9	10.7	9.9
1980	31	70.1	9.2	10.9	9.8
1997	31	70.7	8.8	10.6	9.9
1997	26	70.1	9.1	10.9	9.8
1980	21	69.2	9.6	11.4	9.8
1997	21	69.6	9.5	11.1	9.8
1997	15	69.2	9.7	11.4	9.8

TABLE D.9. Gender Qualification Distributions (Marine Corps Regular)

Score-Scale	AFQT Cut	Males	Females
1980	93	94.0	6.0
1997	93	93.9	6.1
1997	93	93.9	6.1
1980	65	92.7	7.3
1997	65	92.8	7.2
1997	64	92.8	7.2
1980	50	92.1	7.9
1997	50	92.2	7.8
1997	47	92.1	7.9
1980	45	92.1	7.9
1997	45	92.1	7.9
1997	42	92.2	7.8
1980	40	92.0	8.0
1997	40	92.1	7.9
1997	36	92.1	7.9
1980	35	91.9	8.1
1997	35	92.0	8.0
1997	30	92.0	8.0
1980	31	91.9	8.1
1997	31	92.0	8.0
1997	26	91.9	8.1
1980	21	91.9	8.1
1997	21	91.8	8.2
1997	15	91.9	8.1

TABLE D.10. Gender Qualification Distributions (Marine Corps Reserve)

Score-Scale	AFQT Cut	Males	Females
1980	93	96.2	3.8
1997	93	95.7	4.3
1997	93	95.7	4.3
1980	65	94.3	5.7
1997	65	94.4	5.6
1997	64	94.3	5.7
1980	50	93.5	6.5
1997	50	93.6	6.4
1997	47	93.5	6.5
1980	45	93.5	6.5
1997	45	93.5	6.5
1997	42	93.4	6.6
1980	40	93.4	6.6
1997	40	93.4	6.6
1997	36	93.4	6.6
1980	35	93.3	6.7
1997	35	93.3	6.7
1997	30	93.3	6.7
1980	31	93.2	6.8
1997	31	93.3	6.7
1997	26	93.2	6.8
1980	21	93.3	6.7
1997	21	93.2	6.8
1997	15	93.3	6.7

Appendix E
AFQT '97 to '80 Transformation

TABLE E.1. Transformation of AFQT 1997 to 1980 Scale

| AFQT | 1980 | | 1997 | | Trans. |
Score	%	Qual.	%	Qual.	'97 ⟹ '80
1	0.15	100.00	0.11	100.00	1
2	0.06	99.85	0.17	99.89	2
3	0.08	99.78	0.22	99.72	4
4	0.15	99.70	0.57	99.50	5
5	0.15	99.55	0.36	98.93	9
6	0.19	99.40	0.44	98.57	10
7	0.15	99.22	0.57	98.13	12
8	0.26	99.07	0.33	97.56	13
9	0.20	98.81	0.85	97.22	14
10	0.24	98.61	0.50	96.37	16
11	0.26	98.36	0.82	95.87	17
12	0.32	98.10	0.31	95.04	19
13	0.55	97.78	0.67	94.73	19
14	0.21	97.23	0.37	94.06	20
15	0.46	97.02	0.80	93.69	21
16	0.49	96.56	0.90	92.89	22
17	0.58	96.07	0.99	91.99	23
18	0.66	95.50	0.52	91.00	24
19	0.70	94.84	1.12	90.48	25
20	0.38	94.14	0.60	89.36	26
21	0.83	93.76	0.65	88.76	27
22	0.92	92.93	1.35	88.11	27
23	1.04	92.01	0.70	86.76	29
24	0.55	90.97	0.76	86.05	29
25	1.20	90.42	1.63	85.30	30
26	0.62	89.22	0.85	83.66	32
27	1.34	88.61	0.91	82.82	32
28	0.72	87.27	0.92	81.90	33
29	1.48	86.55	0.92	80.98	34
30	0.80	85.07	0.99	80.06	35
31	0.85	84.27	1.02	79.08	35
32	1.77	83.42	1.05	78.05	36
33	0.94	81.64	1.09	77.00	37
34	0.97	80.70	1.12	75.92	38

Note. See Section 6.3.4 for explaination of contents.

TABLE E.1. Transformation of AFQT 1997 to 1980 Scale (continued)

| AFQT | 1980 | | 1997 | | Trans. |
Score	%	Qual.	%	Qual.	'97 $\Longrightarrow$ '80
35	2.07	79.73	2.32	74.80	39
36	1.08	77.66	1.19	72.48	41
37	1.10	76.58	0.00	71.29	42
38	1.12	75.49	1.26	71.29	42
39	1.14	74.37	1.27	70.03	42
40	1.22	73.23	1.32	68.75	43
41	1.24	72.01	1.32	67.43	44
42	2.56	70.77	1.28	66.11	45
43	1.32	68.22	1.33	64.83	46
44	1.27	66.90	1.37	63.50	47
45	1.35	65.63	1.39	62.13	48
46	1.35	64.28	1.42	60.75	49
47	1.42	62.93	1.41	59.32	50
48	1.37	61.52	1.41	57.91	51
49	1.41	60.14	1.44	56.50	52
50	1.41	58.73	1.44	55.06	53
51	1.48	57.32	1.43	53.62	53
52	1.47	55.84	1.47	52.19	54
53	2.94	54.37	1.48	50.73	54
54	1.55	51.44	1.46	49.25	55
55	1.45	49.89	1.48	47.79	56
56	1.55	48.44	1.46	46.31	57
57	1.43	46.89	1.47	44.85	58
58	1.56	45.46	0.00	43.39	59
59	1.45	43.90	1.46	43.39	59
60	0.00	42.45	1.44	41.93	60
61	1.53	42.45	1.42	40.49	62
62	1.47	40.92	1.40	39.07	63
63	1.52	39.45	1.38	37.66	64
64	1.41	37.93	1.38	36.28	65
65	1.49	36.53	0.00	34.91	66
66	1.45	35.03	1.34	34.91	66
67	1.45	33.58	1.33	33.56	67
68	1.33	32.14	1.30	32.23	68
69	1.43	30.80	1.26	30.93	69

Note. See Section 6.3.4 for explaination of contents.

TABLE E.1. Transformation of AFQT 1997 to 1980 Scale (continued)

| AFQT | 1980 | | 1997 | | Trans. |
Score	%	Qual.	%	Qual.	'97 ⟹ '80
70	1.35	29.37	2.47	29.67	70
71	1.33	28.02	1.21	27.20	72
72	1.25	26.69	1.17	25.99	73
73	1.29	25.43	1.13	24.82	73
74	1.21	24.15	1.12	23.69	74
75	1.24	22.93	1.10	22.57	75
76	1.14	21.70	1.06	21.47	76
77	1.16	20.55	1.00	20.41	77
78	1.15	19.40	1.01	19.41	78
79	1.05	18.25	0.95	18.40	79
80	2.11	17.19	0.93	17.45	80
81	1.01	15.08	0.90	16.52	80
82	0.98	14.07	1.73	15.62	81
83	0.00	13.09	0.81	13.89	82
84	1.86	13.09	0.80	13.08	83
85	0.89	11.24	1.48	12.28	83
86	0.81	10.35	0.69	10.81	85
87	0.83	9.54	0.67	10.11	86
88	0.76	8.71	1.20	9.45	87
89	0.77	7.95	0.57	8.25	89
90	0.66	7.18	1.08	7.68	89
91	0.67	6.52	0.49	6.60	91
92	0.60	5.84	0.88	6.11	92
93	0.62	5.24	1.20	5.23	93
94	0.55	4.62	0.67	4.03	95
95	0.58	4.07	0.84	3.36	96
96	0.48	3.49	0.67	2.52	98
97	0.53	3.02	0.69	1.85	99
98	0.37	2.48	0.55	1.16	99
99	2.11	2.11	0.61	0.61	99

Note. See Section 6.3.4 for explaination of contents.

Appendix F
Composite Transformation Tables

TABLE F.1. Composite '97 Conversion: GT-Army

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
61	0.1	99.4	0.2	98.9	58	99	2.6	63.0	2.5	59.7	98
62	0.1	99.3	0.2	98.8	59	100	2.7	60.4	2.7	57.2	99
63	0.2	99.2	0.2	98.6	60	101	2.6	57.8	2.6	54.5	100
64	0.2	99.0	0.0	98.4	61	102	2.6	55.1	2.7	51.9	101
65	0.0	98.8	0.2	98.4	62	103	2.7	52.6	2.6	49.3	102
66	0.2	98.8	0.3	98.1	62	104	2.8	49.8	2.7	46.6	103
67	0.3	98.6	0.3	97.9	63	105	2.8	47.1	2.6	43.9	104
68	0.2	98.3	0.4	97.6	65	106	0.0	44.2	2.6	41.3	105
69	0.3	98.1	0.4	97.2	66	107	2.4	44.2	0.0	38.6	105
70	0.3	97.8	0.4	96.8	67	108	2.8	41.8	2.6	38.6	106
71	0.4	97.4	0.4	96.4	68	109	2.8	39.0	2.5	36.0	108
72	0.4	97.0	0.5	96.0	70	110	2.6	36.2	2.4	33.5	109
73	0.5	96.6	0.6	95.5	71	111	2.5	33.5	2.4	31.1	110
74	0.6	96.0	0.6	94.9	72	112	2.5	31.1	2.2	28.8	111
75	0.6	95.5	0.7	94.2	73	113	2.4	28.5	2.2	26.5	112
76	0.7	94.9	0.8	93.6	74	114	2.4	26.1	2.1	24.3	113
77	0.7	94.2	0.8	92.8	75	115	2.1	23.8	2.0	22.2	114
78	0.8	93.5	0.9	92.0	76	116	2.2	21.7	1.9	20.3	115
79	0.0	92.6	0.0	91.2	77	117	2.0	19.5	1.8	18.4	116
80	0.8	92.6	1.0	91.2	77	118	1.8	17.5	1.7	16.6	118
81	1.0	91.8	1.0	90.2	78	119	0.0	15.7	1.6	15.0	119
82	1.0	90.8	1.1	89.2	80	120	1.9	15.7	1.4	13.4	119
83	1.1	89.8	1.2	88.1	81	121	1.8	13.8	1.3	12.0	120
84	1.2	88.7	1.3	86.9	82	122	1.6	12.0	0.0	10.6	121
85	1.3	87.6	1.4	85.6	83	123	1.5	10.4	1.2	10.6	123
86	1.4	86.3	1.5	84.2	84	124	1.4	8.9	1.2	9.4	124
87	1.5	84.9	1.6	82.7	86	125	1.4	7.5	1.1	8.3	126
88	1.6	83.3	1.7	81.1	87	126	1.3	6.1	1.0	7.2	127
89	1.7	81.8	1.8	79.4	88	127	1.2	4.8	0.8	6.2	129
90	1.8	80.1	1.9	77.6	89	128	1.2	3.7	0.8	5.4	130
91	1.9	78.3	2.0	75.7	90	129	1.1	2.5	0.7	4.6	132
92	0.0	76.4	2.2	73.7	91	130	0.9	1.4	0.6	3.9	135
93	2.0	76.4	0.0	71.6	91	131	0.1	0.6	0.6	3.3	140
94	2.1	74.4	2.2	71.6	92	132	0.1	0.4	0.5	2.7	141
95	2.1	72.3	2.3	69.3	94	133	0.0	0.3	0.4	2.2	142
96	2.4	70.1	2.3	67.0	95	134	0.1	0.3	0.4	1.8	142
97	2.4	67.8	2.5	64.7	96	135	0.1	0.2	0.3	1.4	143
98	2.3	65.3	2.5	62.2	97	136	0.0	0.2	0.0	1.2	144

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.2. Composite '97 Conversion: CL-Army

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
64	0.1	99.4	0.2	98.9	60	101	2.5	57.5	2.5	55.2	100
65	0.1	99.3	0.2	98.7	61	102	2.5	55.1	2.5	52.7	101
66	0.2	99.2	0.2	98.5	62	103	2.5	52.6	2.5	50.2	102
67	0.2	99.0	0.3	98.2	63	104	2.5	50.1	2.6	47.7	103
68	0.3	98.8	0.3	98.0	65	105	2.6	47.6	2.5	45.1	104
69	0.2	98.5	0.3	97.7	66	106	2.5	45.0	2.5	42.6	105
70	0.3	98.3	0.3	97.3	67	107	2.5	42.5	2.4	40.1	106
71	0.4	98.0	0.4	97.0	68	108	2.4	40.0	2.4	37.7	107
72	0.4	97.6	0.4	96.6	69	109	2.4	37.6	2.3	35.3	108
73	0.4	97.3	0.5	96.2	70	110	2.4	35.1	2.3	32.9	109
74	0.5	96.8	0.6	95.6	71	111	2.3	32.8	2.2	30.7	110
75	0.5	96.4	0.6	95.1	73	112	2.2	30.5	2.1	28.5	111
76	0.6	95.8	0.6	94.5	74	113	2.1	28.3	2.0	26.4	112
77	0.6	95.2	0.7	93.9	75	114	2.1	26.1	1.9	24.4	113
78	0.7	94.6	0.8	93.2	76	115	2.0	24.1	1.9	22.5	114
79	0.7	93.9	0.8	92.4	77	116	1.9	22.1	1.8	20.7	115
80	0.8	93.1	0.9	91.6	78	117	1.9	20.2	1.8	18.9	116
81	0.9	92.3	1.0	90.7	79	118	1.7	18.3	1.5	17.1	117
82	1.0	91.4	1.0	89.7	80	119	1.7	16.6	1.4	15.6	118
83	1.1	90.4	1.2	88.7	81	120	1.5	14.9	1.4	14.2	119
84	1.2	89.3	1.2	87.5	82	121	1.5	13.4	1.2	12.8	121
85	1.2	88.1	1.3	86.3	83	122	1.4	11.9	1.2	11.6	122
86	1.3	86.9	1.4	85.0	85	123	1.3	10.5	1.1	10.3	123
87	1.4	85.6	1.5	83.6	86	124	1.2	9.2	1.0	9.3	124
88	1.5	84.2	1.5	82.1	87	125	1.1	8.0	1.0	8.3	125
89	1.7	82.6	1.7	80.6	88	126	1.1	6.9	0.8	7.3	127
90	1.7	80.9	1.8	78.9	89	127	1.0	5.8	0.8	6.5	128
91	1.8	79.3	1.9	77.1	90	128	0.9	4.7	0.7	5.6	129
92	2.0	77.5	2.0	75.2	91	129	0.9	3.8	0.7	4.9	131
93	2.0	75.5	2.1	73.2	92	130	0.8	3.0	0.6	4.2	132
94	2.1	73.5	2.1	71.2	93	131	0.7	2.2	0.5	3.6	134
95	2.2	71.4	2.2	69.0	94	132	0.6	1.5	0.5	3.1	136
96	2.2	69.2	2.3	66.9	95	133	0.4	1.0	0.4	2.6	138
97	2.3	67.0	2.3	64.6	96	134	0.3	0.5	0.3	2.2	140
98	2.3	64.6	2.3	62.3	97	135	0.1	0.3	0.3	1.8	143
99	2.3	62.3	2.3	59.9	98	136	0.1	0.2	0.3	1.5	144
100	2.5	60.0	2.4	57.6	99	137	0.0	0.1	0.2	1.2	146

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.3. Composite '97 Conversion: CO-Army

