3-1-1963

The Dakota Indian Economy: Factors Associated with Success in Ranching

V. Malan

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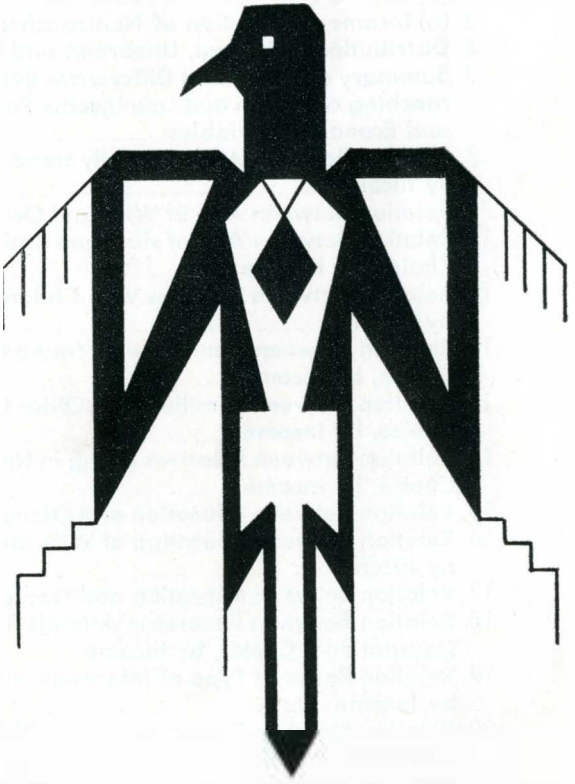
Bulletin 509
March 1963

THE DAKOTA INDIAN ECONOMY



Missouri River Basin Investigations Project, Bureau of Indian Affairs, United States Department of Interior, under research contract with

Rural Sociology Department
AGRICULTURAL EXPERIMENT STATION
South Dakota State College, Brookings

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Factors Associated With Success in Ranching

By Vernon Malan*

I. Introduction to Pine Ridge Study

The Problem

The sharpest cultural contrasts in modern America are between rural folk societies and the urban areas of mass culture.[1] This contrariety is accentuated in the traditional community of the isolated reservation, where the Indian people are submerged in a familiar way of life that is antithetical to the very concept of urbanism.

While on the South Dakota reservations some individuals judge their status on the basis of their familiarity with the modern urban ways, the majority oppose measurements of success which are weighed in the values of a money economy. They reject the orientation of the rural middle class which increasingly strives to emulate the "city folk" and derives their notion of "city ways" through channels of communications originating in the great metropolitan centers.

Modern Trends Spreading

The rural-urban dichotomy appears to be vanishing from the larger American scene. Industrial technology and modernization are diffusing from the cities into the hinterland and rapidly erasing the earlier distinctions. The great explosion of population into the suburban areas in the last decade has virtually eliminated any clear demarcation between town and country. These changes, nevertheless, serve only to exaggerate the distinctiveness of the small, isolated pockets of resistance. These traditional communities stand in severe opposition to the larger society, because as innovations are introduced and adopted in other areas, they cling tenaciously to many of their folk characteristics inherited from earlier generations.

Good Study Setting

Folk communities provide a unique opportunity for the study of social change. The problem of this study is one phase in the process of social change, and seeks to discover an answer to the question: What are the social and economic factors which contribute to success

*Former associate rural sociologist, South Dakota State College Agricultural Experiment Station.

[1]Robert Redfield, **Tepoztlan, A Mexican Village,** Chicago: The University Press, 1930, p. 205.

in ranching on the Pine Ridge Indian Reservation? Since success in this investigation is measured in monetary terms the problem can be restated in terms of social change theory: What changes in the social and economic conditions of the Pine Ridge people are necessary antecedent or contributing factors to acceptance of the value of competitive economic success?

The Setting

The area studied was South Dakota's largest and most populous Indian Reservation – Pine Ridge. Located in the semi-arid country west of the Missouri River, the inhabitants of some Pine Ridge communities have been reluctant to give up the basic orientation of the Dakota culture, while assimilating most of the material elements of their rural, non-Indian neighbors. These islands of folk culture are united by remnants of the kinship bonds which they inherited from their earlier tribal society. The more traditional communities are found huddled along the meandering streams that interlace the outlying reservation areas.

Once Proud Warriors

The people of Pine Ridge are vestigal fragments of the once proud Teton Dakota tribes which dominated the northern plains, and because of their prolonged and fierce resistance to the invasion of the frontiersman, became a stereotype symbolizing all American Indians. They were known as the dreaded "Sioux" whose warriors fought desperately against extermination and were led by the brilliant exploits of Crazy Horse and Red Cloud. Their heritage was marred only by their final subjugation—the gradual destruction of a brave people overwhelmed by the unyielding force of the westward advance of the American frontier.

The culture of the Pine Ridge reservation is intermediate between the traditional Dakota camp circle and the modern American city. It is in the process of gradual transition from the extreme folk community, possessing the traits which Redfield describes (self-sufficiency, unwritten social heritage, and intimate and personal knowledge) to the ideals of the non-reservation world defined "in terms of modern city civilization."[2] Those residents of Pine Ridge who are at the modern end of this cultural continuum may be regarded as assimilated, since they have escaped the bonds of folk society.

The Plan of Study

While the measurement of cultural transition was undertaken with imprecise instruments which could not possibly register the finer nuances of social change, there were certain gross differences between these two extremes (folk and modern societies) that were readily revealed by the available instruments. The division of families on the basis of their participation or non-participation in ranching was selected as the primary factor, distinguishing the residents of Pine Ridge in their choice of

[2] **Ibid.**, p. 217.

livelihood; the ranching and non-ranching populations are compared and analyzed in part II of this bulletin.

