University of Montana

ScholarWorks at University of Montana

Graduate Student Theses, Dissertations, & Professional Papers

Graduate School

1970

Development of a weighted application blank to aid in the selection of probable long tenure department store salesclerks

John Andrew Justice
The University of Montana

Follow this and additional works at: https://scholarworks.umt.edu/etd

Let us know how access to this document benefits you.

THE DEVELOPMENT OF A WEIGHTED APPLICATION BLANK

TO AID IN THE SELECTION OF PROBABLE LONG

TENURE DEPARTMENT STORE SALESCLERKS

By

John A. Justice

B.S., University of Tennessee, 1964

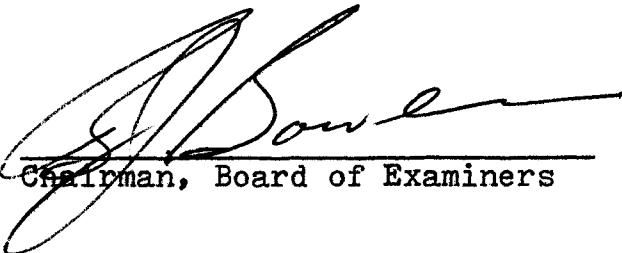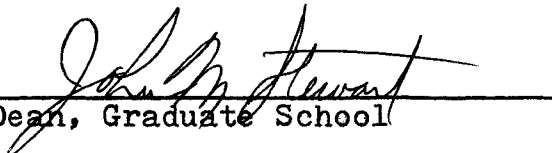Presented in partial fulfillment of the requirements
for the degree of

Master of Business Administration
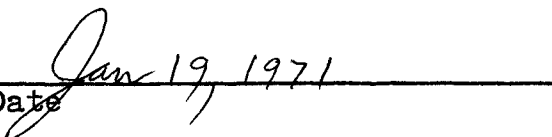
UNIVERSITY OF MONTANA

1970

Approved by:

_____
Chairman, Board of Examiners

_____
Dean, Graduate School

Jan 19, 1971
_____
Date

UMI Number: EP34431

UMI®

Dissertation Publishing

UMI EP34431

ProQuest®

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

CHAPTER I

THE PROBLEM AND METHOD OF STUDY

Introduction

The growing importance of selection and placement
decisions to individuals, employers, and society was high-
lighted with estimates of over "thirty million job changes
a year at an estimated cost of more than ten billion dol-
lars."[1] The cost of selection and placement errors to the
individuals and society is incalculable, but it is unques-
tionably large.

A great deal of progress in selection and placement
has been made over the past fifty years. "Selection methods
have been improved by developing better measures of job
success, standardizing the interview, standardizing blanks
for obtaining recommendations, introducing a wide variety
of psychological tests into the employment process, and by
making application blank information more useful through
quantification."[2]

_____

[1]G. W. England, The Development and Use of Weighted
Application Blanks, (Dubuque, Iowa: Wm. C. Brown Company,
Inc., 1961), p. 1.

[2]Ibid., pp. 1-2.

The weighted application blank provides a technique for the improvement of selection by relying on two of these hallmarks in the process of selection standardization and quantification. The rationale behind the development of a weighted application blank can be outlined as follows:[3]

"1. Personal history information such as age, years of education, previous occupations, and marital status represent important aspects of a person's total background and should be useful in selection. The major assumption is that how one will behave in the future is best predicted by how one has behaved in the past or by characteristics associated with past behavior.

2. Certain aspects of a person's total background should be related to whether or not he will be successful in a specific position. Numerous studies have shown that information contained in application blanks is predictive in selecting employees for certain types of positions. Personal factors such as age, years of education, previous occupations, and marital status have been found to be correlated with indicators of desirable employee behavior (length of service, supervisory ratings, sales volume, and average salary increase).

3. A way of determining which aspects of a person's total background are important for a given occupation is needed. The WAB technique identifies those items on an application blank which differentiate between groups of desirable and undesirable employees in a given occupation.

---

[3]G. W. England, _The Development and Use of Weighted Application Blanks_, (The unpublished first revision of his previous book, same title), pp. 4-5.

4. A way of combining the important aspects of
    a person's total background is needed so we
    can predict whether or not he is likely to
    be successful in a given occupation. By
    determining the predictive power of each
    application blank item, it is possible to
    assign numerical weights or scores to each
    possible answer. Weights for these items
    may then be totaled for each individual and
    a minimum total score established, which,
    if used at the time of hiring, will elim-
    inate the maximum number of undesirable
    candidates with a minimum loss of desirable
    candidates."

The weighted application blank technique provides a
systematic process for determining what factors of personal
history are predictive of "job success" and how they can be
used in selection. The technique can be applied to any
organization which has a relatively large number of employees
performing a similar type of work for whom adequate records
are available.

The technique involved is simple and straight for-
ward with no complicated statistical formulas required.
Therefore, there is no need for the services of specialized
consultants. The procedure can be applied inexpensively by
any member of the personnel staff with the possibility of
reducing selection expenses many times over the cost of the
original study.

Basic Assumptions of the Weighted
Application Blank Technique

The use of the weighted application blank is based
on two assumptions as follows:[4]

"1. The subsequent applicants for whom the
weighted application blank is used will
not differ greatly from the employee
groups on which the system was developed.

2. The criterion used in the development of
the weighted application blank continues
to be important and is not changed."

Need For Study

The group surveyed in this paper was female sales-
clerks of a department store located in a northwestern city
of under 100,000 population.

Turnover among the salesclerks posed a serious pro-
blem to management. A newly hired salesclerk cost the store
approximately one hundred dollars in "out-of-pocket" costs
plus an uncalculated cost in loss of sales and goodwill
until the new employee reached an acceptable level of effic-
iency.[5]

Objectives and Limits of the Study

The primary objectives of this study are (1) iden-
tifying, (2) analyzing, (3) weighting the factors of

---

[4]G. W. England, The Development and Use of Weighted
Application Blanks, (Dubuque, Iowa: Wm. C. Brown Company,
Inc., 1961). pp. 39-40

[5]Confidential interview with the store's Personnel
Director.

personal history of the department store's salesclerks that relate to their tenure, and (4) developing a weighted application blank, using a technique developed by Dr. George W. England, to aid in the selection of probable long tenure salesclerks.

Method of Study

This study applied the technique developed by Dr. George W. England in which he lists seven steps for the development of a weighted application blank.[6] A brief synopsis of these seven steps, which will be discussed more fully in Chapter III, follows:

1. Choosing the criterion: In this study, the result to be predicted was tenure and the criterion measure of tenure was length of employment.

2. Identifying the criterion groups: An anlysis of the job application blanks was made of the store's present salesclerks and those who have been employed in the past three years. These were separated into a "long" tenure group (salesclerks with the store at least one year) and a "short" tenure group (salesclerks who were with the store six months or less), with those salesclerks with the store from six months to one year excluded. Only voluntary terminations were used and any salesclerks discharged

[6]England, op. cit. p. 4.

for cause were excluded. These two groups will then
be randomly divided into two groups each: a weight-
ing group and a holdout group.

3. Selecting application blank items to be ana-
lyzed: At this step an analysis was made of those
factors that have been most often predictive of
tenure in past studies; age, marital status,
domicile, friends in the store, relatives in the
store, education, number of dependents, age of
dependents, and whether the applicant had been
employed previously by the store.

4. Specifying item response categories to be used
in the analysis: At this step, the factors men-
tioned above were related to the two criterion
weighting groups by the method of frequency classes
and determining which items differentiate between
the "long" tenure and "short" tenure weighting
groups. These frequencies were then converted to
percentages.

