

PROFILE OF EARNINGS FOR FEMALE-HEADED FAMILIES

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During the Second World War female employment was considered patriotic. With few men to continue in what had been their typical roles as breadwinner and head of the family, the women had to assume these roles. At the end of the war the male veterans returned and took over the job market again (cf Chafe, 1978). A plethora of research was done on the conditions and problems of men involved in the war effort (e.g., Stouffer, 1949). There was no interest in the changed roles of women during that period.

With the advent of the feminist movement in the 1960's, some research began on the status of women, including their earning ability. These studies were largely focussed on women in professional categories (Fidell and DeLamater, 1971; Rossi and Calderwood, 1973), or later with marital problems associated with dual career marriages (Holmstrom, 1973), but less attention to all women as wage earners. There is very little research data on women as heads of households.

The increasing divorce rate (Delury, 1978) and numbers of illegitimate children born suggest that the per capita frequency of women having economic responsibility for households is on the rise. In 1976 about 41% of the labor force in the United States was female (Delury, 1978). In 1973, Blau states that 19% of the female labor force in the United States were widowed, divorced or separated from their husbands and another 23% were single (Blau, 1978). If there are increasing numbers of divorces, more widows, and more illegitimate births, there will be increasing numbers of female heads of households. If these women cannot earn enough to support themselves and their families, the women will have to find other means of support. We need to look at females and their opportunities for having an income that will provide for themselves and their children.

Paper

This paper attempts to evaluate the potential for self-support for Minnesota women with families. In particular, we focus on what the 1970 census calls "female-headed families" and their likelihood of finding employment that would pay them enough to live above a poverty existence.

The potential for earnings depends upon a number of factors. We look at one of the typical variables involved that aids women in locating work: education. However, we wished to determine whether there are more strictly economic issues that may determine the likelihood of finding a decent paying job. To this end, it is necessary to look at the number of jobs that might be available in any given area or community, to see if there are enough jobs for women to begin with. Looking at employment in a given area not only indicates to the researcher why females may not have jobs, but also can be a source of advice to policy makers on the status of women (Roby, 1976). There is little point in suggesting to a woman needing to support a family that she is well trained or educated and therefore should be able to get a job when jobs don't exist in her community. Even if there is available employment, it is irrational to assume that a woman will work if that employment provides a lower standard of living than would public assistance or welfare.

The problem of employment for female headed families is not a small one (Ross, 1976). As Blau (1978) comments:

In March, 1975, 7.2 million American families, one out of every eight families in the population, were headed by women. Female-headed families constitute a large and growing proportion of the poverty population. In 1972, one-half of the families headed by women lived in poverty, while less than one-tenth of the families headed by men had incomes below the poverty threshold. The majority of poor families with children are now headed by women.

All of the problems of discrimination against women in the labor force will certainly be present if not worse for women who have children to support. Sex stereotyping of jobs (McLaughlin, 1978; Featherman, et.al., 1974; Blau, 1978) and reduction in numbers of jobs that are typically categorized as "female" (Blau, 1978) limits the kinds of positions open to women. Other forms of discrimination include personnel officers' beliefs that males should be hired before females because men need to support families. If the prospective employee is a female with children, the bias takes the form of "a woman will have a poor attendance rate because she must care for her children."

As stated earlier, we wanted to find out whether women could find jobs to support themselves and dependents with earnings above a poverty level. The rationale for this is two-fold: 1) women who could get jobs at only the poverty level may opt to stay home with children and accept public assistance, 2) having a job requires more funds than staying at home. Money is needed for appropriate dress, transportation, etc. A literal hand-to-mouth existence precludes being in the work force.

Determining an "adequate" income is arbitrary but based on some statistics. The standard low level budget for a family of four for 1969 was \$6,338 for a rural family and \$6,599 for an urban family. These figures are interpolations of the 1967 Bureau of Labor Statistics "standard low level," using the Consumer Price Index for 1969. The arbitrary figure of \$6,500 was used as the threshold because it allows for a convenient division of the \$6,000 - 6,999 income class provided in the census.

We also wanted to know whether jobs at the \$6,500 threshold exist in the areas where the female-headed households are.  
Toward this end, analysis will be at the county level for the state of Minnesota.