Economic Success Measured

A resulting factor, subsequent to the choice of occupation, was introduced at this juncture to determine its influence on the previously exposed relationships. This secondary factor was economic success, and it was defined by the standards of non-Indian society, and measured as earned income reported for each household. An analysis of the factors which were associated with the economic success of the ranching and non-ranching populations on Pine Ridge is attempted in part III.

The final section is designed as a tentative method for predicting the probabilities of economic success of Pine Ridge residents on the basis of the characteristics of individuals. Recommendations for implementing rehabilitation programs have been suggested on the basis of the conclusions from this research, and predicated on the most efficient utilization of the human resources in the economic development of the Pine Ridge communities.

The Hypothesis

The proposition which was tested in this study can be stated in this general hypothesis: In the process of transition from folk to modern society there are specified individual characteristics associated with economic success or failure in the dominant society. The purpose of this study was to identify these "specified individual traits" and to use them for predictive ends. The field work was completed during the spring and summer of 1960 for these two Indian groups on the Pine Ridge reservation:

(1) **The non-ranchers:** The first group interviewed was selected from non-ranching communities on the reservation, representing various levels of acceptance of non-Indian values. Once the communities had been determined, an effort was made to interview all of the resident family heads. The sample of 220 completed schedules represented about 10% of the estimated total of 2500 families living on Pine Ridge. The actual field interviewing was accomplished by a resident of one of the communities who had achieved a position of leadership and prestige among his own people.[3]

(2) **The ranchers:** The second sample was taken from the total of all those engaged in ranching enterprises on the reservation. In

[3]There are advantages and disadvantages associated with having the interviewing done by a community leader. Taking the latter first: He may have his own prejudices catered to by the respondents and /or unwittingly lead the interviewee to desired responses. The advantages of having a member of the community to do the interviewing were in his ability to speak the language, gain rapport, and recognize possible distortion of the information given by the respondent. A participant observer who has been trained in objectivity to recognize his own biases may be less likely to lead into errors of judgment and interpretation than an outsider.

order to qualify as a rancher, the family head had to own 50 or more cattle, and then an effort was made by the interviewers to contact everyone engaged in such a cattle operation at the time. The ninety-five schedules obtained in this base were taken by a functionary of a government agency and an employee of State College trained in interviewing and farm management.

The schedule of questions in both cases (i.e., for both non-ranchers and ranchers) was basically designed to determine the social and economic factors associated with economic success. On this problem the questions were indentical for both groups. In addition, the schedule administered to the non-ranchers included questions regarding their social and family relationships in the community, and the ranching schedule contained separate questions on the level and degree of ranch management. The community and social data collected has been analyzed in a previous bulletin.[4]

System Unique

The system of analysis which has been designed for purposes of this Pine Ridge study has some unique features which will be revealed in subsequent sections.

In part II, the comparison of ranching and non-ranching populations should demonstrate that some differences in social and economic conditions on the reservation were a matter of occupational opportunities, and this in turn was a crucial factor in social change.

The introduction of the factor of economic success in part III should provide elaboration of the influence of the social and economic factors in creating the conditions necessary for success, and finally, in part IV, if some of these factors can be isolated as causal for individual success, it may be that a method of prediction can be devised which will be useful in planning future economic development programs for Pine Ridge Reservation.

II. Ranching and Non-Ranchers

Range land constituted one of the most important economic assets on the Pine Ridge Reservation. At least two-thirds of the land area was devoted primarily to ranching, but less than one-third was controlled by Indian ranchers. The under-utilization of their land resources by the Pine Ridge people resulted from a combination of factors including lack of capital, uneconomic land holdings, leasing policies, and the absence of management skills. The gradual eroding away of the reservation land base has been apparent in recent years as many of the Pine Ridge residents were obligated to sell their

[4]Vernon D. Malan and Ernest L. Schusky, **The Dakota Indian Community,** South Dakota Experiment Station Bulletin No. 606, Brookings, South Dakota.

land in order to obtain the cash to meet their current subsistence needs.

Ranching Held Interest

Ranching as an occupation seemed to have a stronger appeal to the Indian people during the early reservation period, and cooperative cattle ventures played a prominent part in the adjustment required as the Pine Ridge people began to change from subsistence based on the hunting of buffalo to a more settled reservation economy. Historically there was evidence that cattle ranching might have created a degree of self-sufficiency for the Pine Ridge families that would have eased their transition from the culture of the camp circle to the ways of his non-Indian neighbors.[5] But the path of assimilation was fraught with many roadblocks. A variety of planned and unplanned obstacles caused the cooperative herds to be confiscated, and the Pine Ridge people sank back into destitution and dependency upon a paternalistic government. Although all were not lost, the few who managed to survive were severely handicapped in their individual cattle enterprises by the inroads of depression, inadequate credit, and unfriendly non-Indian ranchers who resented the competition of the reservation operators.

Have Special Characteristics

The ranchers on Pine Ridge today are in some cases individuals who have survived through the difficult earlier times or have been able through government loans and rehabilitation programs to acquire some measure of independence from the non-ranching Pine Ridge communities. They would appear to have certain distinctive personal characteristics which mark them off from the rank and file of the reservation residents. It was possible for them to defy traditional values and orientations and obtain a degree of success in the competitive struggle for existence that is termed the "cattle economy of western South Dakota." What are the distinctive factors which separate the rancher from the non-rancher on Pine Ridge?