5. Determining item weights: At this step, the
differences of the percentages found above were
converted to net weights with the use of "Strong
Tables" derived for this purpose by E. K. Strong.
(See Table II) These net weights can then be con-
verted to assigned weights to simplify scoring.

6. Applying weights to holdout group: At this step, the results obtained with the weighting groups were validated using the holdout groups.

7. Setting cutting scores for selection: This step requires the store management to make a decision as to what percentage of potential long tenure salesclerks they are willing not to hire in order to increase their probability of not hiring short tenure salesclerks.

Content of Following Chapters

Chapter II contains a brief synopsis of the most significant studies made using the weighted application blank technique.

Chapter III contains the step by step application of Dr. England's technique to the study group.

Chapter IV contains summary of the study's findings and a template for the scoring of the store's application blanks.

CHAPTER II

REVIEW OF SIGNIFICANT PAST STUDIES

Numerous studies have been made relating personal history factors of an employee to his tenure. These studies have led to the use of the weighted application blank technique to select employees with probable long tenure. The factors most often found to predict tenure are: age, domicile, marital status, number of dependents, age of dependents, friends and/or relatives with the company, previous employment with the company, and education. A brief synopsis of the more significant studies follows.

A study[1] was made of unskilled factory workers at Bausch and Lomb Optical Company by Joseph Tiffin. The investigation consisted of examining six factors of "long" and "short" tenure workers. The "long" tenure group consisted of individuals who were with the company at least nine months and the "short" tenure individuals stayed less than three months. Four factors were found predictive: age, education, marital status, and number of dependents.

---

[1] J. Tiffen, et al., "The Analysis of Personnel Data in Relation to Turnover on a Factory Job" _Journal of Applied Psychology_, Vol. 31, No. 6, 1947, pp. 182-185.

A weighted application blank to predict turnover in department store salesclerks[2] was developed by James N. Mosel and Richard Wade. Forty-two pieces of information on the application blanks of one hundred and sixty-two "long" tenure and eighty-five "short" tenure female salesclerks were analyzed. Of the forty-two items, twelve were found to be predictive of tenure at the .05 confidence level using the chi-square test. These items were, age, education, years of previous selling experience, weight, height, time on last job, domicile, principal selling experience, number of dependents, marital status, and time lost in last two years. The factors were weighted by use of Strong's Tables of net weights.

Two studies[3] were made by Charles E. Scholl and Roger M. Bellows concerning turnover. The first group studied was composed of seventy-five "long" tenure female production workers (one year or more) and seventy-five "short" tenure female production workers (less than a year and a half) with a pharmaceutical company. Factors found

---

[2]J. N. Mosel and R. R. Wade, "A Weighted Application Blank for Reduction of Turnover in Department Store Salesclerks," Personnel Psychology, Vol. 4, 1951, pp. 177-184.

[3]C. E. Scholl and R. M. Bellows, "A Method for Reducing Employee Turnover," Personnel, Vol. 29, 1952, pp. 234-236.

to predict tenure were: "the Wonderlic Personnel Test,"[4]
marital status, and previous employment record. These
items were weighted by the "Wherry-Doolittle Method."[5] The
weighted scoring system would have eliminated sixty-nine
percent of the seventy-five "short" tenure employees in the
employment office.

The second study was conducted using a similar
technique with automobile manufacturing workers. One
hundred "long" tenure workers (employed six months or more)
and one hundred "short" tenure workers (employed less than
six months) were studied. Five factors were found predic-
tive: marital status, residence, education, previous
employment history, and age. The scoring system was checked
on a group of thirty new employees and would have rejected
twenty-eight percent who proved to be "long" tenure and
seventy-two percent of "short" tenure employees.

An investigation[6] of turnover among clerical workers
at the Prudential Insurance Company was made by Philip H.
Kriedt and Marguerite S. Gadel. They administered a battery

_____

[4]M. L. Blum and J. C. Naylor, Industrial Psychology
Its Theoretical and Social Foundations, New York: Harper
and Row, Publishers, 1968, p. 108.

[5]W. H. Shartle, et al., Occupational Counseling
Techniques, New York: American Book Company, 1940 Appendix,
pp. 245-250.

[6]P. H. Kriedt and M. S. Gadel, "Prediction of Turn-
over Among Clerical Workers," Journal of Applied Psychology,
Vol. 37, 1953, pp. 338-340.

of tests as possible predictors to 358 new female employees.
The battery included a measure of intelligence, clerical
aptitude, an interest questionnaire, a biographical data
blank, and a job preference questionnaire. Of the 358 new
employees, sixty-five had left within three months and
forty-three more by one year. It was found that turnover
could have been predicted "moderately well" and that success
was higher in the prediction of those who leave within three
months than of those within one year.

A study was made by American Airlines[7] in 1953 of
2,015 newly hired employees after twenty-seven percent had
separated within three months. The chi-square test was
used at the .05 level of significance and five factors were
found to predict tenure: marital status, age, willingness
to transfer, friend(s) in the company, and domicile.

An investigation[8] of the tenure of seasonal workers
at The Green Giant Company was made by Marvin D. Dunnette
and James Maetzold. The group studied consisted of 240
"long" tenure workers (who finished the season or had valid
reason for quitting) and 201 "short" tenure workers (who
left before the end of the season without valid reason).

---

[7] I. W. Krantz, "Controlling Quick Turnover,"
Personnel, Vol. 31, No. 6, May 1955, pp. 514-520.

[8] M. D. Dunnette and J. Maetzold, "Use of Weighted
Application Blank in Hiring Seasonal Employees," Journal
of Applied Psychology, Vol. 39, No. 5, 1955, pp. 308-310.

Twelve factors were found to differentiate: age, marital

status, number of dependents, weight, education, previous

employee, availability for work, preference of work, resi-

dence, military status, and telephone.

A study[9] at Minnesota Mining and Manufacturing

Company was made by Wayne K. Kirchner and Marvin D.

Dunnette. They investigated the weighted application blank

method on a group of female office employees who performed

a variety of jobs including clerical, stenographic, secre-

tarial and personal contact. The group consisted of thirty-

three "short" tenure employees (less than nine months) and

one hundred and five "long" tenure employees (nineteen

months or more). Forty variables were reviewed and fifteen

were found to differentiate. These factors were then cross

validated on another group where they continued to predict

tenure.

Frank J. Minor studied[10] the prediction of clerical

employees turnover. The study group consisted of 440 female

clerical workers. Half the group was used to develop the

predictor, the other half was a control group to validate

[9]W. K. Kirchner and M. D. Dunnette, "Applying the Weighted Application Blank Technique to a Variety of Office Jobs," Journal of Applied Psychology, Vol. 41, 1957, pp. 206-208.

[10]F. J. Minor, "The Prediction of Turnover of Clerical Employees," Personnel Psychology, Vol. 11, 1958, pp. 393-402.

the results. Both the development and the control groups
were composed equally of "long" tenure workers (forty-two
to forty-five months) and "short" tenure workers (less than
nine months). Thirty-two variables were studied of which
eleven proved to be predictive: age, distance of home
address from work location, length of time married, source
of reference to the company, average tenure on last three
jobs, reason for leaving last job, major field in high
school, father's occupation, relatives or friends with the
company, and test scores. In testing the predictors on the
control group, seventy-four percent of those who were
selected were in the "long" tenure group.

A study[11] was made by Edwin A. Fleishman and
Joseph Berniger of one hundred and twenty female office
workers. Sixty were "long" tenure employees, with over two
years employment and sixty were "short" tenure employees
who terminated within two years. Forty items were examined,
and four were found predictive: domicile, age, previous
salary, and age of children.

A study[12] was made by Gerald L. Shott and Lewis E.
Albright of clerical workers in a highly automated office.