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
65	0.2	99.3	0.2	98.8	62	103	2.4	49.2	2.4	51.7	104
66	0.2	99.1	0.3	98.6	63	104	2.4	46.7	2.3	49.3	105
67	0.3	98.9	0.3	98.4	64	105	2.4	44.3	2.3	47.0	106
68	0.3	98.7	0.3	98.1	66	106	2.4	41.9	2.3	44.7	107
69	0.3	98.4	0.4	97.8	67	107	2.4	39.6	2.2	42.4	108
70	0.4	98.1	0.4	97.4	68	108	2.3	37.1	2.3	40.2	109
71	0.4	97.7	0.4	97.1	69	109	2.3	34.9	2.3	37.9	110
72	0.5	97.3	0.5	96.6	70	110	2.2	32.6	2.1	35.6	111
73	0.5	96.8	0.5	96.2	72	111	2.2	30.4	2.1	33.5	112
74	0.6	96.3	0.6	95.7	73	112	2.1	28.3	2.1	31.3	113
75	0.7	95.8	0.6	95.1	74	113	2.0	26.2	2.0	29.2	115
76	0.7	95.1	0.7	94.5	75	114	2.0	24.1	1.9	27.2	116
77	0.8	94.4	0.7	93.8	76	115	1.9	22.2	1.9	25.3	117
78	0.9	93.6	0.8	93.1	77	116	1.8	20.3	1.8	23.5	118
79	0.9	92.8	0.9	92.3	78	117	1.7	18.5	1.7	21.7	119
80	1.0	91.8	1.0	91.4	80	118	1.6	16.7	1.6	19.9	120
81	1.1	90.8	1.0	90.4	81	119	1.5	15.2	1.6	18.3	121
82	1.2	89.7	1.1	89.4	82	120	1.4	13.6	1.4	16.8	122
83	1.3	88.5	1.2	88.3	83	121	1.4	12.2	1.4	15.3	123
84	1.4	87.2	1.2	87.1	84	122	1.3	10.8	1.3	13.9	124
85	1.5	85.9	1.3	85.9	85	123	1.1	9.5	1.2	12.6	126
86	1.5	84.4	1.4	84.6	86	124	1.1	8.4	1.1	11.3	127
87	1.6	82.9	1.4	83.2	87	125	1.0	7.2	1.0	10.2	128
88	1.7	81.3	1.6	81.8	88	126	1.0	6.2	1.0	9.2	129
89	1.8	79.6	1.6	80.2	89	127	0.8	5.3	0.9	8.2	131
90	1.8	77.8	1.7	78.6	90	128	0.7	4.4	0.9	7.3	132
91	1.9	76.0	1.7	76.9	92	129	0.7	3.7	0.7	6.4	133
92	2.1	74.1	1.8	75.2	93	130	0.6	3.1	0.7	5.7	135
93	2.1	72.1	1.9	73.4	94	131	0.5	2.4	0.6	5.0	136
94	2.1	70.0	2.0	71.4	95	132	0.4	1.9	0.6	4.4	137
95	2.2	67.8	2.0	69.4	96	133	0.4	1.5	0.5	3.8	139
96	2.2	65.7	2.1	67.4	97	134	0.3	1.1	0.5	3.3	140
97	2.2	63.4	2.1	65.3	98	135	0.2	0.8	0.4	2.8	142
98	2.4	61.2	2.2	63.1	99	136	0.2	0.6	0.3	2.4	144
99	2.4	58.8	2.2	60.9	100	137	0.1	0.4	0.3	2.1	145
100	2.5	56.4	2.3	58.7	101	138	0.1	0.3	0.3	1.7	147
101	2.4	54.0	2.3	56.4	102	139	0.1	0.2	0.2	1.5	149
102	2.4	51.6	2.3	54.1	103	140	0.0	0.1	0.2	1.2	151

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.4. Composite '97 Conversion: EL-Army

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
64	0.1	99.4	0.2	98.9	61	102	2.5	52.1	2.4	54.1	103
65	0.2	99.2	0.2	98.6	62	103	2.5	49.7	2.3	51.8	104
66	0.2	99.0	0.3	98.4	63	104	2.5	47.2	2.4	49.5	105
67	0.2	98.8	0.3	98.2	64	105	2.5	44.7	2.4	47.1	106
68	0.3	98.6	0.3	97.9	65	106	2.4	42.2	2.3	44.7	107
69	0.3	98.3	0.4	97.6	66	107	2.4	39.7	2.3	42.4	108
70	0.4	98.0	0.4	97.2	68	108	2.4	37.3	2.2	40.1	109
71	0.4	97.7	0.4	96.8	69	109	2.3	35.0	2.2	37.9	110
72	0.4	97.3	0.5	96.4	70	110	2.3	32.6	2.2	35.7	111
73	0.5	96.8	0.5	95.9	71	111	2.2	30.3	2.2	33.4	112
74	0.5	96.3	0.6	95.4	72	112	2.2	28.1	2.0	31.3	114
75	0.6	95.8	0.6	94.8	73	113	2.0	25.9	2.0	29.2	115
76	0.7	95.1	0.7	94.2	74	114	2.0	23.9	1.9	27.2	116
77	0.8	94.4	0.7	93.5	76	115	2.0	21.9	1.9	25.3	117
78	0.8	93.7	0.8	92.8	77	116	1.9	19.9	1.8	23.5	118
79	0.9	92.8	0.9	92.0	78	117	1.8	18.1	1.7	21.6	119
80	1.0	92.0	1.0	91.2	79	118	1.7	16.3	1.7	19.9	120
81	1.1	91.0	1.0	90.2	80	119	1.6	14.6	1.5	18.3	121
82	1.2	89.9	1.0	89.2	81	120	1.5	13.1	1.5	16.7	123
83	1.2	88.8	1.2	88.2	82	121	1.4	11.6	1.4	15.2	124
84	1.3	87.6	1.2	87.0	84	122	1.3	10.2	1.3	13.9	125
85	1.4	86.3	1.3	85.8	85	123	1.2	8.9	1.2	12.5	126
86	1.5	84.8	1.4	84.4	86	124	1.1	7.7	1.2	11.3	127
87	1.6	83.4	1.5	83.0	87	125	1.0	6.6	1.1	10.1	129
88	1.7	81.8	1.5	81.6	88	126	0.9	5.6	1.0	9.1	130
89	1.7	80.1	1.6	80.1	89	127	0.8	4.7	0.9	8.1	131
90	1.8	78.4	1.6	78.5	90	128	0.7	3.9	0.8	7.2	133
91	1.8	76.6	1.7	76.8	91	129	0.6	3.2	0.7	6.4	134
92	2.0	74.8	1.8	75.1	92	130	0.6	2.5	0.7	5.6	136
93	2.0	72.8	1.9	73.3	93	131	0.5	2.0	0.6	4.9	137
94	2.2	70.7	2.0	71.4	94	132	0.4	1.5	0.6	4.3	139
95	2.2	68.6	2.0	69.4	95	133	0.3	1.1	0.5	3.7	140
96	2.2	66.4	2.1	67.4	96	134	0.2	0.8	0.5	3.2	142
97	2.3	64.2	2.2	65.3	98	135	0.2	0.6	0.4	2.7	143
98	2.4	61.8	2.3	63.1	99	136	0.1	0.4	0.3	2.3	145
99	2.4	59.5	2.2	60.9	100	137	0.1	0.2	0.3	2.0	147
100	2.5	57.1	2.3	58.7	101	138	0.1	0.1	0.3	1.7	149
101	2.5	54.6	2.3	56.4	102	139	0.0	0.1	0.3	1.4	151

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.5. Composite '97 Conversion: FA-Army

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
65	0.2	99.3	0.2	98.9	62	103	2.4	49.4	2.3	51.7	104
66	0.2	99.1	0.2	98.7	63	104	2.4	47.0	2.4	49.4	105
67	0.3	98.9	0.3	98.4	65	105	2.4	44.6	2.3	47.1	106
68	0.3	98.7	0.3	98.1	66	106	2.4	42.2	2.3	44.7	107
69	0.3	98.4	0.4	97.9	67	107	2.4	39.8	2.2	42.4	108
70	0.4	98.1	0.4	97.5	68	108	2.3	37.5	2.4	40.2	109
71	0.4	97.7	0.4	97.1	69	109	2.2	35.2	2.3	37.8	110
72	0.5	97.3	0.5	96.7	71	110	2.2	33.0	2.1	35.5	111
73	0.5	96.8	0.5	96.2	72	111	2.2	30.8	2.1	33.4	112
74	0.6	96.3	0.5	95.7	73	112	2.1	28.6	2.1	31.3	113
75	0.6	95.7	0.6	95.2	74	113	2.0	26.5	2.0	29.2	114
76	0.7	95.1	0.6	94.5	75	114	2.0	24.5	1.9	27.2	115
77	0.8	94.4	0.7	93.9	76	115	1.9	22.5	1.8	25.2	116
78	0.9	93.6	0.8	93.2	77	116	1.7	20.6	1.8	23.4	118
79	0.9	92.7	0.9	92.4	79	117	1.7	18.9	1.7	21.6	119
80	1.0	91.8	0.9	91.5	80	118	1.7	17.2	1.6	19.8	120
81	1.1	90.8	1.0	90.6	81	119	1.5	15.5	1.6	18.3	121
82	1.2	89.7	1.1	89.6	82	120	1.5	14.0	1.5	16.7	122
83	1.3	88.5	1.2	88.5	83	121	1.4	12.5	1.4	15.2	123
84	1.3	87.2	1.2	87.3	84	122	1.3	11.1	1.3	13.8	124
85	1.5	85.9	1.3	86.1	85	123	1.2	9.8	1.3	12.5	125
86	1.5	84.4	1.4	84.8	86	124	1.1	8.6	1.1	11.2	126
87	1.7	82.9	1.5	83.4	87	125	1.0	7.5	1.0	10.1	128
88	1.7	81.3	1.5	81.9	88	126	1.0	6.5	0.9	9.1	129
89	1.8	79.6	1.6	80.4	89	127	0.8	5.5	0.9	8.1	130
90	1.8	77.9	1.7	78.8	91	128	0.8	4.7	0.8	7.2	131
91	1.9	76.1	1.7	77.1	92	129	0.7	3.9	0.7	6.4	133
92	2.0	74.2	1.9	75.4	93	130	0.6	3.2	0.7	5.6	134
93	2.1	72.1	2.0	73.5	94	131	0.5	2.6	0.6	4.9	135
94	2.2	70.1	2.0	71.6	95	132	0.5	2.0	0.6	4.3	137
95	2.2	67.9	2.1	69.6	96	133	0.4	1.6	0.5	3.8	138
96	2.2	65.7	2.1	67.5	97	134	0.3	1.2	0.4	3.2	140
97	2.3	63.6	2.1	65.4	98	135	0.3	0.9	0.4	2.8	142
98	2.3	61.3	2.2	63.2	99	136	0.2	0.6	0.4	2.4	143
99	2.4	59.0	2.3	61.0	100	137	0.2	0.4	0.3	2.0	145
100	2.4	56.6	2.3	58.7	101	138	0.1	0.3	0.3	1.7	147
101	2.4	54.2	2.4	56.5	102	139	0.1	0.2	0.2	1.4	149
102	2.4	51.8	2.4	54.1	103	140	0.0	0.1	0.2	1.2	151

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.6. Composite '97 Conversion: GM-Army

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
65	0.2	99.3	0.2	98.8	62	103	2.4	47.7	2.3	51.8	105
66	0.2	99.1	0.3	98.6	64	104	2.3	45.3	2.3	49.6	106
67	0.3	98.8	0.3	98.3	65	105	2.4	42.9	2.2	47.3	107
68	0.3	98.6	0.3	98.0	66	106	2.3	40.6	2.2	45.0	108
69	0.3	98.3	0.4	97.7	67	107	2.3	38.2	2.2	42.8	109
70	0.4	97.9	0.4	97.3	68	108	2.3	36.0	2.2	40.7	110
71	0.5	97.5	0.4	96.9	70	109	2.2	33.7	2.2	38.4	111
72	0.5	97.0	0.5	96.4	71	110	2.2	31.5	2.1	36.3	112
73	0.6	96.5	0.6	96.0	72	111	2.2	29.3	2.1	34.1	113
74	0.7	95.9	0.6	95.4	73	112	2.1	27.2	2.0	32.0	114
75	0.8	95.3	0.7	94.8	74	113	2.0	25.1	2.1	30.0	115
76	0.8	94.5	0.7	94.1	75	114	1.9	23.1	1.9	28.0	117
77	0.9	93.7	0.8	93.4	76	115	1.9	21.3	1.9	26.0	118
78	1.0	92.9	0.9	92.6	78	116	1.7	19.4	1.8	24.2	119
79	1.0	91.9	0.9	91.7	79	117	1.6	17.7	1.7	22.4	120
80	1.1	90.9	1.0	90.8	80	118	1.6	16.0	1.6	20.7	121
81	1.2	89.8	1.1	89.8	81	119	1.5	14.4	1.6	19.1	122
82	1.2	88.6	1.1	88.8	82	120	1.4	12.9	1.5	17.5	123
83	1.4	87.4	1.2	87.7	83	121	1.3	11.5	1.4	16.0	124
84	1.4	86.0	1.3	86.5	84	122	1.2	10.2	1.3	14.6	126
85	1.5	84.6	1.4	85.2	86	123	1.2	9.0	1.3	13.3	127
86	1.6	83.0	1.4	83.9	87	124	1.1	7.8	1.2	12.0	128
87	1.6	81.4	1.5	82.5	88	125	1.0	6.7	1.1	10.8	129
88	1.7	79.8	1.5	81.1	89	126	0.9	5.8	1.0	9.7	130
89	1.8	78.1	1.6	79.5	90	127	0.8	4.9	0.9	8.7	132
90	1.9	76.3	1.6	77.9	91	128	0.7	4.1	0.9	7.8	133
91	2.0	74.4	1.7	76.3	92	129	0.6	3.4	0.8	6.9	135
92	2.1	72.4	1.9	74.6	93	130	0.5	2.8	0.7	6.1	136
93	2.1	70.3	1.9	72.8	94	131	0.5	2.2	0.7	5.4	137
94	2.1	68.3	2.0	70.9	95	132	0.4	1.8	0.5	4.7	139
95	2.1	66.2	2.0	68.9	96	133	0.3	1.4	0.5	4.2	140
96	2.2	64.0	2.0	67.0	97	134	0.3	1.0	0.5	3.6	142
97	2.3	61.8	2.1	65.0	99	135	0.2	0.8	0.4	3.1	143
98	2.3	59.5	2.1	62.9	100	136	0.2	0.6	0.4	2.7	145
99	2.4	57.2	2.2	60.8	101	137	0.1	0.4	0.3	2.3	146
100	2.4	54.8	2.2	58.6	102	138	0.1	0.2	0.3	2.0	148
101	2.4	52.4	2.2	56.4	103	139	0.1	0.2	0.3	1.6	150
102	2.4	50.0	2.3	54.1	104	140	0.0	0.1	0.2	1.4	152

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.7. Composite '97 Conversion: MM-Army

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
64	0.2	99.3	0.2	99.0	62	104	2.2	42.9	2.1	50.1	107
65	0.2	99.1	0.2	98.8	63	105	2.2	40.7	2.2	48.0	109
66	0.3	98.9	0.3	98.5	64	106	2.2	38.5	2.1	45.8	110
67	0.3	98.7	0.3	98.2	65	107	2.2	36.2	2.0	43.7	111
68	0.3	98.3	0.4	97.9	67	108	2.2	34.0	2.1	41.7	112
69	0.4	98.0	0.4	97.6	68	109	2.1	31.8	2.0	39.6	113
70	0.5	97.5	0.5	97.1	69	110	2.0	29.7	2.0	37.6	114
71	0.6	97.0	0.5	96.7	70	111	2.0	27.6	2.0	35.6	115
72	0.7	96.4	0.6	96.2	71	112	1.9	25.6	2.0	33.6	116
73	0.7	95.8	0.6	95.6	73	113	1.9	23.7	1.9	31.6	117
74	0.8	95.0	0.7	94.9	74	114	1.8	21.8	1.8	29.7	118
75	0.9	94.3	0.7	94.3	75	115	1.7	20.0	1.8	27.8	120
76	1.0	93.4	0.8	93.6	76	116	1.7	18.3	1.8	26.0	121
77	1.0	92.4	0.8	92.7	77	117	1.6	16.6	1.7	24.3	122
78	1.1	91.4	0.9	91.9	79	118	1.5	15.0	1.6	22.6	123
79	1.2	90.3	1.0	91.0	80	119	1.4	13.5	1.6	21.0	124
80	1.3	89.1	1.0	90.0	81	120	1.3	12.1	1.5	19.4	125
81	1.3	87.9	1.1	89.0	82	121	1.2	10.8	1.4	17.9	127
82	1.4	86.5	1.1	87.9	83	122	1.1	9.5	1.3	16.5	128
83	1.5	85.1	1.2	86.7	84	123	1.1	8.4	1.3	15.2	129
84	1.5	83.6	1.3	85.6	86	124	0.9	7.3	1.2	13.9	130
85	1.7	82.1	1.3	84.3	87	125	0.9	6.4	1.1	12.7	132
86	1.7	80.4	1.4	83.0	88	126	0.8	5.5	1.1	11.5	133
87	1.8	78.7	1.5	81.6	89	127	0.7	4.6	1.0	10.4	134
88	1.8	76.9	1.5	80.0	90	128	0.6	3.9	0.9	9.4	136
89	1.9	75.1	1.6	78.5	91	129	0.6	3.3	0.8	8.5	137
90	1.9	73.2	1.6	77.0	92	130	0.5	2.7	0.8	7.6	138
91	2.0	71.3	1.8	75.3	93	131	0.4	2.2	0.7	6.8	140
92	2.1	69.3	1.7	73.6	94	132	0.4	1.8	0.7	6.1	141
93	2.0	67.3	1.8	71.9	96	133	0.3	1.4	0.6	5.4	143
94	2.1	65.2	1.8	70.1	97	134	0.3	1.1	0.6	4.8	144
95	2.1	63.1	1.9	68.3	98	135	0.2	0.8	0.5	4.2	146
96	2.2	61.0	1.9	66.4	99	136	0.2	0.6	0.5	3.7	147
97	2.3	58.8	2.0	64.5	100	137	0.1	0.4	0.4	3.2	149
98	2.2	56.5	2.0	62.5	101	138	0.1	0.3	0.4	2.8	151
99	2.2	54.3	2.1	60.5	102	139	0.1	0.2	0.3	2.5	153
100	2.3	52.1	2.1	58.5	103	140	0.1	0.1	0.3	2.1	155
101	2.3	49.8	2.1	56.4	104	141	0.0	0.1	0.2	1.8	158
102	2.3	47.5	2.0	54.3	105	142	0.0	0.0	0.3	1.6	161
103	2.3	45.2	2.1	52.2	106	143	0.0	0.0	0.2	1.3	163