Social Variables

Age—The differences in age between ranchers and non-ranchers did not appear to be significant. In the former case the family heads were slightly younger than in the latter, but the difference averaged less than two years. The wives of both ranchers and non-ranchers were virtually the same age, and thus there was a slightly greater difference between the age of husband and wife among the non-ranchers than among the ranchers.

Family—The most noticeable difference in regard to family composition was the larger number of young children in the non-ranching households. This fact suggests a tendency on the part of the younger ranchers to limit births while the birth rate has remained high among non-ranchers. If there has

[5]Gordon Macgregor, **Warriors Without Weapons,** and H. D. McCullough, **Economy of the Pine Ridge Reservation.**

been a permanent shift in attitude toward planning family size, it can be surmised that in the next generation the size of the ranching family will decline to a point well below the size of the non-ranching family.

Irregular Households Common

Another apparent difference was the number of irregular households in the non-ranching sample. An irregular household was defined as one possessing non-family individuals, adopted or foster children, or other relatives, in addition to the usual husband, wife, and children. Only 17.8% of the ranching households were irregular in comparison with 32.4% of the non-ranching households.[6]

Another striking difference in family composition was the virtual absence of single individuals and the scarcity of families lacking one spouse among the ranchers. The percentage of families composed of either husband and wife or of husband and wife and children, greatly exceed the proportion of such families among the non-ranchers (78% for ranchers to 47% for non-ranchers). There was a difference of statistical significance between rancher and non-rancher in this regard (chi-square was 26.50).

Education — Educational differences were very apparent when the mean number of years completed was 9.2 for ranchers compared with 7.5 for non-ranchers; this difference was exaggerated when the spouses were considered, for the means were 11.0 for ranchers and 7.4 for non-ranchers. The proportion of non-ranchers who did not attend beyond the fourth grade was five times as great as the number of ranchers. The percentage of high school graduates among the ranchers was nearly twice as great as among the non-ranchers.

Migration—Mobility was another social factor which was explored, and it was discovered that while the two groups differed little in their experience with living in a non-reservation environment, the non-ranchers had slightly more favorable attitudes toward migrating. This might be anticipated because the ranching population would probably have been more attached to their cattle operation, whereas the non-ranchers would have tended to be more mobile because they lacked any such attachment to land or to job. In addition, the non-ranchers appeared to be more willing to move greater distances. Among those ranchers who expressed an interest in migrating, about one-half preferred to stay in the state of South Dakota, while the non-ranchers were more willing to move out of the state, some even desiring to move to Chicago or Denver if employment were available.

Non-ranchers Better Migrators

The existence of relatives living off the reservation did not appear to offer an incentive to the ranchers to leave the reservation. In

[6]The difference was statistically significant. (Chi-square equaled 7.01, significant at the five percent level with one degree of freedom.)

Table 1. Age Distribution of Respondents and Wives

	Ranchers				Non-ranchers					
	Head		Wife		Head		Wife		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Under 20	0	0.0	1	1.4	0	0.0	2	1.4	3	.6
20-29	6	6.3	9	12.1	21	9.6	22	15.0	58	10.8
30-39	19	20.0	16	21.6	43	19.5	38	25.9	116	21.6
40-49	29	30.5	22	29.7	45	20.5	30	20.4	126	23.5
50-59	19	20.0	14	18.9	37	16.8	28	19.0	98	18.3
60-69	17	17.9	10	13.5	41	18.6	18	12.2	86	16.0
70-79	3	3.2	1	1.4	28	12.7	8	5.4	40	7.5
80 or over	2	2.1	1	1.4	5	2.3	1	.7	9	1.7
	95	100.0	74	100.0	220	100.0	147	100.0	536	100.0
Average age	49.0		45.5		51.2		45.3		48.4	

Table 2. Size and Composition of Ranching Families and Households

Number of persons	Single males		Single females		Husband-wife		Husband-wife-children		Mother-children		Father-children		Irregular		Households	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	2	2.1	—	—	—	—	—	—	—	—	—	—	—	—	2	2.1
2	—	—	—	—	15	15.8	—	—	—	—	2	2.1	—	—	17	17.9
3	—	—	—	—	—	—	17	17.9	—	—	1	1.0	4	4.2	21	22.1
4	—	—	—	—	—	—	9	9.5	—	—	—	—	4	4.2	13	13.7
5	—	—	—	—	—	—	13	13.7	—	—	—	—	5	5.2	18	18.9
6	—	—	—	—	—	—	6	6.3	—	—	—	—	1	1.0	7	7.4
7	—	—	—	—	—	—	3	3.2	—	—	—	—	2	2.1	5	5.3
8	—	—	—	—	—	—	4	4.2	—	—	—	—	0	0.0	4	4.2
9	—	—	—	—	—	—	3	3.2	—	—	—	—	1	1.1	4	4.2
10 over	—	—	—	—	—	—	4	4.2	—	—	—	—	1	1.1	4	4.2
	2	2.1	0	0.0	15	15.8	59	62.2	0	0.0	3	3.1	17	17.9	95	100.0
Mean size =							5.3						5.4		4.5	

fact, the non-ranchers in a significantly larger number of cases had no relatives living off the reservation. Yet they expressed more interest in migrating and were more likely to take steps, such as visiting a relocation officer, that might have been considered as a preliminary move in that direction.