---

[11]E. A. Fleishman and J. Berniger, "One Way to
Reduce Office Turnover," Personnel, Vol. 37, 1960, pp. 63-69.

[12]G. L. Shott and L. E. Albright, "Predicting Turn-
over in an Automated Office Situation," Personnel Psychology,
Vol. 16, 1963, pp. 213-220.

The "long" tenure group consisted of 275 employees with at least one year of service, and the "short" tenure group consisted of 286 individuals who had terminated with less than one year service. Thirty-one items of information were studied, and seven were found to be predictive: age, domicile, prior work experience, reason for leaving last job, Wonderlic scores, employer references, and card punch aptitude test scores.

A study[13] was made by Gordon C. Inskeep of garment workers (primarily women) tenure. The study consisted of a "long" tenure group (with the company over two years) of 848 workers, and a "short" tenure group (with the company less than three months) of 1,027 workers. The chi-square test and Strong's Tables were used to find the predictive factors and weight them. Five factors were found to be predictive: domicile, age, age of youngest child, length of prior work experiences, and education.

---

[13]G. E. Inskeep, "Statistically Guided Employee Selection," Personnel Journal, January, 1970, pp. 15-24.

CHAPTER III

APPLICATION OF WEIGHTED APPLICATION BLANK TECHNIQUE

This study is an application of a technique for

the design of a weighted application blank developed by

Dr. George W. England. The following major steps, out-

lined by England, will be considered in detail in the

following sections.

"1. Choosing the criterion.
2. Identifying criterion groups.
3. Selecting application blank items to be
   analyzed.
4. Specifying item response categories to be
   used in the analysis.
5. Determine item weights.
6. Applying weights to the holdout groups.
7. Setting cutting scores."[1]

Choosing the Criterion

The purpose of this study was to develop a weighted

scoring system for the department store's application blank

which would indicate whether or not the applicants for

salesclerks positions were likely to remain with the store

for a relatively long period of time. Therefore, job tenure

_____

[1]G. W. England, The Development and Use of Weighted
Application Blanks, (Dubuque, Iowa: Wm. C. Brown Company,
Inc., 1961), p. 4.

was chosen as the criterion to be measured and length of service as the measure of employee desirability.

Identifying Criterion Groups

The second step of the procedure was to select the two criterion groups, a "high criterion group" (representing desirable employees) and a "low criterion group" (representing undesirable employees). For the purpose of this study, the desirability of an employee refers only to his job tenure.

Dr. England states that the major considerations in selecting criterion groups when tenure is the objective are:

"1. Where should one set the cutoff point between the long tenure and the short tenure employees.

2. How far back, chronologically, can one go into the file of separated and of retained employees."[2]

The department store's personnel director, in an interview, stated that the majority of their turnover problem among salesclerks occurred within the first six months after employment and that the store considered one year or more as acceptable length of employment.[3] For the purpose of this study, an analysis of the job application

---

[2]*Ibid.* p. 9.

[3]Confidential interview with the store's Personnel Director.

blanks was made of the store's present female salesclerks
and those who have been employed in the past three years.
These were separated into two criterion groups, of seventy-
five salesclerks each. The "short" tenure group consisted
of seventy-five female salesclerks who had left the store
within six months, and the "long" tenure group consisted of
seventy-five female salesclerks who had been with the store
for one year or more. Those salesclerks with the store from
six months to one year and any salesclerks discharged for
cause were excluded.

Each of these two criterion groups was then randomly
separated into a "weighting" group and a "holdout" group.
They were separated following Dr. England's recommendation
of "a two to one ratio between the weighting groups and the
holdout groups."[4] This placed fifty salesclerks in each
of the weighting groups and twenty-five salesclerks in each
of the holdout groups.

The weighting groups were used to identify and
weight the factors of personal history which differentiate
between the "long" tenure and "short" tenure applicants. The
purpose of the holdout groups was then to provide a different
group of applicants on which the results obtained with the
weight groups could be validated.

_____

[4]England, op. cit., p. 9.

18

Dr. England states that "a considerable amount of evidence suggests that it can be very misleading to develop a set of empirical weights which differentiate between two groups and then evaluate the weights on the same groups. Weighted application blank analysis is not recommended unless provision can be made for checking results on different samples than were used in determining the item weights."[5]

Selecting the Application Blank Items to be Analyzed

The third step was a review of previous research in the use of the weighted application blanks. Those factors that have been found most often predictive of tenure and that had been completed on the store's application form were chosen to be studied. These factors were as follows:

1. Age: At time of job application.

2. Marital Status: Five categories; single, married, widowed, separated, or divorced.

3. Living Arrangements: Four categories; own, rent, living with parents, or living with _____.

4. Friends in the Company: Did the applicant have friends working for the store.

---

[5][5]G. W. England, The Development and Use of Weighted Application Blanks, (The unpublished first revision of his book, same title), p. 37.

5. Relatives with the Company: Did the applicant have relatives with the company?

6. Education: Schools attended, whether or not she graduated and the highest grade completed.

7. Children: Did the applicant have children, how many, their ages, and whether or not they were dependent upon the applicant?

8. Previous Employee: Has the applicant ever been employed previously by the store?

Specifying Item Response Categories To be Used in the Analysis

In the fourth step in the procedure, each applicant chosen in each of the two weighting and holdout groups was assigned a control number. Responses for each of the factors chosen at step three were transferred from the job application blank to a data work sheet. (See data work sheets, Appendix I.)

In some cases, it was found more desirable to translate the data into a more useable form. For example, age was found by subtracting date of birth from the date of the job application. In the case where responses were omitted, such as ages of children for a single applicant, the standard not applicable (N/A) entry was made.

Specifying suitable response categories for some factors, such as marital status, was relatively simple.

The factors could be readily classified directly from the work sheets as either single, married, widowed, divorced, or separated.

Continuous variables, such as age, were somewhat more difficult to classify. Equal five year classes were used with the exception of the "twenty and under" group and the "over forty" group. This method was decided upon after graphing the applicants' ages and determining the distribution of ages.

Each factor was then separated into response categories, and a work sheet was devised for each factor to be analyzed. The response categories were then entered in column one of the work sheet for that factor. For example, the factor "marital status" separated into single, married, widowed, separated or divorced. (See column one of Table I)

An additional "not able to respond" category was added for those factors whose response categories were contingent upon the replies to previous factor responses, such as "the number of children dependent on applicant" or "age of youngest child." Both of these factors are contingent on the factor "marital status."

A study made by Thomas A. Mahoney, "Weighted Application Blank Analysis of 'Contingency' Items" stated that "analysis of contingent items as separate and

TABLE I

MARITAL STATUS: WEIGHTING WORK SHEET

Response Category	Number Responding		Percent Responding		Col 4 Minus Col 5	Net Weight	Assigned Weight
	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Single	8	27	16	54	(-38)	(-9)	0
Married	35	20	70	40	30	7	3
Widowed	3	1	6	2	4	2	2
Separated	2	1	4	2	2	1	2
Divorced	2	1	4	2	2	1	2
Totals	50	50					

independent questions can result in the assignment of
unwarranted weights to certain responses to contingent
questions."[6] Mahoney presents an example using the factors
"marital status" and "number of dependent children." In
his example, the response category "single" received a
negative net weight. If those responded "single" to marital
status were included in the "none" response to number of
dependent children, it receives a similar weight due to the
influence of the single individuals. A different weight is
received when those who were not able to respond were not
considered in the assignment of weights. This has the
effect of weighting the response single twice, once in the
factor marital status and again in the number of dependent
children. The applicants who were not able to respond were
not used in the calculation of percentages or the net
weights, and a net weight of zero was assigned to the "not
able to respond" category. A further discussion of the
determination of net weights follows.