### Data and Analysis

Data were taken from the 1970 National Census for Minnesota, Fourth Count Summary. This summary provides estimates of the total population characteristics by a five percent sample. All numbers are given as representing the total population of Minnesota. The Fourth Count Summary is also county by county, which allows us to examine the presumed locale of employment by the female-headed households in that region.

The principal dependent variable is the relative surplus of women earning an adequate income (\$6,500 or more), compared to the number of female-headed households. The number of women earning at least \$6,500 minus the number of women heading households indicates the actual surplus or deficit of jobs currently held by women which could support current households headed by women. Since that surplus or deficit is dependent upon population size, it has been divided by the number of female-headed households so as to provide an index of surplus or deficit that is relative to the number of female-headed households. The index is therefore free of population size. A positive value means that more women have adequate incomes than act as heads of families. A negative value means that fewer women have adequate incomes than head households.

To determine the relative surplus of women earning \$6,500 or more, several computations were necessary. First, the number of females with incomes of \$6,500 and over was estimated. Because the threshold of \$6,500 is in the middle of the income category of \$6,000 - 6,999, that category frequency was divided by two and added to the total frequencies in all higher income categories. It was impossible to manipulate the census data to obtain the earnings through employment (rather than total income) of households with female heads. This point will be discussed later. The number of female-headed families was subtracted from the number of females earning \$6,500 or more, providing the surplus or deficit of jobs available to females heading families. For

example, if there are 100 females that earn at least \$6,500, and 100 female-headed households, the surplus of jobs available to females who must support families is zero.

The relative surplus is obtained by dividing the surplus by the number of families with female head. This gives a figure that is free of population size to the extent that the number of female-headed families remains a fairly constant proportion of the number of families across counties. For the 87 counties in Minnesota, the number of female-headed families ranged from 55 to 24,166. The proportion of female-headed families averaged 6.3 % and exceeded 10 % in only two counties. *6-10 % range*

A distribution over all counties of the relative surplus was obtained. The range was from  $-.57$  to  $+.95$ . If the value equals  $-.57$ , it means that there are only 43 % as many jobs paying \$6,500 or more as there are female-headed households, or 57 % of the females who head households would still be without adequate jobs even if all available female jobs paying at least \$6,500 were held by female heads of households. A value of  $+.95$  indicates that there are 95 % more jobs earning \$6,500 or more than there are female-headed households. A value of 1.0 would mean that there are twice as many adequate paying jobs as there are female heads of households.

For purposes of analysis, the relative surplus was coded into three categories. The range for Group 1 (counties with the worst income possibilities for female-headed households) is  $-.57$  to  $-.23$ . Group 2 has breaking points of  $-.20$  to  $+.20$ , and Group 3 (highest likelihood of adequate income) has a range of  $+.25$  to  $+.95$ . Note that Group 2 includes zero. This value was not used as a cutting point because there was no obvious break in the distribution at that point. The number of counties in Group 1 is 27; Group 2 contains 37 counties, and Group 3 contains 23 counties.

We then looked at county characteristics as independent variables that might explain the variation from county to county

of our dependent variable, the relative surplus of jobs paying at least \$6,500 for female headed families. Discriminant analysis was used with the following variables as independent variables:

- Total number of females age 16 and over
- Percent of the labor force that is female
- Percent of total employment in agriculture
- Percent of total employment in non-agriculture business
- Percent of total employment in non-agriculture government
- Percent of all families that are female headed
- Mean education of females, in years
- Average earnings of all females age 16 or over
- Average income of female-headed households
- Average earnings of unrelated females age 16 or over
- Average income of unrelated females age 16 or over
- Average income of all females age 16 or over

The term earnings refers only to wages, salary, non-farm self employment income and farm self employment income. The term income includes the preceding sources of income plus social security, retirement, public assistance, welfare and other forms of income. Consequently, earnings provides a better picture of the ability to be self sufficient. Unfortunately the census summary data do not provide these distinctions for female heads of house separately, but only for all males or all females.

Discriminant analysis will show whether a combination of the variables listed above could classify a county into the correct relative surplus group (Group 1, 2 or 3). Eighty and one-half percent of the cases were correctly classified using these independent variables. The canonical correlation is .356, a more than substantial figure, and the Chi square value for the fit of the discriminant analysis is significant beyond .001. Of those counties incorrectly classified (17 out of 87), all are assigned to the next closest type. For example, no counties of Group 1 were assigned to Group 3. A purely random assignment of 87 cases

into groups of 27, 37 and 23 cases respectively, would produce an average of only 30 correct classifications, compared with the 70 correct classifications made by the discriminant analysis procedure. Actual classification of the counties is shown in Figure 1.