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.8. Composite '97 Conversion: OF-Army

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
64	0.2	99.3	0.2	98.9	61	103	2.3	48.1	2.3	52.0	105
65	0.2	99.2	0.2	98.7	63	104	2.4	45.8	2.3	49.7	106
66	0.2	98.9	0.3	98.5	64	105	2.3	43.4	2.3	47.4	107
67	0.3	98.7	0.3	98.2	65	106	2.3	41.1	2.2	45.1	108
68	0.3	98.4	0.3	97.9	66	107	2.3	38.7	2.2	42.9	109
69	0.3	98.1	0.4	97.6	67	108	2.3	36.4	2.2	40.7	110
70	0.4	97.8	0.4	97.3	69	109	2.2	34.2	2.2	38.5	111
71	0.5	97.4	0.5	96.8	70	110	2.3	32.0	2.1	36.4	112
72	0.5	96.9	0.5	96.4	71	111	2.2	29.8	2.1	34.3	113
73	0.6	96.4	0.5	95.9	72	112	2.1	27.6	2.1	32.2	114
74	0.7	95.8	0.7	95.3	73	113	2.0	25.5	2.0	30.0	115
75	0.7	95.1	0.7	94.7	74	114	1.9	23.6	2.0	28.1	116
76	0.8	94.4	0.7	94.0	75	115	1.9	21.6	1.9	26.1	118
77	0.8	93.6	0.8	93.3	77	116	1.8	19.7	1.7	24.3	119
78	1.0	92.8	0.9	92.6	78	117	1.7	17.9	1.7	22.5	120
79	1.0	91.8	0.9	91.7	79	118	1.7	16.3	1.6	20.8	121
80	1.1	90.8	1.0	90.8	80	119	1.5	14.6	1.6	19.2	122
81	1.2	89.7	1.0	89.9	81	120	1.4	13.0	1.5	17.5	123
82	1.2	88.6	1.1	88.8	82	121	1.3	11.6	1.4	16.0	124
83	1.4	87.3	1.2	87.7	83	122	1.3	10.3	1.4	14.6	125
84	1.4	86.0	1.3	86.5	84	123	1.2	9.0	1.2	13.2	127
85	1.5	84.5	1.3	85.3	86	124	1.1	7.8	1.2	12.0	128
86	1.6	83.1	1.4	84.0	87	125	1.0	6.7	1.1	10.8	129
87	1.6	81.5	1.5	82.6	88	126	0.9	5.7	1.0	9.7	130
88	1.7	79.9	1.5	81.1	89	127	0.8	4.8	1.0	8.7	132
89	1.7	78.2	1.6	79.6	90	128	0.8	4.1	0.9	7.7	133
90	1.9	76.4	1.6	78.0	91	129	0.6	3.3	0.8	6.8	134
91	1.9	74.6	1.7	76.4	92	130	0.6	2.7	0.7	6.1	136
92	2.0	72.6	1.9	74.7	93	131	0.5	2.1	0.6	5.3	137
93	2.1	70.6	1.9	72.8	94	132	0.4	1.7	0.6	4.7	139
94	2.1	68.5	1.9	71.0	95	133	0.3	1.3	0.6	4.1	140
95	2.1	66.5	2.0	69.1	96	134	0.3	0.9	0.5	3.6	142
96	2.2	64.4	2.0	67.1	97	135	0.2	0.7	0.4	3.1	143
97	2.2	62.1	2.1	65.1	98	136	0.2	0.5	0.4	2.7	145
98	2.3	59.9	2.1	63.0	99	137	0.1	0.3	0.3	2.2	147
99	2.4	57.6	2.1	60.8	101	138	0.1	0.2	0.3	1.9	149
100	2.4	55.2	2.2	58.7	102	139	0.1	0.1	0.3	1.6	151
101	2.4	52.8	2.3	56.5	103	140	0.0	0.1	0.2	1.3	153
102	2.4	50.5	2.3	54.2	104	141	0.0	0.0	0.2	1.1	155

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.9. Composite '97 Conversion: SC-Army

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
64	0.1	99.4	0.2	98.9	60	102	2.5	53.3	2.5	54.0	102
65	0.2	99.3	0.2	98.7	61	103	2.6	50.8	2.4	51.5	103
66	0.2	99.1	0.3	98.5	62	104	2.5	48.2	2.5	49.1	104
67	0.2	98.9	0.3	98.2	64	105	2.5	45.7	2.4	46.7	105
68	0.2	98.7	0.3	97.9	65	106	2.4	43.1	2.4	44.3	106
69	0.3	98.5	0.3	97.6	66	107	2.4	40.7	2.3	41.9	108
70	0.3	98.2	0.4	97.3	67	108	2.5	38.2	2.3	39.6	109
71	0.3	97.8	0.4	97.0	68	109	2.4	35.8	2.3	37.2	110
72	0.4	97.5	0.4	96.5	69	110	2.3	33.4	2.2	34.9	111
73	0.5	97.1	0.5	96.1	71	111	2.3	31.1	2.1	32.7	112
74	0.5	96.6	0.5	95.6	72	112	2.2	28.8	2.1	30.6	113
75	0.5	96.1	0.6	95.1	73	113	2.1	26.6	2.0	28.5	114
76	0.6	95.5	0.6	94.5	74	114	2.0	24.5	1.9	26.5	115
77	0.7	94.9	0.7	93.8	75	115	1.9	22.5	1.9	24.6	116
78	0.8	94.2	0.8	93.1	76	116	1.9	20.6	1.8	22.7	117
79	0.8	93.4	0.8	92.4	78	117	1.8	18.7	1.7	20.9	118
80	0.9	92.6	0.9	91.5	79	118	1.7	16.9	1.6	19.2	119
81	1.0	91.7	1.0	90.6	80	119	1.6	15.2	1.6	17.6	121
82	1.1	90.7	1.0	89.6	81	120	1.5	13.6	1.5	16.0	122
83	1.1	89.7	1.2	88.6	82	121	1.4	12.1	1.3	14.6	123
84	1.3	88.5	1.2	87.4	83	122	1.3	10.7	1.3	13.2	124
85	1.4	87.3	1.3	86.2	84	123	1.2	9.4	1.2	11.9	125
86	1.4	85.9	1.4	84.9	85	124	1.1	8.2	1.1	10.7	126
87	1.6	84.5	1.5	83.6	86	125	1.0	7.0	1.0	9.6	128
88	1.6	82.9	1.5	82.1	87	126	0.9	6.0	0.9	8.6	129
89	1.7	81.3	1.6	80.6	88	127	0.9	5.1	0.8	7.6	130
90	1.7	79.6	1.7	78.9	90	128	0.8	4.2	0.8	6.8	132
91	1.9	77.9	1.8	77.3	91	129	0.7	3.4	0.8	6.0	133
92	2.0	76.0	1.9	75.5	92	130	0.6	2.7	0.7	5.3	135
93	2.0	74.0	1.9	73.6	93	131	0.5	2.2	0.6	4.6	136
94	2.2	72.0	2.0	71.7	94	132	0.5	1.7	0.6	4.0	137
95	2.2	69.8	2.1	69.7	95	133	0.3	1.2	0.5	3.4	139
96	2.3	67.6	2.1	67.5	96	134	0.3	0.8	0.4	3.0	141
97	2.3	65.3	2.2	65.4	97	135	0.2	0.6	0.4	2.5	143
98	2.4	63.0	2.2	63.2	98	136	0.1	0.4	0.3	2.1	144
99	2.4	60.7	2.3	61.0	99	137	0.1	0.2	0.3	1.8	146
100	2.5	58.3	2.3	58.6	100	138	0.1	0.1	0.3	1.5	148
101	2.5	55.8	2.3	56.3	101	139	0.0	0.1	0.2	1.2	150

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.10. Composite '97 Conversion: ST-Army

C	1980 P	1980 Q	1997 P	1997 Q	'97	C	1980 P	1980 Q	1997 P	1997 Q	'97
64	0.1	99.3	0.2	98.9	61	102	2.5	53.8	2.3	53.7	102
65	0.2	99.2	0.2	98.7	62	103	2.5	51.3	2.4	51.4	103
66	0.2	99.0	0.2	98.4	63	104	2.6	48.8	2.5	49.0	104
67	0.2	98.8	0.3	98.2	64	105	2.5	46.2	2.5	46.5	105
68	0.3	98.6	0.3	97.9	65	106	2.5	43.7	2.4	44.0	106
69	0.3	98.3	0.3	97.6	66	107	2.4	41.2	2.3	41.6	107
70	0.3	98.0	0.4	97.3	68	108	2.4	38.8	2.3	39.3	108
71	0.4	97.7	0.4	96.9	69	109	2.4	36.4	2.3	37.0	109
72	0.4	97.3	0.5	96.5	70	110	2.4	34.0	2.2	34.8	110
73	0.5	96.9	0.5	96.0	71	111	2.3	31.7	2.2	32.5	111
74	0.5	96.4	0.6	95.5	72	112	2.2	29.4	2.1	30.3	112
75	0.6	95.9	0.6	95.0	73	113	2.2	27.2	2.0	28.3	114
76	0.6	95.3	0.6	94.4	74	114	2.0	25.1	1.9	26.3	115
77	0.7	94.7	0.7	93.8	75	115	1.9	23.0	1.9	24.3	116
78	0.8	94.0	0.8	93.1	77	116	1.9	21.1	1.8	22.5	117
79	0.8	93.2	0.8	92.3	78	117	1.8	19.2	1.7	20.6	118
80	0.9	92.4	0.9	91.5	79	118	1.7	17.3	1.6	18.9	119
81	1.0	91.6	1.0	90.6	80	119	1.6	15.6	1.5	17.3	120
82	1.1	90.6	1.1	89.6	81	120	1.6	14.0	1.5	15.8	121
83	1.2	89.5	1.1	88.5	82	121	1.5	12.4	1.4	14.3	122
84	1.3	88.3	1.2	87.3	83	122	1.3	10.9	1.3	12.9	124
85	1.3	87.1	1.3	86.1	84	123	1.3	9.6	1.2	11.7	125
86	1.4	85.7	1.4	84.8	85	124	1.2	8.4	1.1	10.5	126
87	1.5	84.3	1.4	83.5	86	125	1.1	7.2	1.0	9.4	127
88	1.6	82.9	1.5	82.0	87	126	1.0	6.1	1.0	8.4	129
89	1.7	81.3	1.7	80.5	88	127	0.9	5.1	0.9	7.4	130
90	1.8	79.6	1.7	78.8	90	128	0.8	4.3	0.8	6.6	131
91	1.8	77.8	1.8	77.1	91	129	0.7	3.4	0.7	5.8	133
92	1.9	76.1	1.9	75.4	92	130	0.6	2.7	0.7	5.1	134
93	2.0	74.1	2.0	73.5	93	131	0.6	2.1	0.6	4.4	136
94	2.1	72.2	2.0	71.5	94	132	0.4	1.6	0.5	3.8	137
95	2.2	70.0	2.1	69.5	95	133	0.4	1.1	0.5	3.2	139
96	2.2	67.8	2.2	67.4	96	134	0.3	0.7	0.4	2.8	141
97	2.3	65.6	2.2	65.2	97	135	0.2	0.5	0.4	2.3	143
98	2.3	63.3	2.3	63.0	98	136	0.1	0.3	0.3	1.9	145
99	2.3	61.0	2.3	60.7	99	137	0.1	0.2	0.3	1.6	147
100	2.4	58.7	2.3	58.4	100	138	0.0	0.1	0.3	1.4	149
101	2.4	56.2	2.4	56.1	101	139	0.0	0.1	0.2	1.1	150

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.11. Composite '97 Conversion: GT-Navy

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
65	0.1	99.3	0.2	98.9	62	99	2.5	60.1	2.6	56.7	98
66	0.2	99.1	0.2	98.7	63	100	2.6	57.6	2.7	54.1	99
67	0.2	99.0	0.3	98.5	64	101	2.7	55.0	2.5	51.4	100
68	0.2	98.8	0.3	98.2	66	102	2.5	52.3	2.7	48.8	101
69	0.2	98.6	0.3	98.0	67	103	2.7	49.8	2.7	46.2	102
70	0.3	98.3	0.4	97.6	68	104	2.7	47.1	2.6	43.5	103
71	0.3	98.1	0.4	97.3	69	105	2.8	44.3	2.6	40.9	104
72	0.4	97.7	0.4	96.9	70	106	2.4	41.5	2.6	38.2	105
73	0.5	97.3	0.5	96.5	71	107	2.5	39.1	2.3	35.7	106
74	0.4	96.9	0.6	96.0	72	108	2.6	36.6	2.3	33.3	107
75	0.5	96.4	0.6	95.5	73	109	2.6	34.0	2.4	31.0	108
76	0.6	95.9	0.6	94.9	74	110	2.2	31.4	2.2	28.7	109
77	0.7	95.3	0.7	94.3	75	111	2.4	29.2	2.1	26.4	110
78	0.7	94.6	0.8	93.6	76	112	2.1	26.8	2.0	24.3	111
79	0.8	93.9	0.9	92.8	78	113	2.2	24.7	1.9	22.3	112
80	0.9	93.1	1.0	91.9	79	114	2.0	22.5	1.9	20.4	113
81	0.9	92.2	1.1	90.9	80	115	2.1	20.5	1.8	18.5	114
82	1.1	91.3	1.2	89.8	81	116	2.0	18.4	1.7	16.7	115
83	1.2	90.2	1.2	88.7	82	117	1.7	16.4	1.6	15.0	116
84	1.3	89.0	1.3	87.5	83	118	1.9	14.7	1.4	13.4	117
85	1.3	87.7	1.4	86.1	84	119	1.7	12.8	1.3	12.0	118
86	1.5	86.5	1.7	84.7	85	120	1.6	11.0	1.3	10.6	120
87	1.6	85.0	1.6	83.0	86	121	1.5	9.4	1.1	9.4	121
88	1.6	83.4	1.8	81.4	87	122	1.3	8.0	1.0	8.2	122
89	1.8	81.8	1.8	79.6	88	123	1.3	6.7	1.0	7.2	124
90	1.9	80.0	2.0	77.7	89	124	1.2	5.4	0.8	6.3	125
91	1.9	78.2	2.1	75.7	90	125	1.1	4.1	0.8	5.5	127
92	2.0	76.3	2.2	73.6	91	126	1.1	3.0	0.7	4.6	129
93	2.2	74.3	2.4	71.4	92	127	1.0	1.9	0.6	3.9	131
94	2.4	72.1	2.4	69.1	93	128	0.7	1.0	0.5	3.3	134
95	2.3	69.7	2.4	66.6	94	129	0.1	0.3	0.5	2.8	139
96	2.5	67.4	2.6	64.3	95	130	0.1	0.2	0.4	2.3	140
97	2.4	64.9	2.5	61.7	96	131	0.0	0.2	0.4	1.9	141
98	2.4	62.5	2.5	59.2	97	132	0.0	0.1	0.3	1.5	142