Determining Item Weights

At step five of the procedure, response of the
fifty applicants in the weighting groups were entered in
columns two and three of the factor work sheets. (See
Table I)

---

[6]T. A. Mahoney, "Weighted Application Blank Analysis
of 'Contingency' Items," *Journal of Applied Psychology,*
Vol. 42, No. 1, 1958, p. 60.

After the fifty applicants from the long and short
tenure weighting groups responses had been recorded on the
work sheet, these numbers are converted to percentages as
shown in columns four and five.

The percentages for the "Group II Short Tenure
Weighting Group" in column five were then subtracted from
the "Group I Long Tenure Weighting Group" column four and
the result recorded in column six using the appropriate
plus or minus sign. For example, in Table I, using the
"single" category, sixteen percent of Group I and fifty-
four percent of Group II fell into the "single" response
group. Therefore, subtracting the percentage from Group II
(54%) from the percentage in Group I (16%) gives a minus
thirty-eight percent recorded in column six.

The net weights for difference in percentages in
column six can be found directly by using the appropriate
section of three tables developed by E. K. Strong, Jr., on
the basis of a formula derived by T. L. Kelly. These three
tables are reproduced for this paper in Table II.

If the percentages for the response category, found
in columns four and five, were between eight and ninety-two
percent, Part "A" of Table II was used to secure the net
weight. If one of the percentages was between three and
seven percent, or between ninety-three and ninety-seven
percent, Part "B" was used. If one of the percentages was
between zero and two percent or ninety-eight and one hundred
percent, Part "C" was used.

TABLE II[7]

STRONG'S TABLES OF NET WEIGHTS
FOR DIFFERENCES IN PERCENTS

Part A (To be used when both percents are between 8 and 92)		Part B (To be used when one percent is between 3 and 7, or 93 and 97)		Part C (To be used when one percent is between 0 and 2, or 98 and 100)	
Diff. in Percents	Net Weight	Diff. in Percents	Net Weight	Diff. in Percents	Net Weight
69	27	69	27	69	28
68	26	68	26	68	27
67	25	67	25	67	26
66	24	66	24	66	25
65	23	64--65	23	65	24
64	22	63	22	63--64	23
62--63	21	62	21	62	22
61	20	60--61	20	60--61	21
60	19	58--59	19	59	20
58--59	18	57	18	57--58	19
56--57	17	55--56	17	55--56	18
54--55	16	53--54	16	53--54	17
52--53	15	50--52	15	51--52	16
50--51	14	48--49	14	49--50	15
48--49	13	45--47	13	46--48	14
45--47	12	42--44	12	43--45	13
42--44	11	39--41	11	40--42	12
39--41	10	35--38	10	36--39	11
36--38	9	31--34	9	32--35	10
33--35	8	27--30	8	28--31	9
29--32	7	23--26	7	24--27	8
24--28	6	19--22	6	19--23	7
21--23	5	15--18	5	15--18	6
16--20	4	11--14	4	11--14	5
12--15	3	7--10	3	7--10	4
8--11	2	4-- 6	2	4-- 6	3
3-- 7	1	2-- 3	1	2-- 3	2
0-- 2	0	0-- 1	0	1	1
				0	0

[7]W. H. Stead, C. L. Shartle, et al., Occupational Counseling Techniques, (New York: American Book Company, 1940, p. 255.

The net weights for each response category were found in the appropriate table and entered in column seven using the appropriate plus or minus sign of the percentage difference in column six. For example, using the single response category in Table I, the percentages in columns four and five were between eight and ninety-two percent. Therefore, Part "A" of Table II was used. The percentage difference found in column six was minus thirty-eight. Therefore, thirty-eight was found in Part "A" of Table II giving a net weight of minus nine.

Determination of item weights could stop at this point, however, working with both positive and negative numbers can prove cumbersome. Therefore, the net weights were converted to assigned weights with small positive values to simplify weighting. The conversion scale suggested by Dr. England was slightly modified for this study.[8] (Reference Table III) Dr. England used only three assigned weights (0, 1, and 2) with a net weight of minus four or less receiving an assigned weight of zero, minus 1, 2 or 3 and plus 1, 2 or 3 receiving an assigned weight of one, and plus four or more receiving an assigned weight of two. This conversion scale was modified to that found in Table IV due to a wider range of values found for net weights than Dr. England had in his study.

---

[8]England, op. cit., p. 25.

Applying Weights to the Holdout Groups

Upon completion of converting all the net weights to assigned weights, in accordance with Table III, all the applicants in Group I long tenure and Group II short tenure holdout groups were scored on each of the nine factors found to discriminate in step five.

TABLE III

ASSIGNED WEIGHTS DERIVED FROM NET WEIGHTS

Net Weight	Assigned Weight
-4 or less	0
0, -1, -2 or -3	1
1, 2 or 3	2
4 or more	3

Table IV, extracted from the long tenure holdout group scoring sheet (Table XIX, Appendix II), provides an example of this technique.

As is shown in Table IV, applicant number one was fifty years of age at the time of application for an assigned weight of three and she had a high school education for an assigned weight of two, etc., for a total score of twelve.

TABLE IV

EXAMPLE SCORING SHEET

Control Number		Age at Time of Application	Education Level	Relatives With the Company	Friends With the Company	Marital Status	Living Arrangements	Age of Youngest Child	Number of Children Dep. on Applicant	Previous Employee of the Company	TOTALS
1	Response	50	H.S.Grad	No	No	D	R	17	1	No	12
	Weight	3	2	1	0	2	0	2	2	1	
2	Response	46	H.S.Grad	No	Yes	M	O	9	2	Yes	19
	Weight	3	2	1	2	3	3	2	1	2	
3	Response	48	H.S.Grad	Yes	No	M	O	11	4	No	17
	Weight	3	2	2	0	3	3	2	1	1	
4	Response	30	H.S.Grad	No	No	M	O	7	3	No	14
	Weight	1	2	1	0	3	3	2	1	1	
5	Response	56	Less than HS	No	No	M	O	Over 21	0	No	18
	Weight	3	1	1	0	3	3	3		1	
6	Response	46	Less than HS	No	No	M	O	15	2	No	15
	Weight	3	1	1	0	3	3	2	1	1	
Etc.											

Setting Cutting Scores for Selection

The purpose of this study was to provide a method
by which a decision could be made whether an applicant for
a salesclerk position was likely to remain on the job for
an acceptable length of time. This can be accomplished by
the establishment of a score on the weighted application
blank above which the store will hire and below which they
will not. This score is known as a cutting score.

An optimal cutting score; "one which places the
maximum number of persons, according to their total scores,
in the proper holdout groups,"[9] can be found by computing
the maximum index differentiation between the two holdout
groups. The index differentiation can be found by subtract-
ing cumulative percentage of applicants obtaining each pos-
sible score in the short tenure holdout group from the long
tenure holdout group as shown in Table IV. The score with
the largest index of differentiation is the optimal cutting
score.

As shown in Table V, the lowest optimal cutting
score for this study is thirteen. If the applicants in the
two holdout groups had been scored at the time of their
application and a cutting score of thirteen had been used
to make the hiring decision, only thirty-two percent of the

----

[9]England, op. cit., p. 33.