One of the independent variables could not be considered a good predictor of the relative surplus index; the percent of employed people who are in government jobs. All other predictor variables show consistent changes in mean value across Groups 1 through 3. As can be seen in Figures 2 through 9, the higher the

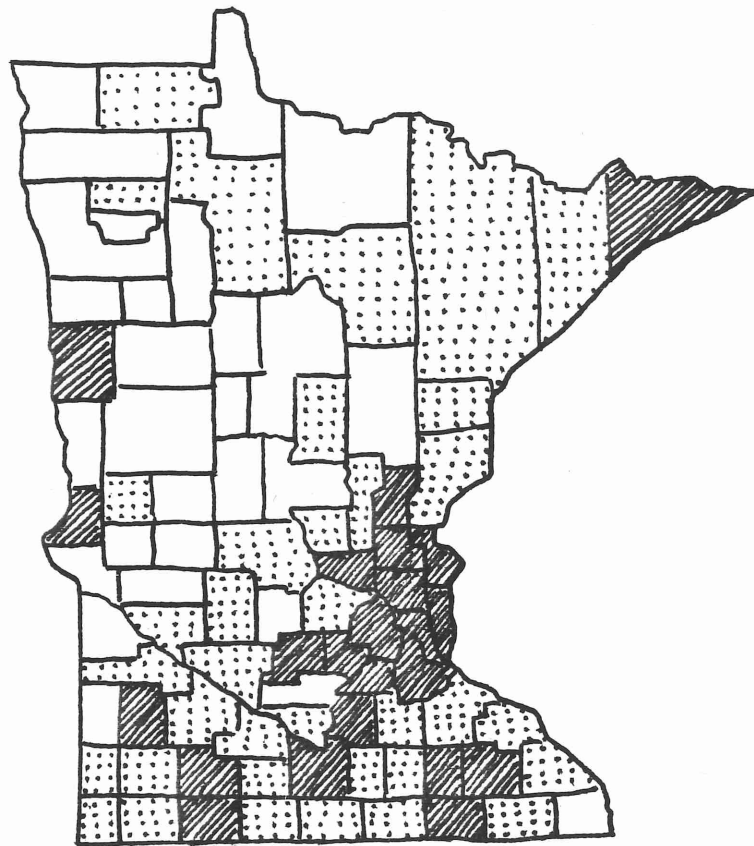
percentage of labor force that is female,  
 percentage of labor force in non-agricultural business,  
 mean education of females,  
 average earnings of females,  
 average income of female-headed households,  
 average earnings of unrelated females,  
 average income of unrelated females, and  
 average income of all females,

the more likely that there will be a relative surplus of jobs paying at least \$6,500. However, as the percent of county employment devoted to agriculture goes down, women's income is more likely to be above \$6,500, as shown in Figure 10.

It might be suggested that non-agricultural counties will have more female-headed families that receive large incomes in the form of public assistance, social security and other income. However, there is a smaller percentage of female-headed households in Group 3 than the other groups. Group 3 counties contain all major large cities (25,000 or more) in the state, with two exceptions. (See Appendix for the list of counties and their groups based on relative surplus) Unless these non-agricultural counties have very large benefits for women in terms of welfare and social security to offset the mean income of these benefits for the state, we cannot assume that income is higher in these counties



FIGURE 1  
Relative Surplus, by County






- |   |        |           |
|---|--------|-----------|
|  | Low    | (Group 1) |
|  | Medium | (Group 2) |
|  | High   | (Group 3) |