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.12. Composite '97 Conversion: EL-Navy

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
138	0.1	99.3	0.1	98.9	134	178	1.0	80.8	0.9	81.6	179
139	0.1	99.2	0.1	98.8	135	179	1.0	79.9	0.9	80.7	180
140	0.1	99.1	0.1	98.7	136	180	1.0	78.9	1.0	79.8	181
141	0.1	99.0	0.1	98.6	138	181	1.1	77.9	1.0	78.7	182
142	0.1	98.9	0.1	98.5	139	182	1.1	76.8	1.0	77.7	183
143	0.1	98.7	0.2	98.3	140	183	1.2	75.7	1.1	76.7	184
144	0.2	98.6	0.2	98.2	141	184	1.1	74.5	1.1	75.6	185
145	0.2	98.4	0.2	98.0	142	185	1.2	73.4	1.1	74.5	186
146	0.2	98.2	0.2	97.8	144	186	1.2	72.2	1.2	73.4	187
147	0.2	98.0	0.2	97.6	145	187	1.2	71.0	1.2	72.2	188
148	0.2	97.8	0.2	97.4	146	188	1.2	69.8	1.1	71.1	189
149	0.2	97.6	0.2	97.2	147	189	1.2	68.6	1.2	69.9	190
150	0.3	97.4	0.2	96.9	148	190	1.3	67.4	1.2	68.7	191
151	0.3	97.1	0.3	96.7	149	191	1.3	66.1	1.2	67.5	192
152	0.3	96.8	0.3	96.4	151	192	1.3	64.9	1.2	66.2	193
153	0.3	96.5	0.3	96.2	152	193	1.3	63.6	1.2	65.0	194
154	0.3	96.2	0.3	95.9	153	194	1.3	62.3	1.3	63.8	195
155	0.3	95.9	0.3	95.5	154	195	1.2	61.0	1.3	62.5	196
156	0.4	95.6	0.3	95.2	155	196	1.3	59.8	1.2	61.2	197
157	0.4	95.2	0.4	94.9	156	197	1.4	58.5	1.4	60.0	198
158	0.5	94.8	0.4	94.5	157	198	1.3	57.1	1.3	58.6	199
159	0.4	94.3	0.4	94.1	158	199	1.3	55.8	1.4	57.4	200
160	0.5	93.9	0.5	93.7	160	200	1.4	54.5	1.4	55.9	201
161	0.5	93.4	0.5	93.2	161	201	1.4	53.1	1.3	54.6	202
162	0.5	92.9	0.5	92.8	162	202	1.3	51.7	1.4	53.2	203
163	0.6	92.4	0.5	92.3	163	203	1.3	50.4	1.4	51.8	204
164	0.6	91.8	0.5	91.8	164	204	1.4	49.1	1.3	50.4	205
165	0.6	91.3	0.6	91.3	165	205	1.3	47.7	1.3	49.1	206
166	0.6	90.6	0.6	90.7	166	206	1.3	46.4	1.4	47.8	207
167	0.7	90.0	0.6	90.1	167	207	1.3	45.2	1.3	46.4	208
168	0.7	89.3	0.7	89.5	168	208	1.3	43.9	1.4	45.1	209
169	0.8	88.6	0.7	88.8	169	209	1.3	42.6	1.4	43.7	210
170	0.8	87.8	0.7	88.1	170	210	1.2	41.2	1.3	42.3	211
171	0.8	87.1	0.7	87.4	171	211	1.2	40.0	1.3	41.1	212
172	0.8	86.3	0.8	86.7	173	212	1.3	38.8	1.3	39.7	213
173	0.8	85.4	0.8	86.0	174	213	1.2	37.5	1.3	38.5	214
174	0.9	84.6	0.9	85.1	175	214	1.2	36.2	1.3	37.2	215
175	0.9	83.7	0.8	84.3	176	215	1.2	35.0	1.2	35.9	216
176	0.9	82.8	1.0	83.4	177	216	1.3	33.8	1.3	34.7	217
177	1.1	81.9	0.9	82.5	178	217	1.2	32.5	1.2	33.4	218

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.12. Composite '97 Conversion: EL-Navy (continued)

C	1980 P	1980 Q	1997 P	1997 Q	'97	C	1980 P	1980 Q	1997 P	1997 Q	'97
218	1.1	31.4	1.3	32.2	219	244	0.6	8.0	0.6	8.7	245
219	1.2	30.2	1.1	30.9	220	245	0.6	7.5	0.5	8.1	246
220	1.2	29.1	1.2	29.8	221	246	0.5	6.9	0.5	7.6	248
221	1.1	27.9	1.2	28.6	222	247	0.6	6.4	0.5	7.1	249
222	1.1	26.8	1.1	27.4	223	248	0.4	5.8	0.4	6.6	250
223	1.0	25.7	1.1	26.3	224	249	0.5	5.4	0.4	6.2	251
224	1.0	24.7	1.1	25.2	224	250	0.4	4.9	0.4	5.8	252
225	1.0	23.7	1.0	24.1	225	251	0.4	4.4	0.4	5.4	254
226	1.0	22.7	1.0	23.1	226	252	0.4	4.0	0.3	5.0	255
227	1.0	21.7	1.0	22.0	227	253	0.4	3.6	0.3	4.7	256
228	0.9	20.7	0.9	21.0	228	254	0.4	3.2	0.3	4.3	258
229	1.0	19.8	1.0	20.1	229	255	0.3	2.8	0.3	4.0	259
230	0.9	18.9	0.9	19.1	230	256	0.4	2.5	0.3	3.7	260
231	0.9	18.0	0.9	18.2	231	257	0.3	2.2	0.3	3.4	262
232	0.9	17.0	0.9	17.3	232	258	0.3	1.9	0.3	3.1	263
233	0.9	16.1	0.8	16.4	233	259	0.2	1.6	0.2	2.8	265
234	0.8	15.2	0.8	15.6	234	260	0.2	1.3	0.2	2.6	267
235	0.8	14.4	0.8	14.7	235	261	0.2	1.1	0.2	2.4	268
236	0.7	13.6	0.7	14.0	237	262	0.1	0.9	0.2	2.2	270
237	0.8	12.8	0.7	13.2	238	263	0.2	0.8	0.2	2.0	272
238	0.7	12.1	0.7	12.5	239	264	0.1	0.6	0.2	1.8	274
239	0.7	11.4	0.7	11.8	240	265	0.2	0.5	0.2	1.6	276
240	0.7	10.7	0.6	11.1	241	266	0.1	0.3	0.1	1.5	279
241	0.7	10.0	0.6	10.5	242	267	0.1	0.3	0.1	1.3	280
242	0.7	9.3	0.6	9.9	243	268	0.1	0.2	0.1	1.2	283
243	0.6	8.6	0.6	9.2	244	269	0.0	0.1	0.1	1.1	285

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.13. Composite '97 Conversion: BEE-Navy

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
136	0.1	99.6	0.1	99.0	125	176	0.9	84.6	0.8	83.6	175
137	0.1	99.5	0.1	98.9	127	177	0.8	83.8	0.9	82.8	176
138	0.1	99.5	0.1	98.8	129	178	0.8	82.9	0.9	81.9	177
139	0.1	99.4	0.1	98.7	130	179	0.9	82.2	0.9	81.0	178
140	0.1	99.3	0.1	98.6	131	180	0.9	81.3	0.9	80.1	179
141	0.1	99.2	0.1	98.5	133	181	1.0	80.4	1.0	79.2	180
142	0.1	99.1	0.2	98.3	134	182	0.9	79.4	1.0	78.2	181
143	0.1	99.0	0.2	98.2	136	183	1.0	78.6	1.0	77.3	182
144	0.2	98.9	0.2	98.0	137	184	0.9	77.6	1.0	76.2	183
145	0.1	98.7	0.2	97.8	139	185	1.1	76.6	1.1	75.2	184
146	0.2	98.6	0.2	97.6	140	186	0.9	75.5	1.1	74.1	185
147	0.2	98.4	0.2	97.4	141	187	1.1	74.6	1.1	73.0	186
148	0.2	98.2	0.2	97.2	142	188	1.0	73.5	1.2	71.9	187
149	0.2	98.0	0.3	97.0	144	189	1.3	72.5	1.1	70.7	187
150	0.3	97.8	0.3	96.7	145	190	0.9	71.2	1.2	69.6	189
151	0.2	97.5	0.3	96.5	146	191	1.3	70.3	1.2	68.4	189
152	0.3	97.3	0.2	96.2	148	192	1.0	69.0	1.2	67.2	190
153	0.2	97.0	0.3	96.0	149	193	1.4	68.0	1.2	65.9	191
154	0.4	96.7	0.3	95.7	150	194	0.9	66.7	1.3	64.7	192
155	0.3	96.4	0.4	95.4	151	195	1.4	65.7	1.3	63.5	193
156	0.4	96.1	0.3	95.0	152	196	1.0	64.4	1.3	62.2	194
157	0.3	95.7	0.4	94.6	154	197	1.4	63.4	1.3	60.9	195
158	0.4	95.4	0.4	94.3	155	198	1.0	62.0	1.4	59.6	196
159	0.4	95.0	0.4	93.9	156	199	1.5	60.9	1.3	58.2	197
160	0.5	94.6	0.4	93.5	157	200	1.0	59.5	1.3	56.9	198
161	0.4	94.1	0.5	93.1	158	201	1.4	58.5	1.4	55.6	199
162	0.5	93.8	0.5	92.6	159	202	1.0	57.0	1.4	54.2	200
163	0.5	93.2	0.5	92.1	161	203	1.5	56.0	1.3	52.8	201
164	0.6	92.8	0.5	91.6	162	204	1.0	54.6	1.4	51.5	202
165	0.5	92.2	0.5	91.0	163	205	1.5	53.5	1.5	50.1	202
166	0.6	91.7	0.6	90.5	164	206	0.9	52.0	1.4	48.6	204
167	0.6	91.0	0.6	90.0	165	207	1.6	51.1	1.4	47.1	204
168	0.7	90.4	0.6	89.4	166	208	1.0	49.5	1.4	45.8	205
169	0.6	89.7	0.7	88.7	167	209	1.6	48.5	1.5	44.4	206
170	0.7	89.2	0.7	88.1	168	210	1.0	46.8	1.4	42.9	207
171	0.6	88.4	0.7	87.4	169	211	1.5	45.8	1.3	41.5	208
172	0.7	87.8	0.7	86.7	170	212	0.9	44.3	1.4	40.2	209
173	0.7	87.0	0.8	86.0	171	213	1.5	43.4	1.3	38.8	210
174	0.9	86.3	0.8	85.2	172	214	0.9	41.9	1.4	37.5	211
175	0.8	85.5	0.8	84.4	174	215	1.6	41.0	1.3	36.1	211

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.13. Composite '97 Conversion: BEE-Navy (continued)

C	1980 P	1980 Q	1997 P	1997 Q	'97	C	1980 P	1980 Q	1997 P	1997 Q	'97
216	0.9	39.4	1.2	34.8	213	242	0.6	13.7	0.6	9.7	236
217	1.5	38.5	1.3	33.6	213	243	0.8	13.1	0.6	9.1	237
218	0.9	37.0	1.3	32.3	214	244	0.7	12.4	0.5	8.5	238
219	1.4	36.2	1.2	31.0	215	245	0.8	11.7	0.5	8.0	239
220	0.9	34.7	1.2	29.8	216	246	0.6	10.9	0.5	7.6	240
221	1.3	33.8	1.2	28.6	217	247	0.7	10.3	0.5	7.1	241
222	0.8	32.5	1.2	27.5	218	248	0.6	9.6	0.5	6.6	242
223	1.4	31.7	1.1	26.3	219	249	0.7	9.0	0.4	6.2	243
224	0.8	30.3	1.1	25.2	220	250	0.6	8.4	0.4	5.8	244
225	1.3	29.5	1.1	24.0	220	251	0.5	7.7	0.4	5.3	246
226	0.9	28.2	1.1	23.0	221	252	0.6	7.2	0.4	5.0	247
227	1.3	27.3	1.1	21.9	222	253	0.5	6.7	0.3	4.6	248
228	0.8	26.0	1.0	20.9	223	254	0.6	6.2	0.3	4.2	249
229	1.2	25.3	1.0	19.9	224	255	0.5	5.6	0.3	3.9	250
230	0.8	24.0	1.0	18.9	225	256	0.5	5.1	0.3	3.6	252
231	1.2	23.2	0.9	18.0	226	257	0.4	4.6	0.3	3.3	253
232	0.8	22.0	0.9	17.1	227	258	0.5	4.2	0.3	3.1	254
233	1.1	21.2	0.8	16.2	228	259	0.3	3.7	0.2	2.8	256
234	0.7	20.2	0.8	15.4	229	260	0.5	3.3	0.3	2.6	257
235	1.0	19.5	0.8	14.6	229	261	0.3	2.8	0.2	2.3	259
236	0.7	18.4	0.8	13.8	231	262	0.5	2.5	0.2	2.1	260
237	1.0	17.8	0.7	13.1	231	263	0.2	2.0	0.2	1.9	262
238	0.6	16.8	0.7	12.3	232	264	0.5	1.8	0.2	1.8	264
239	0.9	16.1	0.7	11.7	233	265	0.2	1.4	0.1	1.6	267
240	0.6	15.2	0.6	11.0	234	266	0.4	1.2	0.2	1.4	268
241	0.8	14.6	0.6	10.3	235	267	0.1	0.8	0.2	1.3	270

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.14. Composite '97 Conversion: ENG-Navy

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
71	0.2	99.5	0.3	98.9	68	102	3.1	48.2	2.9	50.7	103
72	0.3	99.2	0.3	98.7	70	103	3.0	45.1	3.0	47.8	104
73	0.3	99.0	0.3	98.4	71	104	3.0	42.1	2.9	44.8	105
74	0.4	98.6	0.4	98.0	72	105	2.5	39.1	2.8	41.8	106
75	0.5	98.2	0.4	97.6	73	106	3.4	36.5	2.7	39.0	107
76	0.5	97.7	0.5	97.2	75	107	2.3	33.2	2.6	36.3	108
77	0.7	97.3	0.6	96.7	76	108	2.6	30.9	2.6	33.7	109
78	0.6	96.6	0.6	96.1	77	109	2.6	28.2	2.6	31.1	110
79	0.8	95.9	0.7	95.5	78	110	2.2	25.6	2.5	28.5	111
80	0.9	95.1	0.9	94.8	80	111	2.6	23.4	2.3	26.0	112
81	1.1	94.2	0.9	93.9	81	112	2.1	20.8	2.2	23.7	113
82	1.1	93.1	1.1	92.9	82	113	2.0	18.7	2.1	21.6	114
83	1.6	92.0	1.2	91.9	83	114	2.0	16.7	2.0	19.5	115
84	1.2	90.4	1.3	90.7	84	115	1.9	14.7	1.8	17.5	117
85	1.5	89.2	1.5	89.4	85	116	1.6	12.8	1.7	15.7	118
86	1.8	87.6	1.5	87.9	86	117	1.6	11.2	1.6	14.0	119
87	1.6	85.8	1.7	86.4	87	118	1.3	9.6	1.4	12.4	120
88	2.3	84.3	1.7	84.8	88	119	1.2	8.3	1.3	10.9	121
89	1.8	82.0	1.9	83.0	90	120	1.1	7.1	1.2	9.6	122
90	2.2	80.1	1.9	81.1	90	121	1.1	6.0	1.1	8.4	123
91	2.3	77.9	2.2	79.2	92	122	0.7	4.9	1.0	7.3	125
92	2.5	75.6	2.2	77.0	93	123	0.8	4.2	0.9	6.3	126
93	2.4	73.1	2.4	74.8	94	124	0.6	3.3	0.8	5.5	127
94	2.7	70.7	2.5	72.4	95	125	0.5	2.7	0.7	4.7	128
95	2.7	68.0	2.5	69.9	96	126	0.5	2.2	0.7	4.0	129
96	2.5	65.2	2.7	67.4	97	127	0.3	1.7	0.5	3.3	131
97	3.3	62.8	2.8	64.8	98	128	0.3	1.4	0.5	2.8	132
98	2.6	59.5	2.7	62.0	99	129	0.2	1.1	0.4	2.3	133
99	2.8	56.9	2.9	59.3	100	130	0.3	0.8	0.3	2.0	134
100	3.1	54.1	2.8	56.4	101	131	0.1	0.6	0.3	1.6	136
101	2.9	51.0	2.9	53.7	102	132	0.2	0.5	0.2	1.3	137