It was, however, apparent that some of those who were most inadequately prepared, socially and economically, to leave the reservation, were most anxious to move if they had the assistance of a relocation program. They may be willing to accept temporary financial help and guidance simply because they find themselves in a hopeless situation and were reaching for some straw that might provide surcease for their empty stomachs. Realistically, this sort of relocatee had little chance of success, and contributed to the constantly increasing number of families who had returned to the reservation when their source of subsistence disappeared.

Health—The non-ranching sample was marked by one significant problem that was of minor importance among the ranching population. This was the exceedingly large number of family heads who reported that health problems prevented their full-time employment. It could be anticipated that, since more than half of the adult males in the non-ranching group claimed that they were handicapped by poor health, their employability was strictly limited, and they would be at least partially dependent on welfare programs in order to survive. Likewise, they could hardly be expected to choose ranching as an occupation. The rancher, in turn, might be forced to abandon his enterprise if his health were inadequate to meet the strenuous requirements of operating a cattle enterprise.

Military service—There was a slightly greater percentage of ranchers than non-ranchers who were veterans of the military service (35.8% to 29.1%), but this difference was not statistically significant. There seemed to be no guarantee that military service provided the Pine Ridge youth with the skills and energy to compete successfully either on or off the reservation.

Economic Variables

Housing—Home ownership by the family head was in identical proportion for both ranchers and non-ranchers with about sixty percent of the homes in both cases being the property of the family living in the house. The statistical differences were in the type and condition of the homes. Nearly three-fourths of the homes of ranchers were of brick or frame construction, while more than half of the non-ranching homes were made of logs or tents or some inferior material. More than three-fourths of the non-ranchers' homes were judged to be average or below for housing conditions on the reservation, while nearly one-half of the ranchers' homes were estimated to be above average.

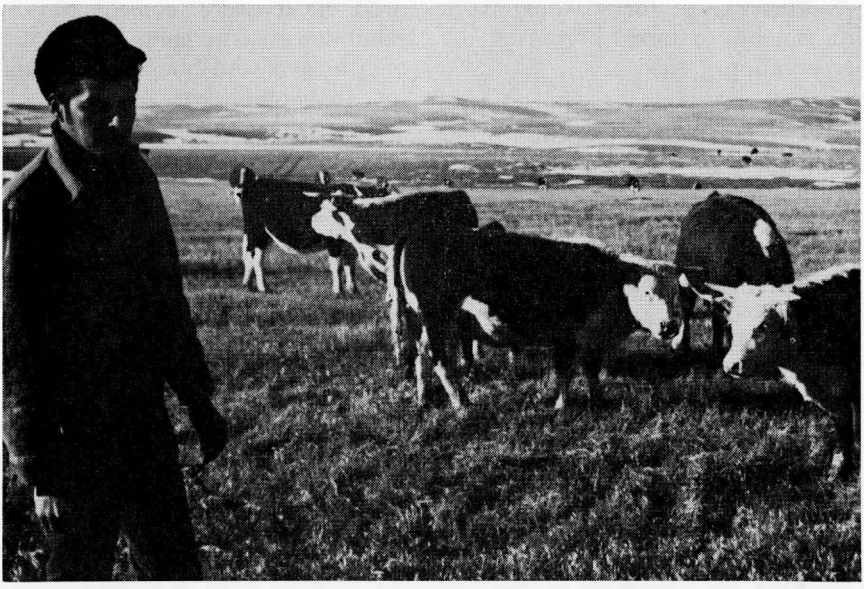
Employment—The variables chosen to measure employment all re-

Table 3. Education of Respondents and Wives

	Ranchers				Non-ranchers					
	Head		Wife		Head		Wife		Total	
Years of education	No.	%	No.	%	No.	%	No.	%	No.	%
0-4	1	1.1	4	5.2	33	15.3	24	16.6	62	11.8
4-8	41	46.0	23	30.4	116	53.7	71	48.9	251	47.7
8-12	42	47.2	43	56.6	64	29.6	47	32.4	196	37.3
Over 12	5	5.7	6	7.8	3	1.4	3	2.1	17	3.2
	89	100.0	76	100.0	216	100.0	145	100.0	526	100.0
Average years education	9.2		11.0		7.5		7.4		8.3	

Table 4. Work Preferences of Respondents

	Ranchers		Non-ranchers		Total	
	No.	%	No.	%	No.	%
Ranching	79	83.1	20	9.1	99	31.4
Farming	2	2.1	32	14.5	34	10.9
Skilled employment	3	3.2	40	18.2	43	13.7
Unskilled or semi-skilled	0	0.0	37	16.8	37	11.7
Semi-professsional/professional	3	3.2	16	7.3	19	6.0
Unable to work	2	2.1	69	31.4	71	22.5
No answer	6	6.3	6	2.7	12	3.8
	95	100.0	220	100.0	315	100.0



Although there was not much age difference between ranchers and non-ranchers, the ranchers did have smaller families, were much better educated, were better migrators, they reported they were in better health, and had better housing.

vealed significant differences between ranchers and non-ranchers. The latter were frequently unemployed, engaged in seasonal work, and those who were employed lacked experience in their present occupations. The question regarding work preference disclosed that among the non-ranchers nearly one-third of the respondents considered themselves unable to work because of age or physical disabilities, while the others were distributed in order of preference between skilled employment, unskilled or semi-skilled jobs, farming, ranching, and semi-professional or professional positions. The vast majority (83.1%) of the ranchers, obviously, preferred to remain in their chosen field.