FIGURE 2

Mean Percent County Labor Force that is Female,  
by Relative Surplus Group

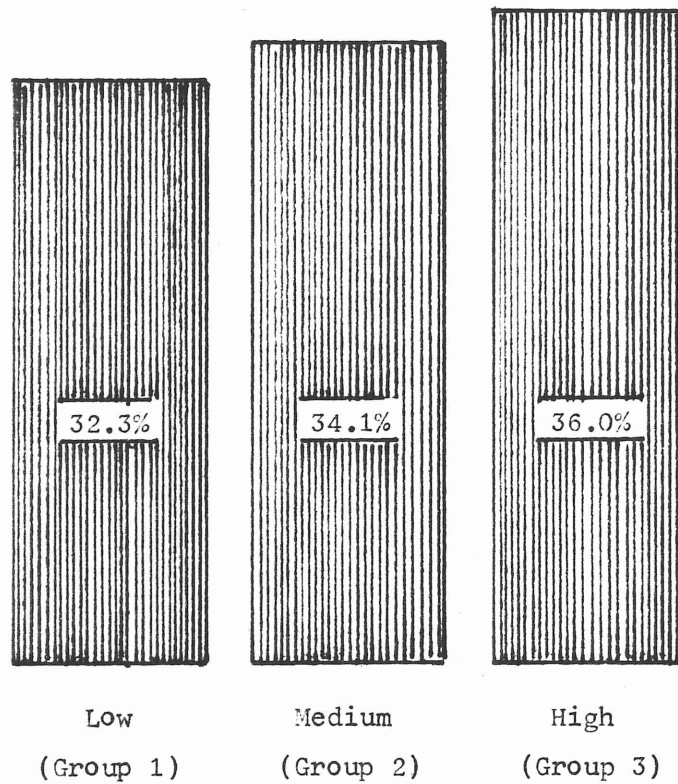


FIGURE 3

Mean Percent Labor Force in Business,  
by Relative Surplus Group

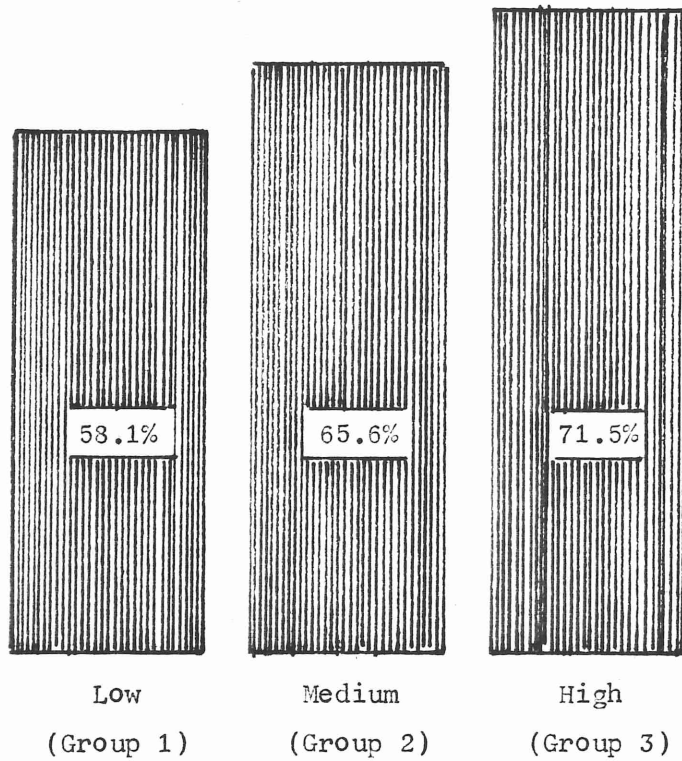


FIGURE 4

Mean Education of Females,  
by Relative Surplus Group

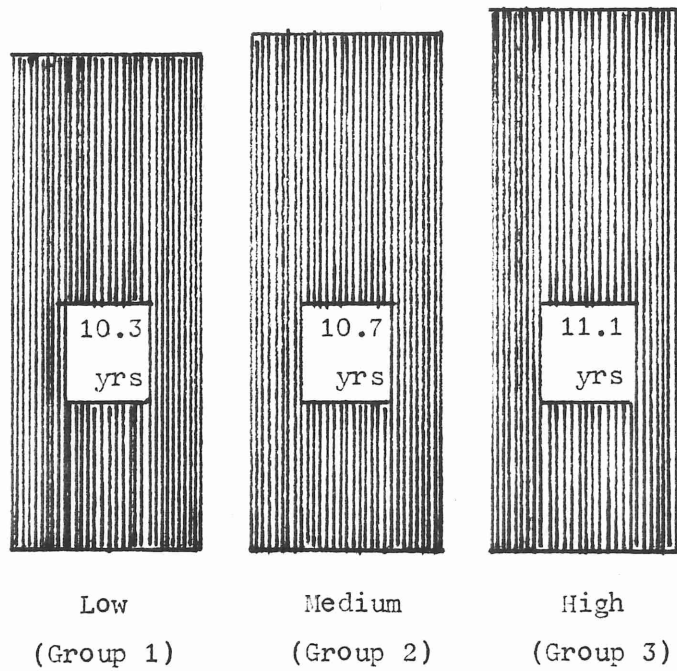


FIGURE 5

Average Earnings of Females,  
by Relative Surplus Group

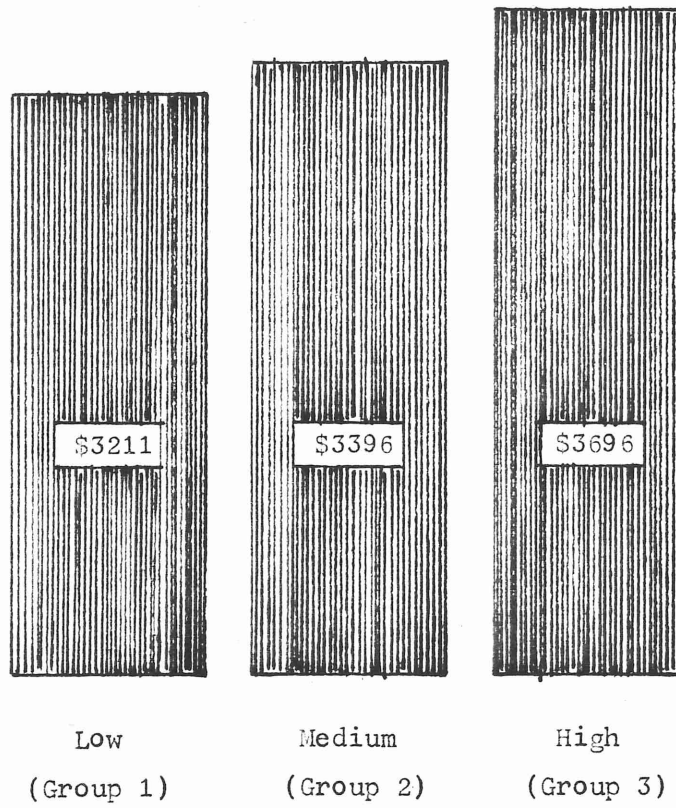


FIGURE 6

Average Income of Female-headed Households,  
by Relative Surplus Group

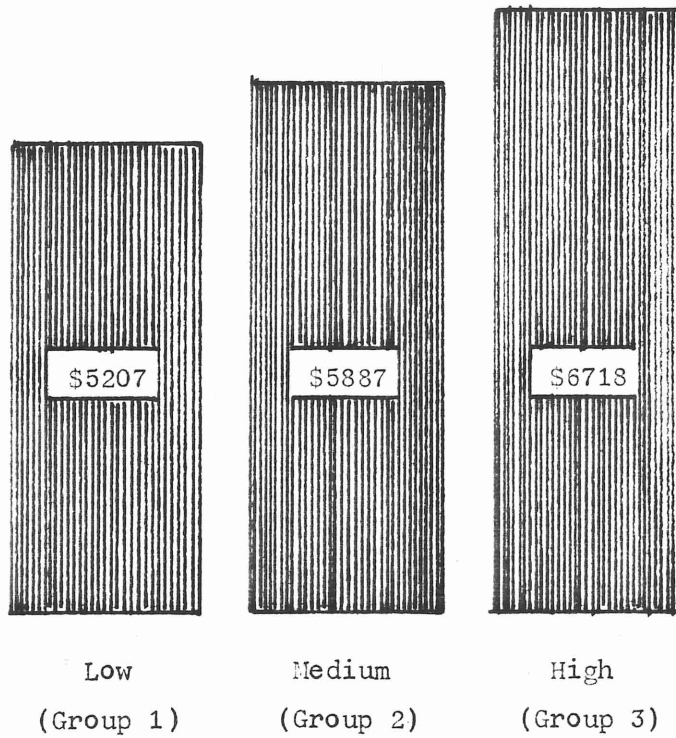


FIGURE 7

Average Earnings of Unrelated Females,  
by Relative Surplus Group

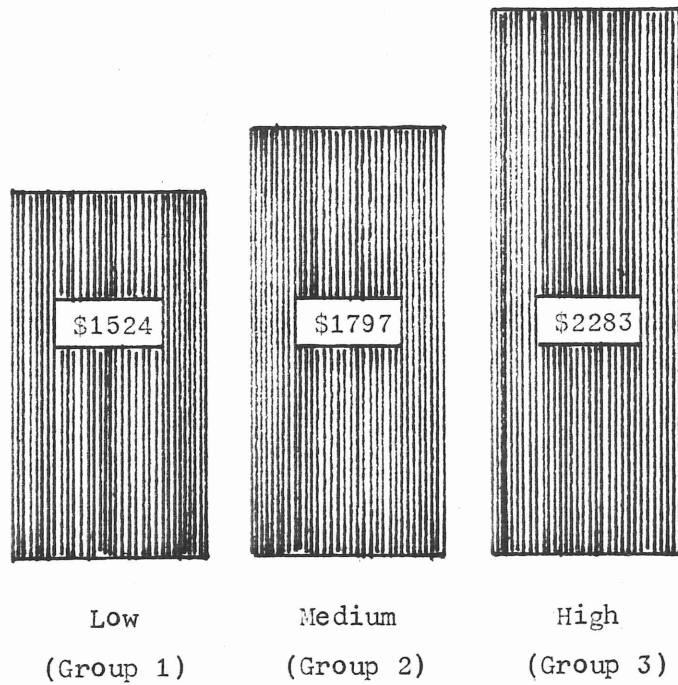


FIGURE 3

Average Income of Unrelated Females  