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.15. Composite '97 Conversion: MEC-Navy

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
103	0.2	98.9	0.1	99.0	104	143	1.6	58.5	1.6	66.1	148
104	0.3	98.7	0.1	98.9	106	144	1.6	56.9	1.5	64.6	149
105	0.3	98.4	0.2	98.8	107	145	1.6	55.3	1.6	63.0	150
106	0.4	98.1	0.2	98.6	108	146	1.5	53.7	1.7	61.5	151
107	0.4	97.8	0.2	98.4	110	147	1.5	52.2	1.6	59.8	152
108	0.4	97.4	0.2	98.2	111	148	1.6	50.7	1.7	58.2	153
109	0.4	97.0	0.3	98.0	112	149	1.5	49.1	1.7	56.5	153
110	0.5	96.5	0.3	97.6	113	150	1.6	47.5	1.6	54.8	154
111	0.5	96.0	0.3	97.3	114	151	1.5	45.9	1.7	53.2	155
112	0.6	95.5	0.3	97.0	116	152	1.5	44.4	1.7	51.5	156
113	0.7	94.9	0.4	96.6	117	153	1.5	42.8	1.6	49.9	157
114	0.6	94.2	0.4	96.2	118	154	1.6	41.4	1.7	48.2	158
115	0.8	93.6	0.5	95.8	119	155	1.4	39.8	1.6	46.6	159
116	0.7	92.8	0.5	95.3	120	156	1.5	38.4	1.7	45.0	160
117	1.0	92.1	0.6	94.8	121	157	1.4	36.9	1.6	43.3	161
118	0.9	91.1	0.6	94.3	123	158	1.5	35.4	1.6	41.7	162
119	1.0	90.3	0.6	93.6	124	159	1.4	33.9	1.6	40.2	163
120	1.0	89.3	0.7	93.0	125	160	1.5	32.5	1.5	38.6	164
121	1.0	88.3	0.7	92.3	126	161	1.4	31.0	1.6	37.1	165
122	1.2	87.3	0.7	91.6	127	162	1.3	29.6	1.5	35.5	166
123	1.1	86.2	0.8	90.9	128	163	1.4	28.3	1.4	34.0	167
124	1.2	85.1	0.9	90.1	129	164	1.2	26.8	1.5	32.5	168
125	1.2	83.9	0.9	89.2	130	165	1.5	25.6	1.4	31.1	169
126	1.3	82.7	1.0	88.2	131	166	1.1	24.1	1.5	29.7	170
127	1.2	81.4	1.0	87.2	132	167	1.4	23.0	1.3	28.2	171
128	1.3	80.2	1.1	86.2	133	168	1.1	21.6	1.3	26.9	172
129	1.2	78.8	1.1	85.2	134	169	1.3	20.5	1.4	25.5	173
130	1.5	77.6	1.1	84.0	135	170	1.1	19.2	1.3	24.1	174
131	1.3	76.1	1.2	82.9	136	171	1.2	18.1	1.2	22.8	175
132	1.3	74.8	1.2	81.7	137	172	1.1	16.9	1.2	21.6	176
133	1.5	73.4	1.3	80.5	138	173	1.0	15.8	1.2	20.4	177
134	1.4	72.0	1.2	79.2	139	174	1.1	14.8	1.1	19.2	178
135	1.6	70.5	1.4	78.0	140	175	1.0	13.7	1.2	18.1	179
136	1.5	68.9	1.4	76.6	141	176	1.0	12.8	1.1	17.0	180
137	1.6	67.5	1.4	75.2	142	177	0.8	11.8	1.0	15.9	181
138	1.4	65.9	1.4	73.8	143	178	1.0	11.0	0.9	14.8	182
139	1.6	64.5	1.4	72.3	144	179	0.7	10.0	1.0	14.0	183
140	1.3	62.9	1.6	70.9	145	180	0.9	9.3	0.9	12.9	184
141	1.7	61.5	1.6	69.2	146	181	0.7	8.3	0.8	12.0	186
142	1.4	59.9	1.5	67.7	147	182	0.8	7.7	0.8	11.2	187

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.15. Composite '97 Conversion: MEC-Navy (continued)

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
183	0.6	6.9	0.8	10.3	188	194	0.3	1.5	0.4	3.9	202
184	0.7	6.3	0.7	9.5	189	195	0.2	1.3	0.4	3.5	204
185	0.6	5.5	0.8	8.8	190	196	0.2	1.1	0.3	3.1	205
186	0.6	5.0	0.6	8.0	191	197	0.2	0.8	0.3	2.8	207
187	0.6	4.4	0.6	7.4	193	198	0.2	0.7	0.3	2.5	208
188	0.4	3.8	0.6	6.9	194	199	0.1	0.5	0.2	2.3	210
189	0.5	3.4	0.6	6.3	195	200	0.1	0.4	0.2	2.0	212
190	0.4	2.9	0.6	5.7	197	201	0.1	0.3	0.2	1.8	215
191	0.4	2.6	0.5	5.2	198	202	0.1	0.2	0.2	1.6	217
192	0.3	2.1	0.5	4.7	200	203	0.1	0.1	0.2	1.4	220
193	0.3	1.9	0.4	4.2	201	204	0.0	0.1	0.2	1.3	222

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.16. Composite '97 Conversion: MEC2-Navy

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
100	0.2	98.9	0.1	99.3	103	140	1.4	69.3	1.3	75.9	145
101	0.2	98.8	0.1	99.2	105	141	1.3	67.9	1.4	74.7	146
102	0.2	98.6	0.1	99.1	106	142	1.5	66.6	1.3	73.3	147
103	0.3	98.3	0.1	99.0	107	143	1.4	65.1	1.3	72.0	148
104	0.3	98.0	0.1	98.9	108	144	1.5	63.7	1.5	70.7	149
105	0.3	97.8	0.2	98.7	109	145	1.5	62.3	1.5	69.2	149
106	0.3	97.5	0.2	98.6	111	146	1.5	60.8	1.6	67.7	150
107	0.4	97.1	0.2	98.4	112	147	1.5	59.2	1.5	66.1	151
108	0.4	96.7	0.3	98.1	113	148	1.5	57.7	1.6	64.6	152
109	0.4	96.3	0.3	97.9	114	149	1.5	56.2	1.6	63.0	153
110	0.4	95.9	0.3	97.6	115	150	1.6	54.7	1.6	61.4	154
111	0.5	95.5	0.3	97.3	116	151	1.5	53.1	1.7	59.8	155
112	0.5	95.0	0.4	97.0	117	152	1.6	51.6	1.7	58.1	156
113	0.5	94.5	0.3	96.7	118	153	1.6	50.0	1.7	56.4	157
114	0.6	94.0	0.4	96.3	119	154	1.6	48.4	1.7	54.7	158
115	0.6	93.4	0.4	95.9	120	155	1.5	46.9	1.7	53.0	159
116	0.6	92.9	0.5	95.5	121	156	1.6	45.3	1.7	51.3	159
117	0.7	92.2	0.4	95.1	122	157	1.6	43.7	1.8	49.6	160
118	0.7	91.6	0.5	94.6	123	158	1.6	42.2	1.8	47.8	161
119	0.7	90.8	0.5	94.1	125	159	1.6	40.5	1.7	46.0	162
120	0.7	90.2	0.6	93.6	125	160	1.4	39.0	1.8	44.3	163
121	0.8	89.4	0.6	93.0	127	161	1.5	37.5	1.7	42.5	164
122	0.9	88.6	0.6	92.5	128	162	1.5	36.0	1.7	40.8	165
123	0.8	87.7	0.7	91.8	129	163	1.6	34.5	1.7	39.1	166
124	0.9	86.9	0.7	91.2	130	164	1.4	32.9	1.6	37.3	167
125	0.9	86.1	0.7	90.5	131	165	1.4	31.5	1.6	35.7	168
126	1.0	85.2	0.8	89.8	131	166	1.5	30.1	1.6	34.1	168
127	1.0	84.2	0.8	89.1	132	167	1.4	28.6	1.6	32.4	169
128	1.0	83.3	0.9	88.3	133	168	1.5	27.2	1.6	30.8	170
129	1.0	82.3	0.9	87.4	134	169	1.3	25.8	1.5	29.2	171
130	1.0	81.2	0.9	86.5	135	170	1.3	24.4	1.5	27.7	172
131	1.1	80.2	1.0	85.6	136	171	1.3	23.1	1.4	26.2	173
132	1.1	79.1	0.9	84.7	137	172	1.2	21.8	1.5	24.7	174
133	1.1	78.0	1.0	83.8	138	173	1.2	20.6	1.4	23.3	175
134	1.2	76.9	1.0	82.7	139	174	1.2	19.4	1.3	21.8	176
135	1.3	75.7	1.2	81.7	140	175	1.2	18.2	1.3	20.5	177
136	1.2	74.4	1.0	80.6	141	176	1.1	17.0	1.3	19.2	178
137	1.2	73.2	1.2	79.5	142	177	1.2	15.8	1.3	18.0	179
138	1.3	72.0	1.2	78.4	143	178	1.0	14.7	1.2	16.7	180
139	1.4	70.7	1.2	77.2	144	179	1.0	13.7	1.1	15.5	181

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.16. Composite '97 Conversion: MEC2-Navy (continued)

C	1980 P	1980 Q	1997 P	1997 Q	'97	C	1980 P	1980 Q	1997 P	1997 Q	'97
180	0.9	12.7	1.1	14.4	182	192	0.5	3.6	0.5	4.6	194
181	1.0	11.8	1.1	13.3	182	193	0.4	3.1	0.5	4.1	196
182	0.9	10.7	1.0	12.2	184	194	0.4	2.6	0.4	3.7	197
183	0.8	9.8	0.9	11.2	185	195	0.3	2.2	0.4	3.3	198
184	0.8	9.0	0.9	10.4	186	196	0.3	1.9	0.4	2.9	199
185	0.8	8.2	0.8	9.5	187	197	0.3	1.6	0.3	2.5	201
186	0.7	7.4	0.8	8.7	188	198	0.3	1.2	0.2	2.2	202
187	0.7	6.6	0.7	7.9	189	199	0.2	1.0	0.2	2.0	204
188	0.7	6.0	0.7	7.2	190	200	0.2	0.7	0.2	1.7	205
189	0.6	5.3	0.6	6.5	191	201	0.2	0.5	0.2	1.5	208
190	0.6	4.7	0.6	5.9	192	202	0.1	0.3	0.2	1.3	210
191	0.5	4.1	0.6	5.2	193	203	0.1	0.2	0.2	1.1	213

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.17. Composite '97 Conversion: NUC-Navy

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
138	0.1	99.3	0.1	98.9	134	178	0.9	83.0	0.9	83.3	178
139	0.1	99.2	0.1	98.9	135	179	0.9	82.1	0.9	82.4	179
140	0.1	99.1	0.1	98.7	136	180	1.0	81.2	1.0	81.5	180
141	0.1	99.0	0.1	98.6	137	181	1.0	80.2	1.0	80.5	181
142	0.1	98.9	0.1	98.5	139	182	1.0	79.1	1.1	79.5	182
143	0.1	98.8	0.1	98.4	140	183	1.1	78.2	1.1	78.4	183
144	0.1	98.6	0.1	98.3	141	184	1.1	77.1	1.1	77.3	184
145	0.1	98.5	0.2	98.1	142	185	1.0	76.0	1.0	76.2	185
146	0.2	98.3	0.2	98.0	143	186	1.1	75.0	1.1	75.2	186
147	0.2	98.2	0.2	97.8	145	187	1.1	73.9	1.2	74.1	187
148	0.2	97.9	0.2	97.6	146	188	1.2	72.8	1.2	72.9	188
149	0.2	97.8	0.2	97.4	147	189	1.2	71.6	1.2	71.7	189
150	0.2	97.6	0.2	97.2	148	190	1.2	70.4	1.2	70.4	190
151	0.2	97.3	0.2	97.0	149	191	1.2	69.2	1.2	69.2	191
152	0.2	97.1	0.2	96.8	150	192	1.2	68.0	1.4	68.0	192
153	0.2	96.9	0.2	96.6	152	193	1.3	66.8	1.4	66.6	193
154	0.3	96.6	0.3	96.3	153	194	1.3	65.5	1.3	65.2	194
155	0.3	96.3	0.3	96.0	154	195	1.3	64.2	1.3	63.9	195
156	0.4	96.0	0.3	95.7	155	196	1.3	63.0	1.3	62.6	196
157	0.4	95.7	0.3	95.4	156	197	1.3	61.7	1.4	61.3	197
158	0.3	95.3	0.4	95.1	157	198	1.3	60.4	1.4	59.8	198
159	0.5	95.0	0.4	94.7	158	199	1.3	59.1	1.4	58.4	199
160	0.4	94.5	0.4	94.3	159	200	1.3	57.7	1.4	57.0	199
161	0.4	94.1	0.4	94.0	161	201	1.4	56.5	1.4	55.6	200
162	0.5	93.7	0.5	93.6	162	202	1.3	55.1	1.4	54.1	201
163	0.5	93.2	0.5	93.1	163	203	1.3	53.8	1.4	52.7	202
164	0.5	92.7	0.4	92.6	164	204	1.3	52.4	1.5	51.3	203
165	0.6	92.2	0.5	92.2	165	205	1.3	51.1	1.4	49.9	204
166	0.6	91.7	0.5	91.7	166	206	1.4	49.8	1.4	48.5	205
167	0.6	91.1	0.6	91.2	167	207	1.3	48.4	1.4	47.0	206
168	0.6	90.5	0.6	90.5	168	208	1.4	47.2	1.4	45.6	207
169	0.7	89.9	0.6	89.9	169	209	1.3	45.8	1.5	44.2	208
170	0.7	89.2	0.6	89.4	170	210	1.4	44.5	1.4	42.7	209
171	0.7	88.5	0.7	88.7	171	211	1.3	43.1	1.4	41.3	210
172	0.7	87.8	0.7	88.1	172	212	1.3	41.8	1.3	39.9	211
173	0.8	87.1	0.8	87.4	173	213	1.3	40.5	1.3	38.5	212
174	0.8	86.4	0.8	86.6	174	214	1.3	39.2	1.3	37.3	212
175	0.9	85.6	0.8	85.9	175	215	1.2	37.9	1.3	36.0	214
176	0.9	84.7	0.9	85.1	176	216	1.2	36.7	1.3	34.7	214
177	0.9	83.8	0.9	84.2	177	217	1.3	35.5	1.3	33.3	215

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.17. Composite '97 Conversion: NUC-Navy (continued)