Job Training—The opportunity for vocational training in the military service was in favor of the ranching sample, and those who had received this training were more likely to learn skills that contributed to their choice of livelihood. Other special training was also received more frequently by ranchers, although the difference was not statistically significant. The advantage that the ranchers had in job training was emphasized by their superior experience in their chosen occupation, and the fact that the reservation offers very little opportunity for untrained

workers except for seasonal work on ranches or farms bordering the reservation.

Ownership—The ranching population owned more land and other property than the non-ranchers as would be anticipated because of the necessary capital investment required for a cattle enterprise. Nevertheless, a minority of the non-ranchers owned small acreages of land which they usually had leased to a local rancher.

Debt—While they more frequently owned property, the ranchers also were more frequently in debt (about 60% to only 10% for the non-ranchers). The explanation for this finding was simply the necessity for nearly all of the ranchers to borrow money at some time to finance their operations (96.3% had received a loan). In the case of non-ranchers, loans were not usually requested because they realized that without security for the loan their applications would normally be rejected. Because they applied less frequently for loans, they were less likely to be refused. The ranchers, requiring credit constantly in order to operate their ranching businesses, requested more loans, received more loans, but were also refused more loans.

Ranching—Two questions which might reveal something of the attitudes and knowledge about ranching were included in the schedule:

One question required an estimate of the number of cows needed to start ranching. If one hundred head were considered the minimum requirement,[7] more than one-third of the non-ranchers and less than one-fourth of the ranchers estimated a figure below the minimum, but this difference was not statistically significant at the 5% level.

An expression of attitudes toward spending tribal money was given by the respondents. About 70% of the ranchers and 50% of the non-ranchers suggested that any such funds should be used for purchasing land or giving loans, while the others believed that it should be distributed to individuals in a direct per capita payment. The advantages of land purchases or loans to ranching appeared to outweigh direct cash payments which might be dissipated in purchasing consumer goods needed for immediate subsistence. In this expression of attitudes the two groups were significantly different, and the difference was probably a result of the economic need among the non-ranchers which virtually forced them to prefer per capita payments.

Supplementary Income—The ranching population appeared to be in a superior economic position as a result of supplementary income provided by employment of

[7]The choice of 100 head is an arbitrary figure, but taken as a minimum requirement, can reveal differences in attitude and knowledge between the two groups. Actually, other variables, such as willingness to sacrifice living standards, obtain part-time work, and supplement cattle operations with other marketable crops, would contribute to determination of a minimum number.

wives and other relatives living in the household. The employment of the ranching wife was more likely to be skilled than the work of the non-ranching wife, but there was little difference regarding the employment of the wife prior to marriage.

High and Low Income

Income data reported on questionnaires has been subject to much scrutiny and criticism because respondents are usually reluctant to report as completely and accurately as careful analysis demands. This caution was likewise advisable in the analysis of the income data reported here and must be considered a major limitation of the study. The gross income from the sale of crops and livestock of the ranchers was divided in half to offset their necessary expenses of operation. This adjusted income was utilized to provide a rough measurement of comparison between those who had incomes above the average and those below.

Ranchers Income Much Higher

The mean earned income of the non-ranchers was $819, compared with $5257 for the ranchers. When the reported incomes of ranchers and non-ranchers were combined, the mean was $2158. This figure was taken as a dividing point in dichotomizing the sample population into (a) high income respondents with earned income above the mean and (b) low income respondents with earned income below this mean.

Dividing the ranchers and non-ranchers on the basis of their inclusion in the high or low income category, the following results were obtained:

	Ranchers	Non-ranchers
High income	69 (72.6%)	32 (14.5%)
Low income	26 (27.4%)	188 (85.5%)
	95 (100.0%)	220 (100.0%)

The value of x^2 for this distribution was 102.77 and was statistically significant. This finding verified the contention that on the average the ranchers were much better off economically than the non-ranchers. Further analysis of income distribution from various sources is provided in table 5.

Problem of Income Revealed

The economic disparity between ranchers and non-ranchers was emphasized by these figures: (a) The mean income from all sources (by all family members) was $5428.68. for the ranchers compared with $1842.29 for non-ranchers; (b) 72.7% of the non-ranchers had incomes of less than $2000, while only 23.1% of the ranchers were in this low income classification, (c) 22.1% of the ranchers compared with 2.8% of the non-ranchers had incomes over $7000; (d) the ranchers received the vast majority of their income (mean $5257.44) from general earned sources (sale of crops or livestock and wages) while the non-ranchers received more than half of their income (mean $1022.90) from unearned sources (leases, welfare and other); and the median family income for South Dakota in

Table 5a. Income Distribution of Ranchers

Income	Sale of crop and livestock		Wages		Leases		Welfare		Other		All sources	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0- 999	15	15.8	80	84.2	92	96.8	95	100.0	92	96.9	6	6.3
1,000-1,999	19	20.0	4	4.2	1	1.1	—	—	3	3.1	16	16.8
2,000-2,999	12	12.6	4	4.2	2	2.1	—	—	—	—	15	15.8
3,000-3,999	9	9.5	4	4.2	0	0.0	—	—	—	—	9	9.5
4,000-4,999	11	11.6	2	2.1	0	0.0	—	—	—	—	15	15.8
5,000-6,999	12	12.6	1	1.1	0	0.0	—	—	—	—	13	13.7
7,000-over	17	17.9	0	0.0	0	0.0	—	—	—	—	21	22.1
No answer	0	0.0	0	0.0	0	0.0	—	—	—	—	0	0.0
	95	100.0	95	100.0	95	100.0	95	100.0	95	100.0	95	100.0
Mean income=												$5,428.68