TABLE V

NUMBER AND PERCENT OF APPLICANTS IN LONG TENURE AND
SHORT TENURE HOLDOUT GROUPS RECEIVING INDICATED
OR GREATER SCORES ON WEIGHTED APPLICATION BLANK
AND INDEXES OF DIFFERENTIATION FOR SCORES

	Number		Percentage		
Score	Group I Long Tenure Holdout Group	Group II Short Tenure Holdout Group	Group I Long Tenure Holdout Group	Group II Short Tenure Holdout Group	Index of Differentiation
19	2	0	8	0	8
18	4	0	16	0	16
17	7	0	28	0	28
16	12	1	36	4	32
15	15	1	60	4	56
14	16	2	64	8	56
13	17	3	68	12	56
12	19	6	76	24	52
11	21	7	84	28	52
10	23	10	92	40	52
9	24	16	96	64	32
8	25	21	100	84	16
7	25	22	100	88	12
6	25	24	100	96	4
5	25	25	100	100	0
4	25	25	100	100	0
3	25	25	100	100	0
2	25	25	100	100	0
1	25	25	100	100	0
0	25	25	100	100	0

long tenure group would not have been hired, while only
twelve percent of the short tenure group would have been
hired.

"The weighted application blank as a selection
tool will function most efficiently when the optimum cut-
ting score is used as the minimum score for hiring."[10]
Variations in the supply and demand of the labor market,
however, may necessitate or allow the adjusting of the
minimum score up or down as the situation demands.

---

[10]_Ibid._, p. 33.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Summary of Findings

The nine factors of personal history analyzed in
this paper were carefully chosen on the basis of their pre-
diction of tenure in previous studies. Each of the nine
factors was analyzed by the procedure outlined in Chapter III
and was found to discriminate between the "long" tenure and
"short" tenure groups.

A brief summary of the nine factors and their
assigned weights by response category follows:

1. Age at Time of Job Application:

Response Category	Assigned Weight
20 or under	0
21 - 25	1
26 - 30	1
31 - 35	2
36 - 40	2
Over 40	3

2. Education Level:

Response Category	Assigned Weight
Less than high school graduate	1
High school graduate	2
Some college	2
College graduate	1

3. Relatives with the Company:

Response Category	Assigned Weight
Yes	2
No	1

4. Friends with the Company:

Response Category	Assigned Weight
Yes	2
No	0

5. Marital Status:

Response Category	Assigned Weight
Single	0
Married	3
Widowed	2
Separated	2
Divorced	2

6. Living Arrangements:

Response Category	Assigned Weight
Rent	0
Own	3
Live with parents	2
Live with others	1

7. Age of Youngest Child:

Response Category	Assigned Weight
5 or under	0
6 - 12	2
13 - 18	2
Over 18	3
Not able to respond	1

8. Number of Children Dependent on Applicant:

Response Category	Assigned Weight
None	3
One	2
Two	1
Three or more	1
Not able to respond	1

9. Previous Employee of the Company:

Response Category	Assigned Weight
Yes	2
No	1

The use of these weights in scoring the application blanks of applicants can be facilitated with a scoring template. This scoring technique provides a rapid and efficient means of scoring the application blank. The template is prepared with cutout windows to coincide with the spaces on the application blank in which the differentiating factors appear. Figure I provides an example of this technique for use with the store's application blank used for this study.

With this technique, scoring becomes a simple process of placing the template over the application form, recording the appropriate weights, and adding to get a total score.

Once the weighted application blank has been developed, it should be periodically checked to insure

FIGURE 1

EXAMPLE SCORING TEMPLATE

Less than high school... 1
High school or
Some college............ 2
College graduate........ 1

Education Level

Single.................. 0
Married................. 3
Other................... 2

Marital Status

Rent.................... 0
Own..................... 3
Live with parents....... 2
Live with others........ 1

Living Arrangements

20 or under............. 0
21 - 30................. 1
31 - 40................. 2
Over 40................. 3

Age (calculate)
From Date of Birth

None.......... 3
One........... 2
Two or more... 1
N/A........... 1

Number of
Dependent
Children

5 or under.... 0
6 - 18........ 2
Over 18....... 3
N/A........... 1

Age of
Youngest
Child

Yes............... 2
No................ 1

Relatives with
the Company

Yes............... 2
No................ 0

Friends with
the Company

Yes............... 2
No................ 1

Previous
Employee of
the Company

Weights assigned to personal history
factors for female salesclerks only.

the weighting is still achieving the desired results. A
study by Dunnette and Werimont, reported by Dr. England,
stated that a weighted application blank score for predic-
ting tenure of female office workers decreased in validity
over a five year period. The results were as follows:[1]

Initial correlation between WAB score and length of service	.74
Correlation between WAB score and length of service <u>one year later</u>	.61
Correlation between WAB score and length of service <u>two years later</u>	.38
Correlation between WAB score and length of service <u>five years later</u>	.07

It is suggested that a weighted application blank
score should be checked for validity at least every two
years.

Conclusions

The weighted application blank technique is not
intended to replace a company's present selection practices,
but to serve as an additional tool to be used in conjunction
with tests, interviews, etc. It is important to realize
that not only is the technique valid (i.e., that it differ-
entiates between desirable and undesirable employees) but
that it improves predictions made by other instruments.

---

[1]G. W. England, <u>The Development and Use of Weighted
Application Blanks</u>, (the unpublished first revision of his
book, same title), p. 37.

Since the weight application blank was developed on a group of employees that were selected as acceptable, the findings suggest that the technique measures something useful not measured before.

BIBLIOGRAPHY

A. BOOKS

Blum, M. L., and Naylor, J. C. Industrial Psychology Its Theoretical and Social Foundations. New York: Harper and Row, Publishers, 1968.

England, G. W. The Development and Use of Weighted Application Blanks. Dubuque, Iowa: Wm. C. Brown Company, Inc., 1961.

Stead, W. H., Shartle, C. L., et al. Occupational Counseling Techniques. New York: American Book Company, 1940.

B. PERIODICALS

Dunnette, M. D., and Maetzold, J. "Use of Weighted Application Blanks in Hiring Seasonal Employees," Journal of Applied Psychology. Vol. 39, No. 5, 1955, pp. 308-310.

Fleishman, E. A., and Berniger, J. "One Way to Reduce Office Turnover," Personnel. Vol. 37, 1960, pp. 63-69.

Inskeep, G. C. "Statistically Guided Employee Selection," Personnel Journal. January 1970, pp. 15-24.

Kirchner, W. K., and Dunnette, M. D. "Applying the Weighted Application Blank Technique to a Variety of Office Jobs," Journal of Applied Psychology. Vol. 41, 1957, pp. 206-208.

Krantz, I. W. "Controlling Quick Turnover," Personnel. Vol. 31, No. 6, May 1955, pp. 514-520.

Kriedt, P. H., and Gadel, M. S. "Prediction of Turnover Among Clerical Workers," Journal of Applied Psychology. Vol. 37, 1953, pp. 338-340.

Maloney, T. A. "Weighted Application Blank Analysis of
    Contingency Items," _Journal of Applied Psychology_.
    Vol. 42, No. 1, 1958, pp. 60-62.

Minnor, F. J. "The Prediction of Turnover of Clerical
    Workers," _Personnel Psychology_. Vol. 11, 1958,
    pp. 393-402.

Mosel, J. N., and Wade, R. R. "A Weighted Application
    Blank for Reduction of Turnover in Department Store
    Salesclerks," _Personnel_. Vol. 4, 1951, pp. 177-184.

Scholl, C. E., and Bellows, R. M. "A Method for Reducing
    Employee Turnover," _Personnel_. Vol. 29, 1952,
    pp. 234-236.

Shott, G. L., and Albright, L. E. "Predicting Turnover in
    an Automated Office Situation," _Personnel Psychology_.
    Vol. 16, 1963, pp. 213-220.

Tiffen, J., _et al_. "The Analysis of Personnel Data in
    Relation to Turnover on a Factory Job," _Journal of
    Applied Psychology_. Vol. 31, No. 6, 1947, pp. 182-
    185.

C. OTHER SOURCES

Confidential Interview with Store's Personnel Director.