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
218	1.2	34.2	1.3	32.1	216	243	0.7	9.5	0.5	8.7	242
219	1.2	33.0	1.3	30.8	217	244	0.6	8.8	0.5	8.1	243
220	1.2	31.7	1.2	29.5	218	245	0.6	8.1	0.5	7.6	244
221	1.2	30.5	1.2	28.3	219	246	0.6	7.5	0.4	7.1	245
222	1.2	29.4	1.2	27.1	220	247	0.6	6.9	0.5	6.6	246
223	1.2	28.2	1.2	26.0	221	248	0.6	6.3	0.5	6.2	248
224	1.1	27.0	1.2	24.8	222	249	0.5	5.7	0.4	5.7	249
225	1.1	25.9	1.1	23.7	223	250	0.5	5.2	0.4	5.2	250
226	1.0	24.7	1.1	22.6	224	251	0.5	4.7	0.4	4.9	251
227	1.1	23.7	1.0	21.5	225	252	0.5	4.2	0.4	4.5	253
228	1.1	22.6	1.0	20.4	226	253	0.5	3.8	0.3	4.1	254
229	1.0	21.6	1.0	19.5	227	254	0.4	3.3	0.3	3.8	256
230	1.0	20.5	0.9	18.5	228	255	0.4	2.9	0.3	3.5	257
231	1.0	19.5	0.9	17.6	229	256	0.4	2.5	0.3	3.2	259
232	1.0	18.5	0.8	16.7	230	257	0.3	2.1	0.2	2.9	260
233	0.9	17.5	0.9	15.8	231	258	0.3	1.8	0.2	2.7	262
234	0.9	16.6	0.8	14.9	232	259	0.3	1.5	0.3	2.4	264
235	0.8	15.7	0.7	14.1	233	260	0.2	1.2	0.2	2.2	266
236	0.9	14.9	0.8	13.4	234	261	0.2	1.0	0.2	2.0	268
237	0.8	14.1	0.7	12.6	235	262	0.2	0.7	0.2	1.8	270
238	0.8	13.2	0.7	11.9	236	263	0.2	0.6	0.2	1.6	272
239	0.8	12.4	0.7	11.2	237	264	0.1	0.4	0.2	1.5	275
240	0.7	11.7	0.6	10.4	238	265	0.1	0.2	0.1	1.3	278
241	0.8	10.9	0.6	9.8	239	266	0.1	0.2	0.1	1.2	281
242	0.7	10.1	0.6	9.2	241	267	0.0	0.1	0.1	1.1	287

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.18. Composite '97 Conversion: OPS-Navy

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
139	0.1	99.2	0.1	99.0	136	179	0.8	83.3	0.9	83.0	179
140	0.1	99.1	0.1	98.8	137	180	0.9	82.5	0.9	82.1	180
141	0.1	99.0	0.1	98.7	138	181	0.9	81.6	0.9	81.2	181
142	0.1	98.9	0.1	98.6	139	182	0.9	80.7	0.9	80.4	182
143	0.1	98.8	0.1	98.5	140	183	0.9	79.8	1.0	79.4	183
144	0.1	98.7	0.1	98.3	141	184	0.9	78.8	1.0	78.4	184
145	0.1	98.5	0.2	98.2	142	185	1.1	77.9	1.0	77.4	184
146	0.2	98.4	0.2	98.0	144	186	1.0	76.8	1.1	76.4	186
147	0.2	98.2	0.2	97.9	145	187	1.1	75.9	1.1	75.3	186
148	0.2	98.0	0.2	97.7	146	188	1.1	74.8	1.1	74.2	187
149	0.2	97.9	0.2	97.5	147	189	1.1	73.7	1.1	73.1	188
150	0.2	97.6	0.2	97.3	148	190	1.1	72.6	1.2	71.9	189
151	0.2	97.4	0.2	97.1	149	191	1.2	71.5	1.3	70.8	190
152	0.3	97.2	0.3	96.8	150	192	1.2	70.3	1.2	69.5	191
153	0.2	96.9	0.3	96.6	152	193	1.3	69.1	1.2	68.3	192
154	0.3	96.7	0.3	96.3	153	194	1.2	67.8	1.3	67.1	193
155	0.3	96.4	0.3	96.0	154	195	1.3	66.6	1.4	65.8	194
156	0.3	96.1	0.4	95.8	155	196	1.3	65.3	1.4	64.4	195
157	0.3	95.8	0.3	95.4	156	197	1.3	64.0	1.4	63.0	196
158	0.3	95.5	0.4	95.1	157	198	1.3	62.7	1.3	61.7	197
159	0.4	95.1	0.3	94.7	158	199	1.3	61.4	1.3	60.4	198
160	0.4	94.8	0.4	94.4	159	200	1.3	60.1	1.4	59.1	199
161	0.4	94.3	0.4	94.0	160	201	1.3	58.8	1.4	57.7	200
162	0.5	93.9	0.4	93.6	161	202	1.3	57.5	1.4	56.3	201
163	0.4	93.5	0.5	93.2	162	203	1.4	56.2	1.4	54.9	202
164	0.5	93.0	0.5	92.7	163	204	1.3	54.8	1.4	53.4	203
165	0.5	92.6	0.5	92.2	164	205	1.4	53.5	1.5	52.0	204
166	0.5	92.0	0.5	91.7	165	206	1.3	52.1	1.4	50.6	205
167	0.6	91.6	0.5	91.2	166	207	1.4	50.8	1.4	49.2	206
168	0.6	91.0	0.6	90.7	167	208	1.4	49.4	1.4	47.8	207
169	0.6	90.4	0.6	90.1	168	209	1.3	48.0	1.5	46.4	208
170	0.6	89.8	0.7	89.5	169	210	1.5	46.7	1.5	44.9	209
171	0.6	89.2	0.6	88.8	170	211	1.3	45.2	1.5	43.4	210
172	0.7	88.6	0.6	88.2	171	212	1.4	43.8	1.4	41.9	211
173	0.7	87.9	0.7	87.6	172	213	1.4	42.4	1.4	40.5	212
174	0.7	87.2	0.7	86.9	173	214	1.4	41.1	1.4	39.0	213
175	0.8	86.5	0.8	86.2	174	215	1.3	39.6	1.4	37.7	214
176	0.8	85.8	0.7	85.4	176	216	1.4	38.3	1.4	36.3	215
177	0.8	85.0	0.8	84.7	177	217	1.3	36.9	1.4	35.0	216
178	0.8	84.2	0.9	83.9	178	218	1.3	35.6	1.4	33.5	217

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.18. Composite '97 Conversion: OPS-Navy (continued)

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
219	1.3	34.3	1.4	32.2	217	241	0.8	10.5	0.7	9.6	240
220	1.3	33.0	1.4	30.8	218	242	0.8	9.7	0.7	8.9	241
221	1.3	31.7	1.3	29.4	219	243	0.7	8.9	0.6	8.2	242
222	1.3	30.4	1.2	28.1	220	244	0.7	8.2	0.6	7.6	243
223	1.2	29.1	1.3	26.9	221	245	0.7	7.5	0.5	7.0	244
224	1.2	27.8	1.2	25.7	222	246	0.6	6.8	0.5	6.5	245
225	1.2	26.6	1.2	24.5	223	247	0.6	6.2	0.5	6.0	247
226	1.2	25.5	1.1	23.3	224	248	0.6	5.5	0.4	5.5	248
227	1.2	24.3	1.1	22.2	225	249	0.5	5.0	0.4	5.1	249
228	1.2	23.2	1.0	21.1	226	250	0.6	4.5	0.4	4.7	251
229	1.1	22.0	1.0	20.0	227	251	0.5	3.9	0.4	4.3	252
230	1.1	20.9	1.0	19.0	228	252	0.4	3.4	0.4	3.9	253
231	1.0	19.8	1.1	18.0	229	253	0.4	3.0	0.4	3.5	254
232	1.0	18.8	0.9	17.0	230	254	0.4	2.5	0.3	3.1	256
233	1.0	17.8	0.9	16.0	231	255	0.4	2.2	0.3	2.8	257
234	1.0	16.8	0.9	15.1	232	256	0.3	1.8	0.3	2.5	259
235	1.0	15.8	0.8	14.2	233	257	0.3	1.5	0.3	2.2	261
236	0.9	14.8	0.8	13.4	234	258	0.2	1.2	0.2	2.0	262
237	0.9	13.9	0.8	12.6	235	259	0.2	1.0	0.2	1.8	264
238	0.9	13.1	0.8	11.7	236	260	0.2	0.7	0.2	1.6	266
239	0.9	12.2	0.7	11.0	237	261	0.2	0.5	0.1	1.4	268
240	0.8	11.3	0.7	10.3	239	262	0.2	0.4	0.2	1.3	270

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.19. Composite '97 Conversion: HM-Navy

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
100	0.1	99.4	0.1	98.9	94	140	1.5	76.7	1.5	71.5	137
101	0.1	99.3	0.1	98.8	96	141	1.5	75.3	1.6	70.0	138
102	0.1	99.2	0.1	98.6	97	142	1.5	73.7	1.6	68.4	139
103	0.1	99.1	0.1	98.5	98	143	1.5	72.2	1.6	66.8	140
104	0.1	99.0	0.2	98.3	99	144	1.6	70.6	1.7	65.1	141
105	0.1	98.9	0.2	98.2	100	145	1.7	69.0	1.8	63.4	142
106	0.1	98.8	0.2	98.0	101	146	1.7	67.4	1.7	61.7	143
107	0.2	98.6	0.2	97.8	102	147	1.7	65.7	1.7	60.0	144
108	0.2	98.5	0.2	97.6	103	148	1.7	64.0	1.7	58.3	145
109	0.2	98.3	0.3	97.4	104	149	1.7	62.3	1.8	56.6	146
110	0.2	98.1	0.3	97.1	105	150	1.7	60.6	1.8	54.7	147
111	0.2	97.9	0.3	96.8	106	151	1.8	58.9	1.9	52.9	148
112	0.2	97.7	0.3	96.5	108	152	1.7	57.1	1.8	51.1	149
113	0.3	97.5	0.4	96.2	109	153	1.8	55.3	1.8	49.3	150
114	0.3	97.2	0.4	95.8	110	154	1.9	53.5	1.8	47.4	151
115	0.4	96.9	0.5	95.5	111	155	1.8	51.7	1.8	45.6	152
116	0.3	96.5	0.4	95.0	112	156	1.8	49.8	1.8	43.8	153
117	0.4	96.2	0.5	94.6	113	157	1.8	48.0	1.8	42.0	154
118	0.4	95.8	0.5	94.0	114	158	1.8	46.2	1.9	40.1	155
119	0.4	95.4	0.5	93.5	115	159	1.9	44.4	1.7	38.3	156
120	0.5	95.0	0.6	93.0	116	160	1.8	42.5	1.8	36.5	157
121	0.5	94.5	0.7	92.4	117	161	1.8	40.7	1.7	34.7	158
122	0.6	94.0	0.7	91.7	118	162	1.9	38.9	1.6	33.0	159
123	0.6	93.4	0.8	91.0	119	163	1.8	37.0	1.6	31.4	160
124	0.6	92.8	0.8	90.3	120	164	1.8	35.2	1.6	29.8	161
125	0.7	92.2	0.8	89.5	121	165	1.7	33.4	1.5	28.2	162
126	0.7	91.5	0.9	88.7	122	166	1.7	31.7	1.6	26.7	163
127	0.9	90.7	1.0	87.8	123	167	1.6	30.0	1.5	25.1	164
128	0.8	89.9	1.1	86.8	124	168	1.7	28.4	1.4	23.6	165
129	0.9	89.0	1.0	85.8	126	169	1.5	26.7	1.3	22.2	166
130	0.9	88.2	1.0	84.7	127	170	1.6	25.2	1.3	20.9	167
131	1.0	87.3	1.1	83.7	128	171	1.4	23.6	1.3	19.6	168
132	1.1	86.2	1.2	82.6	129	172	1.5	22.1	1.2	18.3	169
133	1.1	85.2	1.2	81.4	130	173	1.4	20.6	1.3	17.1	170
134	1.1	84.1	1.3	80.2	131	174	1.4	19.3	1.1	15.8	171
135	1.1	83.0	1.3	78.9	132	175	1.3	17.8	1.1	14.8	172
136	1.3	81.9	1.4	77.5	133	176	1.3	16.5	1.0	13.7	173
137	1.2	80.6	1.5	76.1	134	177	1.2	15.2	1.0	12.7	175
138	1.3	79.4	1.5	74.6	135	178	1.2	14.0	0.9	11.7	176
139	1.4	78.1	1.6	73.1	136	179	1.2	12.8	0.9	10.8	177

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.19. Composite '97 Conversion: HM-Navy (continued)

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
180	1.1	11.7	0.8	9.9	178	190	0.6	3.3	0.4	3.6	191
181	1.0	10.6	0.7	9.1	179	191	0.5	2.7	0.3	3.2	193
182	1.0	9.5	0.8	8.3	180	192	0.4	2.1	0.3	2.9	194
183	0.9	8.5	0.7	7.5	182	193	0.4	1.7	0.3	2.5	196
184	0.9	7.6	0.7	6.8	183	194	0.4	1.3	0.3	2.2	198
185	0.8	6.8	0.6	6.2	184	195	0.2	0.9	0.2	1.9	200
186	0.8	6.0	0.5	5.6	185	196	0.3	0.7	0.2	1.7	202
187	0.7	5.2	0.6	5.1	187	197	0.1	0.4	0.2	1.5	205
188	0.6	4.5	0.4	4.5	188	198	0.2	0.3	0.2	1.3	206
189	0.6	3.9	0.4	4.1	189	199	0.0	0.1	0.2	1.1	211

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.20. Composite '97 Conversion: ADM-Navy

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
67	0.1	99.5	0.2	98.9	62	100	2.8	65.2	2.9	56.6	97
68	0.1	99.4	0.2	98.7	63	101	2.6	62.4	2.8	53.7	98
69	0.1	99.3	0.2	98.5	64	102	2.8	59.8	2.9	50.9	99
70	0.2	99.1	0.3	98.3	65	103	3.0	57.0	2.9	48.0	100
71	0.2	99.0	0.3	98.0	66	104	2.6	54.0	2.9	45.0	101
72	0.2	98.8	0.3	97.7	68	105	3.0	51.4	2.8	42.1	102
73	0.2	98.6	0.3	97.4	69	106	3.0	48.4	2.7	39.3	103
74	0.3	98.4	0.4	97.1	69	107	2.7	45.5	2.7	36.6	104
75	0.4	98.1	0.4	96.7	71	108	3.0	42.7	2.6	33.9	105
76	0.3	97.7	0.5	96.2	72	109	2.9	39.7	2.5	31.3	106
77	0.4	97.4	0.6	95.7	73	110	2.5	36.8	2.4	28.8	107
78	0.5	97.0	0.6	95.2	74	111	2.8	34.3	2.2	26.3	108
79	0.5	96.6	0.6	94.5	75	112	2.7	31.5	2.3	24.2	109
80	0.5	96.1	0.8	93.9	76	113	2.3	28.7	2.0	21.9	110
81	0.7	95.5	0.9	93.0	77	114	2.6	26.4	1.9	19.9	111
82	0.7	94.8	1.0	92.1	79	115	2.2	23.9	1.9	17.9	112
83	0.7	94.1	1.1	91.2	80	116	2.4	21.7	1.6	16.0	113
84	0.9	93.4	1.2	90.1	81	117	2.2	19.3	1.6	14.4	114
85	1.0	92.5	1.3	88.9	82	118	1.9	17.1	1.5	12.8	115
86	1.2	91.4	1.5	87.6	83	119	2.0	15.2	1.3	11.3	117
87	1.2	90.3	1.6	86.2	84	120	1.9	13.2	1.3	10.0	118
88	1.3	89.1	1.7	84.6	85	121	1.6	11.3	1.1	8.8	119
89	1.4	87.8	1.8	82.8	86	122	1.6	9.7	1.1	7.6	120
90	1.6	86.3	1.9	81.1	87	123	1.5	8.1	0.9	6.5	122
91	1.7	84.7	2.0	79.1	88	124	1.4	6.6	0.9	5.7	123
92	1.9	83.0	2.2	77.1	89	125	1.2	5.2	0.7	4.8	125
93	1.9	81.0	2.3	74.9	90	126	1.0	4.0	0.7	4.1	126
94	2.1	79.2	2.4	72.6	91	127	1.0	3.1	0.6	3.4	128
95	2.4	77.1	2.5	70.1	92	128	0.8	2.1	0.5	2.8	130
96	2.2	74.8	2.6	67.6	93	129	0.5	1.3	0.4	2.3	132
97	2.3	72.5	2.7	64.9	94	130	0.6	0.8	0.3	1.9	134
98	2.6	70.2	2.8	62.3	95	131	0.1	0.2	0.3	1.6	138
99	2.4	67.6	2.9	59.4	96	132	0.0	0.1	0.2	1.3	140

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.21. Composite '97 Conversion: MM-Marine Corps