Table 5b. Income Distribution of Non-ranchers

Income	Sale of crop and livestock		Wages		Leases		Welfare		Other		All sources	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0-999	216	98.0	163	74.1	215	97.7	184	83.6	194	88.1	81	36.8
1,000-1,999	1	.5	24	10.9	2	.9	31	14.1	11	5.0	79	35.9
2,000-2,999	1	.5	13	5.9	1	.5	4	1.8	5	2.3	23	10.4
3,000-3,999	0	0.0	15	6.8	0	0.0	0	0.0	2	.9	17	7.7
4,000-4,999	1	.5	1	.5	0	0.0	0	0.0	1	.5	9	4.1
5,000-6,999	1	.5	2	.9	0	0.0	0	0.0	2	.9	5	2.3
7,000 over	0	0.0	0	0.0	0	0.0	0	0.0	3	1.4	6	2.8
No answer	0	0.0	2	.9	2	.9	1	.5	2	.9	0	0.0
	220	100.0	220	100.0	220	100.0	220	100.0	220	100.0	220	100.0
Mean Income =												$1,842.29

1959 was $4,251.12. A high percent—93.6, of the non-ranchers, and 52.7% of the ranchers were below the median. These figures suggest that a low level of living was certainly the customary condition for the non-ranchers and for the majority of the ranchers as well (table 6).[8]

The high and low income groups, obtained by dichotomizing the total sample above and below the mean earned income, were related to each of the same social and economic variables reported above for the ranching and non-ranching groups. Utilizing again the chi-square measurement of statistical differences, it was discovered that the high income group was significantly different from the low income on a great number of the same variables as was the case when the differences between ranchers and non-ranchers were determined. The summary table (table 7) lists all of the measured variables, and those values of chi-square (x^2) which are starred were significant at the 5% level with one degree of freedom.

Comparison of the ranching and non-ranching populations with the high-low income classification revealed that some significant differences were found only in one classification. In other cases both occupational choice and income seemed to be associated with the selected variable. The question which remained unanswered at this point was the interrelationship of these two (the dependent variable—occupational choice—and the test variable—income) with the social and economic variable selected for observation.

Description of the following steps have been completed in this chapter: (a) ranchers and non-ranchers were compared on a variety of social and economic variables; (b) income level was found to be significantly associated with occupational choice; and (c) the high and low income groups were compared and found to differ significantly on many of the social and economic variables.

The remaining task was clarification of the interrelationship of occupational choice and income on each social and economic variable, which will be undertaken in the next section.

III. Determining Economic Success

During the reservation period, the Dakota Indians have been subjected to any number of studies, surveys, and investigations. Social scientists and government functionaries have collected voluminous statistics and impressive documents, and the overwhelming conclusion from the economic evidence accumulated has been that their most significant problems stemmed from their condition of

[8]Marvin P. Riley, **South Dakota Population and Farm Census Facts**, Rural Sociology Department, South Dakota State College, Circular No. 151, January, 1962.

Table 6. Distribution of Earned, Unearned, and Total Income of Respondents

Income	Ranchers				Non-ranchers				Total income	
	Earned income		Unearned income		Earned income		Unearned income			
	No.	%	No.	%	No.	%	No.	%	No.	%
0-999	7	7.4	91	95.8	164	74.5	146	66.4	87	27.6
1,000-1999	17	17.9	2	2.1	22	10.0	50	22.7	95	30.2
2,000-2,999	12	12.6	2	2.1	13	5.9	18	5.4	38	12.1
3,000-3,999	11	11.6	0	0.0	16	7.3	4	1.8	26	8.2
4,000-4,999	14	14.7	0	0.0	1	.5	3	1.4	24	7.6
5,000-6,999	14	14.7	0	0.0	3	1.3	0	0.0	18	5.7
7,000 over	20	21.1	0	0.0	1	.5	5	2.3	27	8.6
	95	100.0	95	100.0	220	100.0	220	100.0	315	100.0
Mean income=	$5,257.44		$171.24		$819.39		$1,022.90		$2,923.81	

Table 7. Summary of Significant Differences Between Ranching and Non-Ranching and High and Low Income Populations on Selected Social and Economic Variables

Selected variables	Values of chi square (x^2)	
Social variables	**Ranching/ non-ranching**	**High income/ low-income**
1. Age		
a. Of family head	1.45	9.75*
b. Of spouse	.11	5.89*
c. Of family head and spouse	1.48	16.65*
2. Family		
a. With children	.03	.55
b. With children under five	14.39*	3.91*
c. With children over five	.67	4.40*
d. With relatives in household	.26	3.81
3. Education		
a. Of family head	12.53*	37.57*
b. Of spouse	18.25*	29.23*
4. Migration		
a. Experience living off reservation	.04	5.55*
b. Favorable attitude towards migration	3.08	.20
c. Type of migration preferred	.95	4.01*
d. Communication with relocation officer	11.54*	1.60
e. Relatives living off reservation	12.66*	17.82*
f. To Denver or Chicago for job	6.55*	1.71
5. Health		
a. Problems preventing full-time work	25.15*	32.56*
6. Military service		
a. Of head	1.39	2.98
Economic variables	**Ranching/ non-ranching**	**High income/ low income**
1. Housing		
a. Home ownership	.00	.42
b. Type of housing	21.60*	35.18*
c.Condition of house	18.54*	49.42*
2. Employment		
a. Status (employed/unemployed)	32.01*	16.56*
b. Type (full-time/seasonal)	10.57*	27.18*
c. Experience in present job	28.56*	31.21*
d. Work preference	122.36*	40.72*
3. Job training		
a. In service	4.96*	10.08*
b. Type of service training	.79	1.94
c. Special courses	2.00	3.86*
4. Ownership		
a. Of land	6.73*	1.63
b. Of other property	15.74*	10.86*