APPENDIX I

LEGEND AND DATA WORK SHEETS

TABLE LEGEND

Sin .... Single

M .... Married

Sep .... Separated

D .... Divorced

R .... Rent

O .... Own

Liv Par .... Live with Parents

Liv Oth .... Live with Others

N/A .... Not Applicable

H.S. .... High School

Grad .... Graduate

TABLE VI

DATA WORK SHEET: LONG TENURE WEIGHTING GROUP

Control Number (1)	Age at Time of Application (2)	High School Graduate (3)	College Some (4)	College Grad (4)	Highest Grade Completed (5)	Relatives with Company (6)	Friends with Company (7)	Marital Status (8)
1	22	Yes	Yes		13	No	No	Sin
2	20	Yes	Yes		13	No	No	M
3	43	Yes			12	No	Yes	D
4	49	No			11	No	No	D
5	44	Yes			12	No	No	M
6	33	Yes			12	No	Yes	M
7	40	Yes			12	No	No	M
8	38	Yes			12	No	No	M
9	28	Yes			12	Yes	No	M
10	33	Yes	Yes		14	No	No	M
11	46	No			11	No	Yes	M
12	34	Yes			12	No	No	M
13	40	Yes			12	No	No	M
14	48	Yes			12	No	Yes	M
15	41	No			9	No	Yes	M
16	58	Yes		Yes	16	No	No	M
17	21	Yes	Yes		14	No	No	Sin
18	33	Yes	Yes		13	No	No	M
19	46	Yes			12	No	No	W
20	53	Yes			12	No	No	M
21	39	Yes			12	No	No	M
22	32	Yes			12	No	No	M
23	49	Yes			12	No	No	M
24	25	Yes			12	No	No	M

TABLE VI (Continued)

(9) Living Arrangements	(10) Number of Children	(11) Ages of Children	Dependent on Applicant (12) Yes	No	(13) Previous Employee
R	N/A	N/A	N/A	N/A	No
R	0	N/A	2	0	Yes
R	2	28,27	0	2	No
R	2	11,9	2	0	No
O	2	19,14	2	0	No
R	1	16	1	0	No
O	3	14,12,5	3	0	No
O	2	14,11	2	0	No
R	2	7,5	2	0	No
O	0	N/A		1	Yes
O	2	14,11	2	0	No
O	1	25	0	1	No
O	5	14,12,11,7,4	5	0	No
O	2	14,11	2	0	No
O	1	20	0	1	No
O	4	15,13,10,9	4	0	No
O	2	22,21	0	2	No
Liv Par	N/A	N/A	N/A		No
O	1	15	1	0	No
Liv Dau	3	27,26,20	0	3	No
O	1	Over 21	0	6	No
O	3	20,14	1	1	No
R	2	22,19	0	2	No
O	2	12,11	2	0	No
O	0	N/A	N/A	N/A	No

TABLE VI (Continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
25	36	Yes		12	No	No	M
26	51	Yes		12	No	No	W
27	59	No		10	No	No	M
28	18	Yes		12	No	No	Sin
29	47	Yes	Yes	14	No	No	M
30	45	Yes		12	No	No	M
31	32	Yes		12	No	No	M
32	38	No		9	No	No	M
33	34	No		9	No	No	M
34	19	Yes		12	No	Yes	Sin
35	49	Yes		12	Yes	Yes	M
36	22	Yes		12	No	No	Sin
37	63	No		8	No	No	Sep
38	30	Yes	Yes	14	No	Yes	M
39	50	Yes		12	No	No	M
40	22	Yes		12	No	Yes	M
41	22	Yes		12	No	No	M
42	21	Yes		12	No	No	M
43	20	Yes		12	Yes	Yes	Sep
44	19	Yes	Yes	13	No	Yes	Sin
45	50	Yes		12	No	No	W
46	20	Yes		12	No	Yes	Sin
47	36	Yes		12	No	No	M
48	45	Yes		12	No	No	M
49	19	Yes		12	No	Yes	Sin
50	36	No		10	No	Yes	M

TABLE VI (Continued)

(9)	(10)	(11)	(12)		(13)
0	0	N/A	N/A		Yes
Liv Dau	2	27,22	0	2	No
R	0	N/A	N/A		Yes
Liv Par	N/A	N/A	N/A		No
0	3	22,21,11	1	2	Yes
0	3	19,15,13	2	1	No
0	3	11,10,9	3	0	No
R	2	7,6	2	0	No
R	5	17,16,13,11,9	5	0	No
Liv Par	N/A	N/A	N/A		No
0	4	25,22,16,12	2	2	No
Liv Par	N/A	N/A	N/A		No
0	1	Over 21	0	1	No
0	2	6,5	2	0	No
0	2	27,25	0	2	No
0	1	5	1	0	Yes
R	0	N/A	N/A		No
Liv Par	1	17 mos.	1	0	No
Liv Par	0	N/A	N/A		Yes
Liv Par	N/A	N/A	N/A		Yes
Liv Son	1	Over 21	0	1	No
Liv Par	N/A	N/A	N/A		Yes
0	3	18,11,7	2	1	No
0	3	23,21,13	1	2	No
R	N/A	N/A	N/A		No
0	0	N/A	N/A		Yes

TABLE VII

DATA WORK SHEET: LONG TENURE HOLDOUT GROUP

Control Number (1)	Age at Time of Application (2)	High School Graduate (3)	College (4) Some	College (4) Grad	Highest Grade Completed (5)	Relatives with Company (6)	Friends with Company (7)	Marital Status (8)
1	50	Yes			12	No	No	D
2	46	Yes			12	No	Yes	M
3	48	Yes			12	Yes	No	M
4	30	Yes			12	No	No	M
5	56	No			8	No	No	M
6	46	No			11	No	No	M
7	46	Yes			12	No	No	M
8	26	No			11	No	Yes	M
9	37	Yes			12	No	No	M
10	21	Yes			12	No	Yes	Sep
11	21	Yes			12	No	No	Sin
12	43	Yes			12	No	No	D
13	18	Yes			12	No	No	Sin
14	51	Yes	Yes		14	No	No	M
15	22	Yes			12	No	No	M
16	17	No			11	Yes	Yes	Sin
17	30	Yes			12	No	No	M
18	21	Yes			12	No	No	M
19	27	Yes			12	No	Yes	M
20	31	Yes			12	No	Yes	M
21	49	Yes			12	No	No	M
22	21	Yes			12	No	Yes	M
23	20	Yes			12	No	No	M
24	49	No			10	No	Yes	M
25	38	Yes		Yes	14	No	No	D

TABLE VII (Continued)

Living Arrangements (9)	Number of Children (10)	Ages of Children (11)	Dependent on Applicant Yes (12)	No	Previous Employee (13)
R	3	25,23,17	1	2	No
O	5	25,23,19,16,9	2	3	Yes
O	4	17,14,12,11	4	0	No
O	3	11,10,7	3	0	No
O	2	Over 21	0	2	No
O	2	18,15	2	0	No
R	2	18,10	2	0	No
O	2	8,6	2	0	No
O	3	27,25,20	0	3	No
Liv Par	0	N/A	N/A		No
Liv Par	N/A	N/A	N/A		No
Liv Par	0	N/A	N/A		No
O	N/A	N/A	N/A		No
Liv Par	4	22,17,11,7	3	1	No
R	1	7 Mos.	1	0	No
Liv Par	N/A	N/A	N/A		No
O	4	12,11,9,8	4	0	Yes
R	1	3 Mos.	1	0	No
O	2	12,6	2	0	Yes
O	4	11,9,7,6	4	0	No
O	2	14,10	2	0	No
R	1	2	1	0	Yes
R	0	N/A	N/A	N/A	No
O	3	25,22,18	0	3	No
O	2	16,14	2	0	Yes