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
69	0.3	99.0	0.2	99.1	70	106	2.8	41.9	3.0	51.6	110
70	0.4	98.7	0.1	98.9	71	107	2.7	39.1	1.4	48.6	111
71	0.4	98.3	0.3	98.8	73	108	1.3	36.5	2.8	47.2	112
72	0.2	97.9	0.3	98.5	74	109	2.9	35.2	2.7	44.4	113
73	0.5	97.7	0.2	98.2	75	110	2.5	32.3	1.4	41.7	114
74	0.6	97.2	0.4	98.0	76	111	2.5	29.8	2.7	40.3	115
75	0.7	96.6	0.4	97.6	77	112	1.3	27.3	2.7	37.6	116
76	0.4	95.9	0.5	97.2	79	113	2.4	26.0	1.3	34.9	117
77	0.8	95.5	0.3	96.7	79	114	2.4	23.6	2.7	33.5	119
78	0.9	94.7	0.6	96.4	81	115	2.1	21.2	2.4	30.8	120
79	1.1	93.8	0.7	95.8	82	116	1.0	19.0	2.4	28.4	121
80	0.6	92.7	0.5	95.1	83	117	2.0	18.0	1.3	26.0	122
81	1.2	92.0	0.8	94.6	84	118	1.9	16.0	2.3	24.7	123
82	1.4	90.8	0.9	93.8	85	119	1.8	14.1	2.1	22.5	124
83	1.5	89.4	0.5	92.9	86	120	0.8	12.3	1.1	20.4	125
84	0.8	87.9	1.1	92.3	88	121	1.5	11.5	1.9	19.3	126
85	1.7	87.1	1.4	91.2	88	122	1.5	10.0	1.8	17.4	127
86	1.8	85.5	1.4	89.8	89	123	1.3	8.6	0.9	15.6	129
87	1.9	83.7	0.7	88.5	91	124	0.7	7.2	1.7	14.7	130
88	1.0	81.9	1.5	87.7	92	125	1.1	6.6	1.5	13.0	131
89	2.1	80.8	1.7	86.3	92	126	0.9	5.4	1.4	11.5	132
90	2.1	78.7	0.9	84.6	94	127	0.8	4.5	0.6	10.1	134
91	2.3	76.6	1.9	83.7	95	128	0.4	3.6	1.2	9.5	135
92	1.2	74.3	2.0	81.7	96	129	0.6	3.3	1.1	8.3	136
93	2.4	73.1	1.1	79.7	96	130	0.7	2.6	0.5	7.2	138
94	2.5	70.7	2.1	78.7	98	131	0.5	1.9	0.9	6.7	139
95	2.5	68.2	2.3	76.5	99	132	0.2	1.5	0.8	5.7	141
96	1.3	65.7	2.4	74.2	100	133	0.4	1.3	0.4	5.0	142
97	2.7	64.4	1.2	71.8	101	134	0.3	0.9	0.7	4.6	144
98	2.7	61.7	2.5	70.6	102	135	0.2	0.6	0.6	3.9	146
99	2.7	59.0	2.6	68.1	103	136	0.1	0.4	0.5	3.3	148
100	1.4	56.2	1.4	65.5	104	137	0.1	0.3	0.3	2.7	149
101	2.9	54.9	2.6	64.1	105	138	0.1	0.2	0.4	2.5	151
102	2.9	52.0	2.8	61.5	106	139	0.1	0.2	0.4	2.1	153
103	2.9	49.1	1.4	58.7	107	140	0.0	0.1	0.1	1.7	156
104	1.5	46.2	2.8	57.3	108	141	0.0	0.1	0.3	1.6	158
105	2.7	44.6	2.9	54.5	109	142	0.0	0.0	0.3	1.3	161

Notes. C: composite score, P: percentage with score C, Q: percentage scoring
at or above C. See Section 5 for an explanation of table contents.

TABLE F.22. Composite '97 Conversion: GT-Marine Corps

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
69	0.2	99.0	0.1	98.9	69	104	1.9	54.2	1.9	54.0	104
70	0.2	98.8	0.1	98.8	70	105	3.9	52.2	4.0	52.2	105
71	0.3	98.6	0.3	98.7	71	106	1.9	48.3	2.0	48.2	106
72	0.2	98.3	0.2	98.4	73	107	2.0	46.4	2.1	46.1	107
73	0.3	98.1	0.2	98.2	74	108	3.8	44.4	3.8	44.1	108
74	0.6	97.8	0.5	98.0	74	109	1.8	40.6	1.9	40.2	109
75	0.3	97.2	0.3	97.5	76	110	1.9	38.8	1.9	38.3	110
76	0.4	96.9	0.3	97.2	77	111	3.6	36.9	3.7	36.4	111
77	0.9	96.5	0.7	96.9	78	112	1.7	33.3	1.9	32.8	112
78	0.5	95.7	0.4	96.3	79	113	1.7	31.6	1.8	30.9	113
79	0.5	95.2	0.4	95.9	80	114	3.5	29.9	3.5	29.1	114
80	1.1	94.8	1.0	95.5	81	115	1.8	26.3	1.6	25.6	115
81	0.6	93.6	0.5	94.5	83	116	1.6	24.5	1.6	24.0	116
82	0.7	93.0	0.6	94.0	83	117	3.2	22.9	2.9	22.3	117
83	1.5	92.3	1.3	93.4	84	118	1.6	19.7	1.5	19.4	118
84	0.8	90.8	0.7	92.0	86	119	1.4	18.1	1.3	17.9	119
85	0.8	90.0	0.8	91.3	86	120	2.8	16.7	2.6	16.6	120
86	2.0	89.1	1.8	90.5	87	121	1.2	13.9	1.1	14.0	121
87	1.0	87.1	0.9	88.6	89	122	1.1	12.7	1.0	12.9	122
88	1.1	86.1	1.1	87.7	89	123	2.1	11.6	2.0	11.8	123
89	2.3	85.0	2.4	86.6	90	124	1.0	9.5	0.9	9.9	124
90	1.2	82.7	1.3	84.3	91	125	1.0	8.4	0.8	9.0	126
91	1.3	81.5	1.2	83.0	92	126	0.9	7.4	1.5	8.2	127
92	2.6	80.2	2.6	81.8	93	127	1.6	6.5	0.6	6.7	127
93	1.4	77.5	1.4	79.2	94	128	0.7	4.9	0.6	6.1	129
94	1.4	76.1	1.6	77.8	95	129	0.8	4.2	1.2	5.5	130
95	1.4	74.7	3.3	76.2	95	130	1.1	3.4	0.5	4.3	132
96	3.2	73.3	1.7	72.9	96	131	0.5	2.3	0.4	3.8	134
97	1.6	70.1	1.7	71.2	98	132	0.4	1.8	0.8	3.4	135
98	1.8	68.5	3.5	69.5	98	133	0.7	1.4	0.3	2.6	137
99	3.4	66.7	1.9	66.0	99	134	0.3	0.7	0.3	2.3	140
100	1.7	63.3	1.8	64.1	100	135	0.2	0.5	0.3	2.0	142
101	1.9	61.7	2.0	62.3	101	136	0.2	0.3	0.4	1.7	145
102	3.8	59.7	4.1	60.3	102	137	0.0	0.1	0.2	1.3	151
103	1.8	56.0	2.2	56.2	103	138	0.0	0.0	0.2	1.1	152

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.23. Composite '97 Conversion: EL-Marine Corps

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
70	0.2	99.2	0.1	98.8	67	105	2.9	50.0	3.0	51.7	106
71	0.2	99.0	0.3	98.7	69	106	3.0	47.2	3.1	48.7	106
72	0.3	98.8	0.3	98.4	70	107	3.0	44.1	1.6	45.5	108
73	0.2	98.5	0.3	98.1	72	108	1.4	41.2	3.0	43.9	109
74	0.3	98.3	0.2	97.8	72	109	2.8	39.8	3.0	40.9	109
75	0.4	98.0	0.4	97.6	73	110	2.7	37.0	2.9	37.9	110
76	0.5	97.6	0.5	97.2	75	111	2.9	34.3	1.5	35.1	112
77	0.6	97.1	0.5	96.6	76	112	1.2	31.4	2.8	33.6	113
78	0.3	96.5	0.3	96.1	77	113	2.7	30.2	2.8	30.8	113
79	0.7	96.2	0.7	95.8	78	114	2.4	27.4	2.7	28.0	114
80	0.9	95.5	0.8	95.0	79	115	2.5	25.0	1.2	25.3	115
81	0.9	94.6	0.5	94.3	81	116	2.4	22.5	2.5	24.1	117
82	0.5	93.7	1.0	93.8	82	117	1.1	20.1	2.3	21.7	118
83	1.1	93.2	1.1	92.8	83	118	2.0	19.0	2.1	19.4	118
84	1.3	92.1	1.1	91.8	84	119	2.1	17.0	0.9	17.3	119
85	1.3	90.8	0.5	90.6	85	120	1.7	14.9	1.9	16.4	121
86	0.7	89.5	1.4	90.1	86	121	0.9	13.2	1.7	14.4	122
87	1.6	88.8	1.5	88.7	87	122	1.7	12.3	0.8	12.7	122
88	1.8	87.3	1.7	87.2	88	123	1.5	10.6	1.6	11.9	124
89	1.8	85.5	0.9	85.5	89	124	1.4	9.1	1.4	10.3	125
90	2.0	83.7	1.9	84.6	91	125	0.6	7.7	1.1	8.9	126
91	0.9	81.7	1.9	82.8	92	126	1.2	7.1	0.6	7.7	127
92	2.1	80.7	2.0	80.9	92	127	1.1	5.9	1.0	7.2	128
93	2.2	78.6	1.0	78.9	93	128	0.9	4.8	0.9	6.1	129
94	2.2	76.5	2.1	77.8	95	129	0.4	3.9	0.8	5.2	131
95	1.2	74.2	2.4	75.7	96	130	0.7	3.5	0.3	4.4	132
96	2.6	73.0	1.3	73.3	96	131	0.7	2.8	0.6	4.1	133
97	2.6	70.3	2.5	72.0	98	132	0.6	2.1	0.6	3.5	135
98	2.9	67.7	2.8	69.5	99	133	0.5	1.5	0.2	2.9	137
99	1.3	64.8	2.8	66.7	100	134	0.2	1.1	0.5	2.6	139
100	3.0	63.5	1.5	63.8	100	135	0.3	0.9	0.4	2.2	140
101	3.0	60.5	3.0	62.3	102	136	0.2	0.6	0.3	1.7	142
102	3.1	57.5	3.0	59.3	103	137	0.2	0.4	0.1	1.5	144
103	2.9	54.4	3.0	56.3	104	138	0.1	0.2	0.3	1.3	146
104	1.5	51.5	1.5	53.3	105	139	0.1	0.1	0.2	1.0	148

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.24. Composite '97 Conversion: CL-Marine Corps

C	1980 P	1980 Q	1997 P	1997 Q	'97	C	1980 P	1980 Q	1997 P	1997 Q	'97
68	0.1	99.5	0.1	99.0	63	101	2.6	67.7	2.9	58.2	98
69	0.1	99.4	0.2	98.8	64	102	3.1	65.1	3.3	55.3	99
70	0.0	99.3	0.0	98.6	65	103	3.0	62.0	3.3	52.0	100
71	0.1	99.3	0.2	98.6	65	104	2.9	59.0	3.2	48.7	101
72	0.2	99.2	0.3	98.4	66	105	3.2	56.1	3.2	45.5	102
73	0.2	99.0	0.4	98.1	68	106	0.0	52.9	0.0	42.4	103
74	0.2	98.8	0.4	97.7	69	107	3.4	52.9	3.2	42.4	103
75	0.3	98.6	0.4	97.3	71	108	3.1	49.5	3.1	39.2	104
76	0.3	98.4	0.5	96.9	72	109	3.3	46.5	3.1	36.1	105
77	0.4	98.0	0.5	96.4	73	110	3.3	43.2	2.8	33.0	107
78	0.4	97.6	0.6	95.9	74	111	2.9	39.8	2.8	30.2	108
79	0.5	97.2	0.7	95.4	75	112	3.2	36.9	2.6	27.4	109
80	0.5	96.7	0.8	94.6	76	113	3.3	33.6	2.5	24.8	110
81	0.6	96.2	0.9	93.9	77	114	2.7	30.4	2.5	22.2	111
82	0.0	95.6	0.0	93.0	79	115	2.9	27.7	2.1	19.8	112
83	0.7	95.6	1.0	93.0	79	116	2.4	24.8	2.0	17.6	113
84	0.8	94.9	1.1	92.0	80	117	0.0	22.3	1.8	15.6	114
85	0.9	94.0	1.2	90.9	81	118	2.8	22.3	0.0	13.8	114
86	1.0	93.1	1.4	89.7	83	119	2.5	19.6	1.8	13.8	115
87	1.1	92.1	1.5	88.4	84	120	2.1	17.1	1.6	12.0	116
88	1.3	91.0	1.6	86.9	85	121	2.3	15.0	1.4	10.4	117
89	1.3	89.7	1.8	85.4	86	122	2.0	12.7	1.2	9.0	120
90	1.5	88.5	1.9	83.6	87	123	1.7	10.7	1.1	7.8	121
91	1.6	86.9	2.0	81.7	88	124	1.8	9.0	1.0	6.7	122
92	1.7	85.3	2.2	79.7	89	125	1.4	7.2	0.9	5.7	124
93	2.0	83.6	2.3	77.5	90	126	1.3	5.8	0.7	4.8	125
94	0.0	81.6	0.0	75.2	91	127	1.1	4.4	0.7	4.0	126
95	2.1	81.6	2.4	75.2	91	128	1.0	3.3	0.6	3.3	128
96	2.1	79.5	2.7	72.8	92	129	0.0	2.3	0.5	2.7	131
97	2.3	77.5	2.6	70.1	93	130	0.8	2.3	0.0	2.2	131
98	2.4	75.2	2.9	67.4	95	131	0.6	1.6	0.4	2.2	133
99	2.4	72.8	3.0	64.5	96	132	0.4	0.9	0.3	1.7	135
100	2.7	70.3	3.2	61.5	97	133	0.4	0.5	0.3	1.5	137

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.25. Composite '97 Conversion: M-Air Force

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
8	0.2	99.2	0.3	98.8	7	48	0.0	55.7	1.1	60.8	52
9	0.3	99.0	0.5	98.5	7	49	2.4	55.7	1.1	59.7	52
10	0.3	98.7	0.5	98.0	8	50	1.2	53.2	1.1	58.5	55
11	0.3	98.4	0.6	97.5	9	51	1.1	52.0	1.2	57.4	56
12	0.3	98.1	0.4	96.9	10	52	1.2	50.9	1.2	56.3	57
13	0.6	97.8	0.5	96.5	10	53	1.3	49.6	1.1	55.1	58
14	0.7	97.3	0.7	96.0	11	54	1.3	48.4	1.2	53.9	59
15	0.2	96.6	0.9	95.3	13	55	1.3	47.0	1.2	52.8	60
16	0.9	96.4	0.7	94.3	13	56	1.3	45.8	1.3	51.6	61
17	0.6	95.5	0.4	93.6	15	57	1.3	44.5	1.2	50.3	62
18	0.6	95.0	0.8	93.2	15	58	1.3	43.2	1.1	49.1	63
19	0.7	94.3	0.9	92.4	16	59	1.2	41.9	1.2	48.0	64
20	0.8	93.6	0.4	91.6	17	60	1.2	40.7	1.2	46.8	65
21	0.9	92.8	1.0	91.1	19	61	1.3	39.6	1.2	45.6	66
22	1.5	91.9	1.0	90.1	20	62	1.2	38.3	1.2	44.5	67
23	1.1	90.4	0.6	89.0	22	63	1.2	37.1	1.2	43.3	68
24	1.2	89.3	1.2	88.4	23	64	1.2	35.9	1.1	42.1	69
25	0.6	88.2	0.6	87.2	24	65	1.2	34.7	1.1	40.9	71
26	1.3	87.5	1.4	86.6	25	66	1.2	33.5	1.2	39.8	72
27	1.6	86.3	0.7	85.2	26	67	2.3	32.3	1.1	38.7	73
28	1.4	84.7	1.4	84.5	28	68	1.1	30.0	1.1	37.5	75
29	0.8	83.3	1.6	83.1	29	69	1.2	28.9	1.1	36.4	76
30	1.6	82.4	0.8	81.5	29	70	1.1	27.7	1.1	35.3	77
31	0.8	80.8	1.6	80.8	31	71	1.1	26.6	1.1	34.2	78
32	1.7	80.0	0.0	79.1	31	72	1.1	25.5	1.1	33.1	79
33	1.9	78.3	1.7	79.1	33	73	2.0	24.4	1.0	32.0	79
34	1.0	76.4	0.9	77.4	35	74	1.1	22.4	1.1	31.0	81
35	1.9	75.5	0.9	76.5	36	75	0.0	21.3	1.0	29.8	82
36	2.1	73.5	1.0	75.6	38	76	2.0	21.3	1.1	28.9	82
37	1.0	71.4	2.0	74.6	39	77	0.9	19.3	1.0	27.8	84
38	1.1	70.4	1.0	72.6	40	78	1.0	18.4	1.9	26.7	85
39	1.1	69.4	1.0	71.6	41	79	1.0	17.4	0.9	24.8	86
40	1.0	68.3	1.0	70.6	42	80	0.9	16.4	1.0	23.9	87
41	2.3	67.3	1.1	69.6	43	81	0.8	15.5	1.8	22.9	87
42	1.2	65.0	1.0	68.5	45	82	0.9	14.6	0.9	21.1	88
43	1.0	63.8	1.1	67.5	46	83	0.8	13.8	0.9	20.2	88
44	2.4	62.8	1.1	66.4	47	84	0.9	12.9	0.9	19.4	89
45	1.2	60.4	1.1	65.3	48	85	1.6	12.1	0.8	18.4	90
46	1.1	59.2	1.1	64.2	49	86	0.7	10.5	1.6	17.6	91
47	2.4	58.1	2.3	63.1	50	87	0.7	9.8	1.5	16.0	92