5. Debt		
a. Owe money	81.90*	60.37*
b. Loans received	145.39*	83.76*
c. Loans refused	73.29*	24.76*
6. Ranching		
a. Estimate of cows needed to start	3.70	6.84*
b. Attitude toward spending tribal money	11.67*	1.80
7. Supplementary income		
a. Wife working	4.57*	33.56*
b. Type of work of wife	3.83*	3.29
c. Wife worked before marriage	.62	33.86*
d. Relatives working	18.61*	5.11*

*Significant at the 5 percent level with 1 degree of freedom.

extreme poverty. Studies of considerable merit have proved what was obvious to the most superficial observer—The Dakota Indians were surviving on the lowest level of subsistence.[9]

Data Must Be Studied

The social scientist still has a major task before him, and this is the perilous task of evaluating the accumulated economic data and presenting significant and logical reasons for the plight of the Dakota Indians. The proposed contribution of this study is to add to the segment of knowledge available about the causes of poverty on the reservation. In order to accomplish this purpose, it was first necessary to arbitrarily establish a criterion of economic success against which the reservation residents could be measured. The assumption was made that, if the family had an earned income exceeding the mean earned income for the whole reservation sample, they were relatively more successful economically, than their reservation "brothers" who were below the sample mean. Economic success in this study then was defined as earned income exceeding the combined sample average of $2158. While it was obvious that this might not be regarded as a "high" income in a non-reservation environment, it had a statistical basis within the reservation milieu.

Determing Factors of Success

The analysis in this section was designed to determine those social and economic variables which were associated with economic success as defined in the preceding paragraph. The method described in the introductory section of this re-

[9]For examples: Hagen, E. E., and Schaw, L. C., "The Sioux on the Reservations," Center for International Studies, Massachusetts Institute of Technology, pp. 1-13; McPartland, T. S., "A Preliminary Socio-economic Study of the Sisseton-Wahpeton Sioux,"; and the U. S. Department of Interior, Bureau of Indian Affairs, "Cultural and Economic Status of the Sioux People, 1955, Standing Rock Reservation of North and South Dakota" and "Use and Effects of Funds Received by Indians in Connection with Three Large Missouri River Construction Projects," pp. 4-15.

port was utilized to examine each factor independently to determine if it fulfilled the requirements of a condition, contingency, spurious relationship, or interpretation. The search for causal factors of economic success was guided by the formula explained earlier and repeated here: In those cases in which there was an original association between the independent (X) and the dependent (Y) variables and when an antecedent test variable (T) was introduced the partial relationship between (X) and (Y) did not disappear, a causal relationship was assumed.

Social Variables

Age—The division of family heads into groups, below and above 50 years of age revealed little difference between ranchers and non-ranchers, but it was statistically significant for high and low income groups. More family heads below 50 years were in the high income category than could be predicted as a result of chance. Thus, in table 8 it can be seen that age was more associated with income than with occupational choice, since the value of the phi coefficient in both the income partials was higher than in the original relationship between occupational choice and age of family head.

This variable was a contingency in which the value of the phi coefficient was increased in both of the partials by the introduction of the intervening test variable. It was thus possible to conclude that both ranchers and non-ranchers are more likely to be economically successful if they are under 50.

The same result was observed when the age of the spouse of the family head was studied (table 9.)

And, then obviously, if the ages of the family heads and their spouses were combined, the result could not change. Younger couples had a greater opportunity for economic success than those families in which both husband and wife were over 50 (table 10).

Family—The proportion of ranching and non-ranching families with children did not differ significantly. There was a slight increase in the phi coefficient in both the partials indicating that higher income was a condition which tended to encourage families to have children (table 11).

Children under 5 were found more frequently in non-ranching families than in ranching families. The result of studying table 12 was that ranching was more associated with having young children than income; however, since the ranchers were younger in age than the non-ranchers, this may have been a condition which contributed to the younger age of their children.

The trend seemed to be reversed in the case of children over five. In this case income was more associated with older children in the family than occupational choice, and this was most evident among the high income ranchers. Despite the age differential, they were more likely to have older children than was the case for low income

ranchers or either high and low income non-ranchers (table 13).

There was little tendency for non-ranchers to more frequently have relatives in addition to immediate family members living within the household. The low income families among both ranchers and non-ranchers were more likely to have relatives living in their homes, but the difference was not quite sufficient to be statistically significant at the five percent level ($x^2=3.81$) with one degree of freedom. It could be interpreted to mean that as the income increases there was less likelihood of the family caring for needy relatives or vice-versa (table 14).

Education—Education was discovered to be a causal factor in economic success. There was a significant difference between ranchers and non-ranchers in the proportion of family heads with high and low education (the dividing point was completion of the eighth grade). The differences were even greater when income was introduced, the values of the phi coefficient increased in both the partials, but increased the most in the non-ranching category (table 15).

Similar results were found regarding the education of the spouse. The value of the phi coefficient increased in the non-ranching partial but decreased in the ranching partial, suggesting that while an educated wife contributed to economic success for the non-rancher, it was a less significant condition of success for the rancher (table 16).

Migration—Experience living off the reservation did not differ significantly between ranchers and non-ranchers, but it was a distinguishing factor between high and low income groups. It was apparent that some non-reservation living was likely to contribute to economic success, as the value of the phi-coefficient increased in both partials.