TABLE VIII

DATA WORK SHEET: SHORT TENURE WEIGHTING GROUP

Control Number (1)	Age at Time of Application (2)	High School Graduate (3)	College Some (4)	College Grad (4)	Highest Grade Completed (5)	Relatives with Company (6)	Friends with Company (7)	Marital Status (8)
1	19	Yes			12	No	No	Sin
2	53	Yes	Yes		16	No	No	W
3	17	No			10	No	No	Sin
4	16	No			10	No	No	Sin
5	21	No			10	No	No	M
6	18	Yes			12	No	No	Sin
7	18	No			10	No	No	Sin
8	21	Yes			12	No	No	Sin
9	19	Yes			12	No	No	Sin
10	18	No			11	No	No	M
11	17	No			10	No	No	Sin
12	21	Yes			12	No	No	Sin
13	19	No			11	No	No	M
14	20	No			9	No	Yes	M
15	17	No			10	No	No	Sin
16	19	Yes			12	No	Yes	M
17	34	Yes			12	No	No	D
18	25	Yes	Yes		15	No	No	M
19	21	Yes			12	No	No	M
20	23	Yes			12	No	Yes	M
21	17	No			11	No	No	Sin
22	43	Yes			12	No	No	M
23	19	Yes			12	No	Yes	M
24	22	Yes			12	No	Yes	Sin

TABLE VIII (Continued)

Living Arrangements (9)	Number of Children (10)	Ages of Children (11)	Dependent on Applicant		Previous Employee (13)
			Yes	No	
			(12)		
R	N/A	N/A	N/A		No
R	4	27,25,19,17	2	2	No
Liv Par	N/A	N/A	N/A		No
Liv Par	N/A	N/A	N/A		No
R	1	2	1	0	No
Liv Fds	N/A	N/A	N/A		No
Liv Par	N/A	N/A	N/A		No
Liv Rel	N/A	N/A	N/A		No
R	N/A	N/A	N/A		No
R	0	N/A	N/A		No
Liv Par	N/A	N/A	N/A		No
Liv Par	N/A	N/A	N/A		No
R	1	1	1	0	No
Liv Par	1	1	1	0	No
R	N/A	N/A	N/A		No
R	1	4	1	0	No
R	2	14,13	2	0	Yes
O	2	2,1	2	0	No
R	0	N/A	N/A		No
R	1	2	1	0	No
Liv Par	N/A	N/A	N/A		No
R	3	19,15,11	2	1	No
R	0	N/A	N/A		No
R	N/A	N/A	N/A		No

TABLE VIII (Continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
25	26	Yes		12	No	No	M
26	27	Yes	Yes	15	No	No	M
27	27	Yes		12	No	No	M
28	17	Yes		12	No	No	Sin
29	17	Yes		12	No	No	Sin
30	19	No		11	No	No	Sin
31	18	Yes		12	No	No	Sin
32	38	No		11	No	No	M
33	29	Yes		12	Yes	No	M
34	18	Yes		12	No	No	Sin
35	20	Yes		12	No	No	Sin
36	27	No		10	No	No	M
37	20	No		10	No	No	M
38	20	Yes		12	No	No	Sin
39	18	Yes		12	No	No	M
40	23	Yes		12	No	No	M
41	22	Yes	Yes	15	No	No	Sin
42	25	Yes		12	No	No	M
43	25	Yes		12	No	No	Sin
44	33	Yes		12	No	No	Sin
45	29	Yes		12	No	No	Sin
46	18	Yes		12	No	No	Sin
47	22	Yes		12	No	No	Sin
48	19	Yes		12	No	No	Sin
49	22	Yes		12	No	No	Sin
50	26	Yes		12	No	No	Sep

TABLE VIII (Continued)

(9)	(10)	(11)	(12)		(13)
R	0	N/A	N/A		No
R	2	3,1	2	0	No
0	3	6,4,2	3	0	No
R	N/A	N/A	N/A		No
Liv Par	N/A	N/A	N/A		No
Liv Unc	N/A	N/A	N/A		No
R	N/A	N/A	N/A		No
R	5	20,18,14,5,3	3	2	No
0	1	1	1	0	No
Liv GP	N/A	N/A	N/A		No
Liv Aunt	N/A	N/A	N/A		No
R	3	8,6,4	3	0	No
R	2	2,3 Mos.	2	0	No
Liv Par	N/A	N/A	N/A		No
R	0	N/A	N/A		No
R	1	6 Mos.	1	0	No
R	N/A	N/A	N/A		Yes
R	3	4,4,1	3	0	No
R	N/A	N/A	N/A		No
R	N/A	N/A	N/A		No
Liv Par	N/A	N/A	N/A		No
R	N/A	N/A	N/A		No
R	N/A	N/A	N/A		No
Liv Par	N/A	N/A	N/A		No
R	N/A	N/A	N/A		No
R	1	3	1	0	No

TABLE IX

DATA WORK SHEET: SHORT TENURE HOLDOUT GROUP

Control Number (1)	Age at Time of Application (2)	High School Graduate (3)	College — Some (4)	College — Grad	Highest Grade Completed (5)	Relatives with Company (6)	Friends with Company (7)	Marital Status (8)
1	20	No			11	No	No	Sin
2	20	Yes			12	No	No	Sin
3	47	No			10	No	No	Sin
4	24	No		Yes	16	No	No	M
5	18	No			16	No	No	M
6	46	Yes			11	No	Yes	Sin
7	19	Yes			12	No	No	D
8	20	Yes			12	No	No	Sin
9	19	Yes			12	No	No	M
10	25	No			11	No	No	M
11	33	Yes			12	No	No	M
12	21	Yes	Yes		15	No	No	Sin
13	20	Yes	Yes		14	No	Yes	Sin
14	33	Yes			12	No	No	M
15	25	Yes			12	No	No	Sep
16	20	Yes			12	No	No	Sin
17	19	Yes			12	No	No	Sin
18	19	Yes			12	No	No	M
19	22	Yes			12	No	No	M
20	23	Yes			12	No	No	M
21	22	Yes			12	No	No	M
22	26	Yes	Yes		13	No	No	M
23	22	Yes	Yes		12	No	No	Sin
24	23	Yes	Yes	Yes	13	No	No	M
25	18	Yes			12	No	No	Sin

TABLE IX (Continued)

Living Arrangements (9)	Number of Children (10)	Ages of Children (11)	Dependent on Applicant (12) Yes	Dependent on Applicant (12) No	Previous Employee (13)
R	1	4 Mos.	1	0	No
R	N/A	N/A	N/A	0	No
R	N/A	N/A	N/A	0	No
R	1	1	1	0	No
Liv Par	N/A	N/A	N/A	0	No
R	4	23,21,19,16	1	3	No
Liv Par	N/A	N/A	N/A	0	No
R	1	4 Mos.	1	0	No
R	0	N/A	N/A	0	No
R	3	7,3,2	3	0	No
O	1	1	1	0	No
Liv Par	N/A	N/A	N/A	0	No
Liv Par	N/A	N/A	N/A	0	No
O	2	13,9	2	0	Yes
Liv Frd	0	N/A	N/A	0	No
Liv Par	N/A	N/A	N/A	0	No
Liv Par	N/A	N/A	N/A	0	No
R	0	N/A	N/A	0	No
R	2	4,2	2	0	No
R	0	N/A	N/A	0	No
R	1	3 Mos.	1	0	No
O	2	6,5	2	0	No
R	1	N/A	1	0	No
R	3	3,2,2 Mos.	3	0	No
R	N/A	N/A	N/A	0	No