by Relative Surplus Group

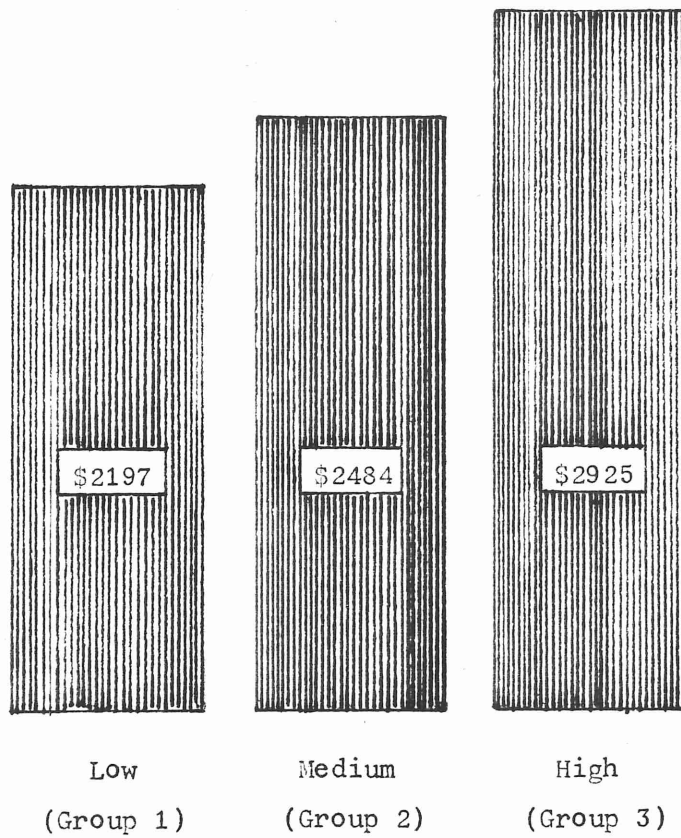




FIGURE 9

Average Income of All Females  
by Relative Surplus Group

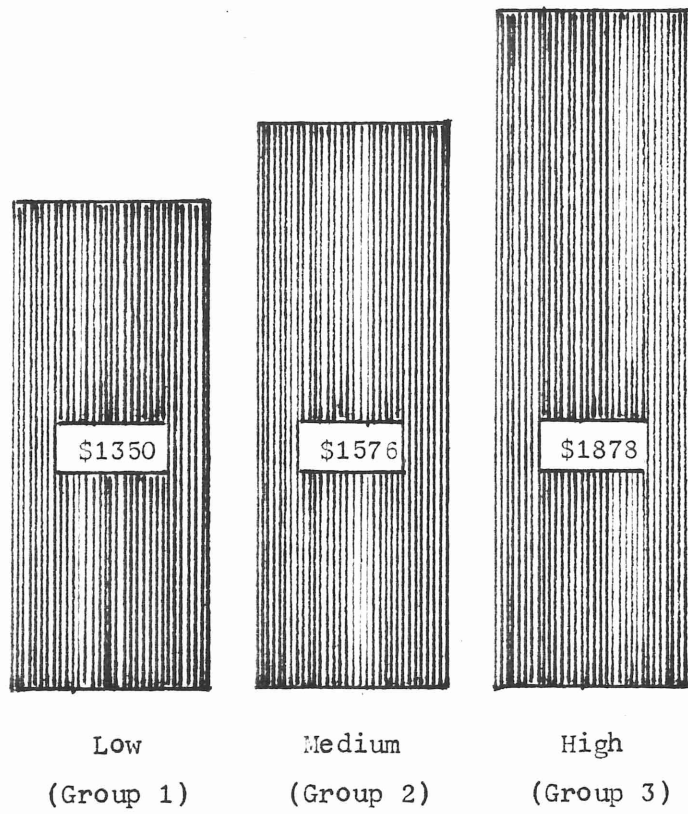
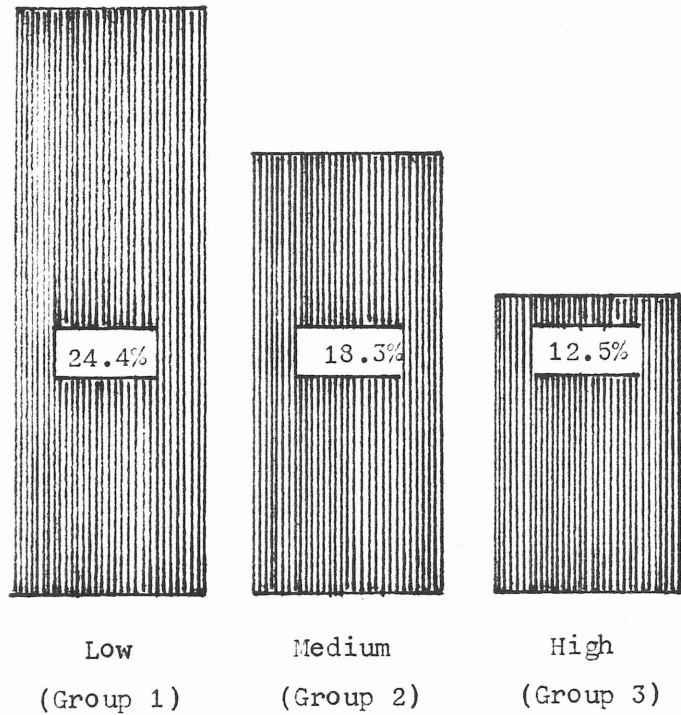


FIGURE 10

Mean Percent Labor Force in Agriculture,  
by Relative Surplus Group



as a consequence of public assistance, social security, etc. In order for such non-earning benefits to raise the total income of enough women far enough to cause the number of women with incomes of at least \$6,500 to be spuriously high only in the Group 3 counties, those counties would have to be far above the state average for such benefits. State means from these three sources are:

Social security or railroad retirement:	\$841.52
Public assistance and welfare:	\$1,245.50
Other income	\$1,153.92

These combined means could not put a woman into the \$6,500 category. It is obvious that there are cases of women who exceed the means. It is not possible for them to exceed the means in all three categories unless they have many children. Public assistance rulings on other income from any source would preclude an income of \$6,500 unless a number of children was present. If more than three children are present, the female-headed household will need more than the \$6,500 considered to be the standard low level income for four people. Further, the number of households with dependent children who receive social security is probably small. Also, the number of families receiving social security in excess of \$6,500 is likely to be small. Even considering that the range over counties of mean amounts of these benefits is \$425 for social security and \$1,764 for public assistance, we will not find many female-headed households with sufficient benefit income to hit the \$6,500 threshold.

Because we could not exclude income from social security, public assistance and other sources from total income of women, it likely that we have slightly overestimated the job market by using the \$6,500 cut-off, since some of these three types of income might contribute to incomes over \$6,500. However, we have attempted to demonstrate that such overestimation should not occur just in the high relative surplus counties, so should

not invalidate conclusions reached from the discriminant analysis.