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.25. Composite '97 Conversion: M-Air Force (continued)

C	1980 P	Q	1997 P	Q	'97	C	1980 P	Q	1997 P	Q	'97
88	1.2	9.1	1.4	14.5	93	94	0.4	3.7	0.9	7.3	97
89	0.6	7.9	0.7	13.0	94	95	0.7	3.3	1.5	6.4	97
90	1.1	7.3	1.3	12.4	94	96	0.9	2.6	1.0	4.9	98
91	0.5	6.1	1.2	11.1	95	97	0.7	1.7	1.3	3.9	99
92	0.9	5.6	1.1	9.9	96	98	0.4	1.0	1.3	2.6	99
93	0.9	4.7	1.5	8.8	96	99	0.6	0.6	1.3	1.3	99

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.26. Composite '97 Conversion: A-Air Force

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
9	0.1	99.6	0.2	99.0	5	49	0.0	74.8	2.9	68.9	45
10	0.1	99.6	0.4	98.8	6	50	2.5	74.8	2.8	66.0	45
11	0.1	99.5	0.3	98.4	6	51	2.9	72.3	0.0	63.2	47
12	0.1	99.4	0.0	98.1	7	52	0.0	69.4	3.1	63.2	49
13	0.1	99.2	0.3	98.1	8	53	0.0	69.4	0.0	60.1	49
14	0.2	99.1	0.4	97.8	8	54	2.9	69.4	0.0	60.1	49
15	0.2	99.0	0.4	97.4	9	55	2.7	66.5	3.3	60.1	50
16	0.2	98.8	0.5	96.9	10	56	0.0	63.8	3.2	56.8	52
17	0.3	98.5	0.5	96.5	11	57	3.1	63.8	0.0	53.6	52
18	0.0	98.3	0.0	95.9	11	58	0.0	60.7	0.0	53.6	55
19	0.3	98.3	0.6	95.9	11	59	3.3	60.7	3.4	53.6	55
20	0.3	98.0	0.7	95.3	13	60	0.0	57.4	0.0	50.2	56
21	0.4	97.7	0.8	94.6	14	61	3.1	57.4	3.2	50.2	56
22	0.5	97.3	0.0	93.8	15	62	0.0	54.3	0.0	47.0	59
23	0.6	96.8	0.9	93.8	16	63	3.3	54.3	3.3	47.0	59
24	0.0	96.2	0.0	92.9	17	64	0.0	51.0	0.0	43.7	61
25	0.6	96.2	1.0	92.9	17	65	3.5	51.0	3.3	43.7	61
26	0.7	95.6	0.0	92.0	20	66	0.0	47.5	0.0	40.4	63
27	0.8	94.9	1.1	92.0	21	67	3.1	47.5	3.2	40.4	63
28	0.0	94.1	1.1	90.9	23	68	0.0	44.4	0.0	37.2	65
29	0.9	94.1	0.0	89.7	23	69	3.7	44.4	3.2	37.2	65
30	0.9	93.2	1.4	89.7	25	70	0.0	40.7	0.0	34.0	67
31	1.1	92.3	0.0	88.3	27	71	3.5	40.7	3.0	34.0	67
32	0.0	91.2	1.4	88.3	28	72	3.1	37.2	2.9	31.0	69
33	1.3	91.2	0.0	86.9	28	73	0.0	34.0	0.0	28.1	71
34	0.0	89.9	1.7	86.9	30	74	3.3	34.0	2.8	28.1	71
35	1.3	89.9	1.9	85.2	30	75	0.0	30.8	0.0	25.3	72
36	0.0	88.7	0.0	83.3	32	76	3.0	30.8	2.6	25.3	72
37	1.5	88.7	2.0	83.3	32	77	3.1	27.8	0.0	22.7	74
38	0.0	87.1	0.0	81.4	34	78	0.0	24.7	2.5	22.7	76
39	1.7	87.1	2.1	81.4	34	79	3.1	24.7	0.0	20.2	76
40	1.8	85.5	0.0	79.2	35	80	0.0	21.6	2.3	20.2	78
41	0.0	83.7	2.3	79.2	37	81	2.5	21.6	0.0	17.9	78
42	2.1	83.7	0.0	76.9	37	82	0.0	19.1	2.3	17.9	80
43	0.0	81.6	2.6	76.9	39	83	2.7	19.1	0.0	15.6	80
44	2.2	81.6	0.0	74.4	39	84	2.5	16.4	2.0	15.6	84
45	0.0	79.4	2.6	74.4	41	85	0.0	13.8	1.8	13.6	85
46	2.2	79.4	0.0	71.8	41	86	2.2	13.8	0.0	11.8	85
47	0.0	77.2	2.9	71.8	43	87	0.0	11.6	1.6	11.8	87
48	2.4	77.2	0.0	68.9	43	88	0.0	11.6	1.5	10.2	87

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.26. Composite '97 Conversion: A-Air Force (continued)

C	1980 P	1980 Q	1997 P	1997 Q	'97	C	1980 P	1980 Q	1997 P	1997 Q	'97
89	2.1	11.6	0.0	8.7	87	94	1.4	6.1	0.7	4.3	92
90	1.9	9.6	1.3	8.7	88	95	0.0	4.7	0.7	3.6	94
91	0.0	7.7	1.2	7.4	91	96	1.2	4.7	1.1	2.8	94
92	1.6	7.7	1.0	6.2	91	97	1.2	3.5	0.7	1.8	95
93	0.0	6.1	0.9	5.2	92	98	0.0	2.3	0.5	1.1	96

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.27. Composite '97 Conversion: G-Air Force

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
8	0.1	99.5	0.4	98.8	5	48	2.9	65.5	0.0	64.9	49
9	0.2	99.5	0.3	98.4	6	49	0.0	62.6	2.8	64.9	51
10	0.2	99.2	0.7	98.2	7	50	2.6	62.6	0.0	62.1	51
11	0.2	99.1	0.4	97.5	7	51	0.0	60.0	2.8	62.1	53
12	0.2	98.9	0.3	97.1	8	52	2.9	60.0	0.0	59.2	53
13	0.2	98.6	0.5	96.7	8	53	3.0	57.1	3.0	59.2	55
14	0.2	98.4	0.6	96.2	9	54	0.0	54.1	0.0	56.3	57
15	0.3	98.2	0.6	95.6	10	55	3.2	54.1	2.9	56.3	57
16	0.4	97.8	0.7	95.0	10	56	0.0	50.9	0.0	53.4	59
17	0.5	97.5	0.8	94.3	11	57	2.7	50.9	2.9	53.4	59
18	0.5	97.0	0.0	93.4	12	58	0.0	48.2	0.0	50.5	62
19	0.5	96.5	1.0	93.4	13	59	3.0	48.2	3.0	50.5	62
20	0.6	96.1	1.0	92.4	14	60	0.0	45.1	0.0	47.4	64
21	0.7	95.4	1.1	91.5	15	61	0.0	45.1	0.0	47.4	64
22	0.8	94.7	0.0	90.4	16	62	3.2	45.1	3.2	47.4	64
23	0.9	93.9	1.3	90.4	17	63	0.0	42.0	0.0	44.3	66
24	0.0	93.0	1.3	89.1	19	64	3.2	42.0	3.0	44.3	66
25	1.0	93.0	0.0	87.8	19	65	0.0	38.8	0.0	41.3	68
26	1.0	92.0	1.5	87.8	21	66	2.8	38.8	2.9	41.3	68
27	1.2	90.9	0.0	86.3	23	67	0.0	36.0	0.0	38.4	70
28	0.0	89.8	1.6	86.3	24	68	3.0	36.0	2.9	38.4	70
29	1.3	89.8	0.0	84.7	24	69	0.0	33.0	0.0	35.5	72
30	1.5	88.5	1.8	84.7	24	70	2.8	33.0	2.7	35.5	72
31	0.0	87.0	0.0	83.0	28	71	0.0	30.2	0.0	32.8	74
32	1.6	87.0	1.8	83.0	28	72	2.8	30.2	2.7	32.8	74
33	1.7	85.4	1.9	81.2	30	73	0.0	27.4	0.0	30.1	76
34	1.7	83.7	0.0	79.3	32	74	2.4	27.4	2.6	30.1	76
35	0.0	81.9	0.0	79.3	33	75	0.0	25.0	0.0	27.5	78
36	2.0	81.9	2.1	79.3	33	76	2.5	25.0	2.3	27.5	78
37	2.0	80.0	0.0	77.2	36	77	0.0	22.4	0.0	25.1	80
38	0.0	78.0	2.2	77.2	38	78	2.6	22.4	2.4	25.1	80
39	2.3	78.0	0.0	75.0	38	79	0.0	19.8	0.0	22.8	81
40	0.0	75.7	2.3	75.0	40	80	2.3	19.8	2.2	22.8	81
41	2.4	75.7	0.0	72.7	40	81	0.0	17.6	2.2	20.5	83
42	2.4	73.4	2.6	72.7	42	82	2.3	17.6	0.0	18.3	83
43	0.0	70.9	0.0	70.1	44	83	0.0	15.3	2.0	18.3	85
44	2.6	70.9	2.6	70.1	44	84	2.2	15.3	2.0	16.3	85
45	0.0	68.3	0.0	67.5	47	85	0.0	13.1	1.7	14.3	87
46	2.8	68.3	0.0	67.5	47	86	2.0	13.1	0.0	12.7	87
47	0.0	65.5	2.6	67.5	49	87	0.0	11.1	1.6	12.7	88

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.27. Composite '97 Conversion: G-Air Force (continued)

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
88	1.7	11.1	1.5	11.1	88	94	1.4	6.0	0.9	4.9	93
89	0.0	9.3	1.4	9.6	89	95	0.0	4.6	1.4	4.1	94
90	1.8	9.3	0.0	8.2	89	96	1.3	4.6	0.9	2.7	94
91	0.0	7.5	1.3	8.2	92	97	0.0	3.3	0.6	1.7	96
92	1.5	7.5	1.1	6.9	92	98	1.2	3.3	0.5	1.1	96
93	0.0	6.0	0.9	5.9	93	99	2.1	2.1	0.6	0.6	97

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.28. Composite '97 Conversion: E-Air Force

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
8	0.2	99.3	0.2	99.0	7	48	1.3	69.3	0.0	67.3	47
9	0.2	99.1	0.5	98.7	8	49	1.4	67.9	1.3	67.3	49
10	0.1	98.9	0.3	98.2	8	50	2.6	66.6	1.4	66.1	50
11	0.3	98.8	0.4	97.9	9	51	1.4	64.0	1.3	64.7	52
12	0.2	98.5	0.5	97.5	9	52	1.5	62.6	1.4	63.4	53
13	0.4	98.3	0.5	97.0	10	53	1.4	61.1	1.4	62.0	54
14	0.4	97.9	0.6	96.5	11	54	1.5	59.7	1.5	60.5	55
15	0.3	97.5	0.3	95.9	12	55	1.4	58.2	1.5	59.0	56
16	0.2	97.2	0.7	95.6	13	56	1.5	56.8	1.4	57.5	56
17	0.6	97.0	0.8	94.8	13	57	1.5	55.3	0.0	56.1	59
18	0.4	96.4	0.4	94.0	14	58	1.5	53.8	1.5	56.1	60
19	0.7	96.1	1.0	93.6	15	59	1.4	52.3	1.5	54.6	61
20	0.4	95.4	0.5	92.6	16	60	1.5	50.9	1.6	53.2	61
21	0.4	95.0	0.5	92.1	17	61	1.4	49.4	1.5	51.6	62
22	0.9	94.6	0.6	91.6	17	62	2.9	47.9	1.5	50.1	64
23	0.5	93.7	1.2	91.0	19	63	1.5	45.0	0.0	48.6	66
24	0.5	93.2	0.7	89.7	19	64	1.4	43.5	1.5	48.6	67
25	0.6	92.7	0.7	89.1	20	65	1.4	42.1	1.5	47.1	68
26	0.6	92.1	0.7	88.4	21	66	1.4	40.7	1.4	45.6	69
27	0.6	91.6	0.8	87.7	22	67	3.0	39.3	1.5	44.1	70
28	0.6	90.9	0.9	86.9	23	68	1.4	36.3	1.4	42.6	72
29	0.6	90.3	0.0	86.1	24	69	1.4	34.9	1.5	41.3	73
30	0.7	89.7	0.9	86.1	24	70	1.4	33.5	1.4	39.8	74
31	0.8	89.0	1.8	85.2	25	71	1.2	32.2	1.4	38.3	75
32	1.6	88.3	0.0	83.4	26	72	2.5	30.9	1.6	36.9	76
33	0.8	86.7	0.9	83.4	28	73	1.3	28.4	1.4	35.3	77
34	0.9	85.8	0.9	82.5	30	74	1.3	27.1	1.3	34.0	79
35	0.9	85.0	1.0	81.5	31	75	1.2	25.8	1.3	32.6	80
36	0.9	84.1	1.0	80.5	33	76	1.2	24.6	2.6	31.4	81
37	1.0	83.2	1.1	79.5	33	77	2.4	23.4	1.3	28.8	82
38	1.0	82.2	1.1	78.4	34	78	1.1	21.0	0.0	27.5	83
39	1.1	81.2	1.2	77.3	35	79	1.2	19.9	1.3	27.5	84
40	1.2	80.1	1.1	76.1	36	80	1.1	18.7	1.2	26.2	85
41	1.1	78.9	1.2	75.0	38	81	2.1	17.6	2.4	25.0	85
42	1.1	77.8	0.0	73.8	39	82	1.0	15.5	1.2	22.6	87
43	2.3	76.7	1.3	73.8	40	83	1.0	14.5	1.1	21.4	88
44	1.3	74.4	1.3	72.5	43	84	0.9	13.5	2.2	20.3	88
45	1.3	73.1	1.3	71.3	44	85	0.8	12.6	1.0	18.1	89
46	1.3	71.9	1.3	70.0	45	86	1.6	11.8	1.0	17.0	89
47	1.3	70.6	1.4	68.7	46	87	0.8	10.2	1.9	16.0	91

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.

TABLE F.28. Composite '97 Conversion: E-Air Force (continued)

	1980		1997				1980		1997		
C	P	Q	P	Q	'97	C	P	Q	P	Q	'97
88	1.4	9.4	1.7	14.1	91	93	1.0	4.5	1.1	7.1	95
89	0.7	8.0	1.5	12.4	92	94	0.4	3.5	1.3	6.0	96
90	1.2	7.3	0.7	10.9	93	95	0.7	3.1	1.1	4.7	96
91	0.6	6.1	2.0	10.2	94	96	0.6	2.4	1.1	3.6	97
92	1.0	5.5	1.1	8.2	94	97	0.5	1.7	0.8	2.4	98

Notes. C: composite score, P: percentage with score C, Q: percentage scoring at or above C. See Section 5 for an explanation of table contents.