APPENDIX II

COMPUTATIONS

TABLE X

AGE: WEIGHTING WORK SHEET

Response Category	Number Responding		Percent Responding		Col 4 Minus Col 5	Net Weight	Assigned Weight
	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
20 or under	7	25	14	50	(-36)	(-9)	0
21 - 25	7	13	14	26	(-12)	(-3)	1
26 - 30	2	7	4	14	(-10)	(-2)	1
30 - 35	7	2	14	4	10	2	2
36 - 40	8	1	16	2	14	3	2
Over 40	19	2	38	4	34	8	3
Totals	50	50					

TABLE XI

EDUCATION: WEIGHTING WORK SHEET

Response Category	Number Responding		Percent Responding		Col 4 Minus Col 5	Net Weight	Assigned Weight
	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Less than H.S. Graduate	8	13	16	26	(-10)	(-2)	1
H.S. Graduate	34	32	68	64	4	1	2
Some College	8	4	16	8	8	2	2
College Graduate	1	1	2	2	0	0	1
Totals	50	50					

TABLE XII

RELATIVES WITH THE COMPANY: WEIGHTING WORK SHEET

Response Category	Number Responding		Percent Responding		Col 4 Minus Col 5	Net Weight	Assigned Weight
	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Yes	3	1	6	2	4	3	2
No	47	49	94	98	(-4)	(-3)	1
Totals	50	50					

TABLE XIII

FRIENDS WITH THE COMPANY: WEIGHTING WORK SHEET

	Number Responding		Percent Responding				
Response Category	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group	Col 4 Minus Col 5	Net Weight	Assigned Weight
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Yes	14	5	28	10	18	4	2
No	36	45	72	90	(-18)	(-4)	0
Totals	50	50					

TABLE XIV

MARITAL STATUS: WEIGHTING WORK SHEET

Response Category	Number Responding		Percent Responding		Col 4 Minus Col 5	Net Weight	Assigned Weight
	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Single	8	27	16	54	(-38)	(-9)	0
Married	35	20	70	40	30	7	3
Widowed	3	1	6	2	4	2	2
Separated	2	1	4	2	2	1	2
Divorced	2	1	4	2	2	1	2
Totals	50	50					

TABLE XV

LIVING ARRANGEMENTS: WEIGHTING WORK SHEET

Response Category	Number Responding		Percent Responding		Col 4 Minus Col 5	Net Weight	Assigned Weight
	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rent	11	30	22	60	(-38)	(-9)	0
Own	29	4	58	8	50	14	3
Live with Parents	7	11	14	22	8	2	2
Live with Others	3	5	6	10	(-4)	(-2)	1
Totals	50	50					

TABLE XVI

AGE OF YOUNGEST CHILD: WEIGHTING WORK SHEET

Response Category	Number Responding		Percent Responding		Col 4 Minus Col 5	Net Weight	Assigned Weight
	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
5 or Under	6	14	16	77	(-61)	(-21)	0
6 - 12	12	2	32	11	12	3	2
13 - 18	6	2	16	11	8	2	2
Over 18	12	0	32	0	32	7	3
Not able To respond	14	32					1
Totals	50	50					

TABLE XVII

NUMBER OF CHILDREN DEPENDENT ON APPLICANT: WEIGHTING WORK SHEET

Response Category	Number Responding		Percent Responding		Col 4 Minus Col 5	Net Weight	Assigned Weight
	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
None	17	5	42	22	20	4	3
One	8	7	20	17	3	1	2
Two	11	6	27	26	1	0	1
Three Or more	5	4	12	17	(-5)	(-1)	1
Not able To respond	27	10				0	1
Totals	50	50					

TABLE XVIII

PREVIOUS EMPLOYEE: WEIGHTING WORK SHEET

Response Category	Number Responding		Percent Responding		Col 4 Minus Col 5	Net Weight	Assigned Weight
	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group	Group I Long Tenure Weighting Group	Group II Short Tenure Weighting Group			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Yes	10	2	4	16	5	2	2
No	40	48	96	(-16)	(-5)	(-2)	1
Totals	50	50					

TABLE XIX

LONG TENURE HOLDOUT GROUP SCORING SHEET

Control Number	Age	Education Level	Relatives with the Company	Friends with the Company	Marital Status	Living Arrangements	Age of Youngest Child	Number of Children Dependent on Applicant	Previous Employee of Company	Total Score
1	3	2	1	0	2	0	2	2	1	12
2	3	2	1	2	3	3	2	1	2	19
3	3	2		0	3	3	2	3	1	17
4	1	2	2	0	3	3	3	1	1	14
5	3	2	1	0	3	3	2	3	1	18
6	3	1	1	0	3	3	2	1	1	15
7	3	2	1	0	3	0	3	1	1	16
8	1	2	1	0	3	3	2	3	1	12
9	2	1	1	2	3	3	2	3	1	18
10	1	2	1	2	2	2	3	1	1	15
11	1	2	1	0	0	2	1	3	1	9
12	3	2	1	0	2	3	1	3	1	16
13	0	2	1	0	0	2	1	1	1	8
14	3	2	1	0	3	3	2	1	1	16
15	1	2	1	0	3	0	0	2	1	11

TABLE XIX (Continued)

Control Number	Age	Education Level	Relatives with the Company	Friends with the Company	Marital Status	Living Arrangements	Age of Youngest Child	Number of Children Dependent on Applicant	Previous Employee of Company	Total Score
16	0	1	2	2	0	2	1	1	1	10
17	2	2	1	0	3	3	2	1	2	16
18	1	2	1	0	3	0	0	2	1	10
19	1	2	1	2	3	3	2	1	2	17
20	2	2	1	2	3	3	2	1	1	17
21	3	2	1	0	3	3	2	1	1	16
22	1	2	1	2	3	0	0	2	2	13
23	0	2	1	0	3	0	1	3	1	11
24	3	1	1	2	3	3	2	3	1	19
25	2	2	1	0	2	3	2	1	2	15

TABLE XX

SHORT TENURE HOLDOUT GROUP SCORING SHEET

Control Number	Age	Education Level	Relatives with the Company	Friends with the Company	Marital Status	Living Arrangements	Age of Youngest Child	Number of Children Dependent on Applicant	Previous Employee of Company	Total Score
1	0	1	1	0	0	0	0	2	1	5
2	3	2	1	0	0	0	1	1	1	6
3	1	1	1	0	0	0	0	2	1	8
4	0	1	1	2	0	0	1	1	1	9
5	3	2	1	0	2	0	2	2	1	13
6	0	2	1	0	0	2	0	1	1	8
7	0	2	1	0	3	0	1	3	1	9
8	0	2	1	0	3	0	0	2	1	11
9	1	1	1	0	3	3	1	1	1	8
10	0	2	1	0	0	0	0	3	1	14
11	2	1	1	0	3	3	1	1	1	9
12	1	2	1	0	0	2	1	2	1	10
13	0	2	1	2	0	2	1	1	1	16
14	2	2	1	0	3	3	2	1	2	12
15	1	2	1	0	2	1	1	3	1	12

TABLE XX (Continued)

Control Number	Age	Education Level	Relatives with the Company	Friends with the Company	Marital Status	Living Arrangements	Age of Youngest Child	Number of Children Dependent on Applicant	Previous Employee of Company	Total Score
16	0	2	1	0	0	2	1	1	1	8
17	0	2	1	0	0	2	1	3	1	8
18	0	2	1	0	3	0	1	3	1	10
19	1	2	1	0	3	0	0	1	1	9
20	1	2	1	0	3	0	1	3	1	12
21	1	2	1	0	3	3	0	2	1	10
22	1	2	1	0	3	0	0	1	1	12
23	1	2	1	0	0	0	1	1	1	7
24	1	2	1	0	3	0	0	1	1	9
25	0	2	1	0	0	0	1	1	1	6