#### Policy Recommendations

Policy makers will, in future, have to examine the vagaries of particular areas in terms of possible jobs that pay adequately and are available to females who head households. When 64 % of the counties in the state are unable to provide employment at an adequate earning level, county managers will either have to look to public assistance or look for industries that will maintain the female-headed households. As stated in the introduction, the likelihood of female-headed households being poverty stricken is higher than for other categories of households. Perhaps it is time for counties to consider their options in terms of bringing in industries, and make sure those industries will provide an adequate income for female-headed families. The only other option is to change the sex-typing of existing jobs so that more women who need jobs to support families have an opportunity to do so. This is not viewed as a likely or even preferable alternative, since it merely reduces the proportion of jobs available to men. It would be better to take a positive approach to enlarging the employment opportunities for women who need to support their families.

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APPENDIX 1

List of Counties by Relative Surplus Group

Counties by level of relative surplus

$$\text{RELSURP} = \frac{\text{women earning over } \$6,500 - \text{no of female heads of house}}{\text{no of female heads of house}}$$

Low group (-.57 to -.23)                      27 cases

001 Aitkin  
005 Becker  
011 BigStone  
021 Cass  
029 Clearwater  
041 Douglas  
055 Houston  
057 Hubbard  
069 Kittson  
071 Koochiching  
073 Lac qui Parle  
077 Lake of the Woods  
081 Lincoln  
087 Mahnomen  
089 Marshall  
093 Meeker  
097 Morrison  
107 Norman  
111 OtterTail  
119 Polk  
125 Red Lake  
143 Sibley  
149 Stevens  
151 Swift  
153 Todd  
159 Wadena  
167 Wilkin

Medium group (-.20 to .19)

37 cases

007 Beltrami  
009 Benton  
015 Brown  
017 Carlton  
023 Chippewa  
035 Crow Wing  
043 Faribault  
045 Fillmore  
047 Freeborn  
049 Goodhue  
051 Grant  
061 Itasca  
067 Kandiyohi  
075 Lake  
091 Martin  
095 Mille Lacs  
101 Murray  
103 Nicollet  
105 Nobles  
113 Pennington  
115 Pine  
117 Pipestone  
121 Pope  
127 Red Wood  
129 Renville  
131 Rice  
133 Rock  
135 Roseau  
137 St. Louis  
145 Stearns  
147 Steele  
157 Wabasha  
161 Waseca  
165 Watonwan  
169 Winona  
171 Wright  
173 Yellow Medicine



High group (.25 to .95)

23 cases

003 Anoka  
013 Blue Earth  
019 Carver  
025 Chisago  
027 Clay  
031 Cook  
033 Cottonwood  
037 Dakota  
039 Dodge  
053 Hennepin  
059 Isanti  
063 Jackson  
065 Kanabec  
079 Le Seur  
083 Lyon  
085 McLeod  
099 Mower  
109 Olmsted  
123 Ramsey  
139 Scott  
141 Sherburne  
155 Traverse  
163 Washington

APPENDIX 2

Discriminant Analysis Results

Standardized Discriminant Function Coefficients

Variable	Function 1	Function 2
Total females 16 or over	-.063	-.713
Percent labor force female	-.168	.762
Percent labor force agric.	.672	.766
Percent labor force bus.	.695	1.343
Percent househds female head	1.155	.414
Mean education of females	-.389	.500
Average earnings of females	-.129	-.069
Av. income of female head	-.243	-.001
Av earnings of unrelated fem.	-.197	-2.321
Av. income of unrelated fem.	.051	2.024
Av. income of all females	-1.309	-.532

Centroids of Groups in Reduced Space

Group 1	1.850	-.295
Group 2	.172	.353
Group 3	-2.448	-.222

Prediction Results

Actual Group	No of Cases	Predicted Group Membership		
		Group 1	Group 2	Group 3
Group 1	27	22 81.5%	5 18.5%	0 0%
Group 2	37	4 10.8%	29 78.4%	4 10.8%
Group 3	23	0 0%	4 17.4%	19 82.6%

80.5% of cases correctly classified

Chi-square = 86.948      Significance = .000