Attitudes favorable to migration were more common among non-ranchers than among ranchers, but the difference was not statistically significant. Low income ranchers were slightly more likely to have favorable attitudes than high income ranchers. Among the non-ranchers high income reversed the situation, and the greatest proportion with favorable attitudes toward migration were found among the high income non-ranchers (table 18).

Ranchers who were willing to migrate showed greater inclination to move to another state, but when income was introduced the trend was reversed, and for both ranchers and non-ranchers high income was significantly related to intrastate migration (table 19).

The interest in migration among non-ranchers was also indicated by the fact that a significantly larger proportion had contacted a relocation officer. The difference was accentuated when income was introduced for both ranchers and non-ranchers (table 20).

The ranching sample in a significantly larger number of cases had relatives living off the reservation than the non-ranchers. High

income increased the difference among the ranchers, but caused the value of the phi coefficient to decrease in the non-ranching partial (table 21).

Another measure of willingness to migrate was suggested by the question, "Are you willing to move to Chicago or Denver to find a job?" The non-ranchers indicated in significantly larger numbers a positive reply to this question. When the income variable was introduced the value of the phi coefficient tended to decrease (table 22).

Health—Problems of health preventing full time employment were significantly more prevalent among the non-ranchers than in the ranching sample. The values of the phi coefficient in both the partials declined, indicating that if the respondent had a handicapping problem of health, he would be unlikely to select ranching as an occupation and thus his income would be primarily influenced by his occupational choice (table 23).

Military Service—Veteran status did not differ greatly for either the ranching-non-ranching or the high-low income dichotomy. The increase in the phi coefficients in the partials indicated that veteran status had some influence on economic status.

Economic Variables

Housing—Home ownership by the head of the family was in exactly the same percentage for both ranchers and non-ranchers. The high income ranchers were more likely to own their own homes than the low income ranchers, but in the case of the non-ranchers high income appeared to cause a decrease in home ownership by the family head (table 25).

The principal types of housing on the reservation were either frame or log construction. The more substantially built brick or frame homes were compared with log huts, tents, or other poorer dwellings, and a significantly greater proportion of the ranchers than non-ranchers enjoyed the better constructed homes. Income was a contributing factor for the ranchers, but decreased the association slightly among the non-ranchers (table 26).

Estimates of the condition of the house in terms of the reservation average indicated that the ranchers were more frequently living in the above average housing than the non-ranchers. In both of the partials the value of the phi coefficient increased, and thus income was judged to be the most essential factor in obtaining adequate housing facilities (table 27).

Employment—There was no unemployment in the ranching population, while more than one-fourth of the non-ranching sample was unemployed. For the ranchers, then income was negligible as a factor associated with employment, but for the non-ranchers the employment of the respondent contributed materially to his economic success (table 28).

The types of employment were categorized as full-time and seasonal, and again the ranchers were much more frequently engaged in

full-time work than the non-ranchers. In fact only about 40% of the non-ranchers enjoyed full-time employment. The value of the phi coefficient in the income partials decreased for the ranchers but increased for the non-ranchers, leading to the conclusion that full-time employment was crucial to the economic success of the non-ranchers (table 29).

Experience in the work in which the individual was engaged was presumed to be another variable which should contribute to economic success. The ranchers had a definite advantage in this situation. The non-ranchers apparently needed experience more in order to achieve a high income, and thus while the value of the phi coefficient decreased in both partials, it showed the greatest decline in the ranching partial although it did not completely disappear, indicating a slight degree of association (table 30).

Preference for ranching as the life work of the individual was the predominate viewpoint of the ranching sample, while less than one-fifth of the non-ranchers expressed a preference for this kind of employment. The relationship between occupational choice and preference for ranching was practically uninfluenced by income, since the differences tended to disappear for both ranchers and non-ranchers when they were divided into high and low income categories (table 31).

Job Training—The ranchers had more opportunities for training in the military service than the non-ranchers. Economic success in ranching was not greatly associated with the opportunity for such training, but it was more essential for the success of the non-ranchers (table 32).

For those who had service training, skills acquired in the service contributed more to the economic success of the non-ranchers (table 33).

The evidence regarding service training was corroborated by the findings regarding special training courses. It was logical to conclude that training for employment prior to selecting an occupation was much more essential to the non-rancher than to the rancher, who probably received his knowledge of his work by on-the-job experience (table 34).

Ownership—A significantly larger proportion of the ranching family heads owned the land on which they lived than the non-ranching heads. The relationship tended to disappear when the test variable was introduced, suggesting that income was an intervening factor which tended to vitiate the original association (table 35).

Ownership of property other than land was significantly associated with ranching, but high income ranchers had no great advantage in this respect. On the other hand, high income was highly associated with property ownership among the non-ranchers (table 36).

Debt—The very high association between ranching and owing money completely disappeared when the income variable was introduc-

ed. High income ranchers had more debts than low income ranchers, and high income non-ranchers were just as likely to be in debt as low income non-ranchers (table 37).

High income ranchers were more likely to have received loans than any of the other groups which would certainly be a partial explanation of their greater likelihood of being in debt (table 38).

In addition, since high income ranchers more frequently applied for loans, they were also more frequently refused (table 39).

Ranching—Among the ranchers the estimated number of cows needed to start in the business remained relatively stable for both the high and low income groups. The low income non-ranchers were most likely to underestimate the need for cows to start ranching, and they were probably least prepared by experience or knowledge to engage in the ranching business (table 40).

Spending of tribal funds differed significantly in the attitudes of ranchers and non-ranchers. However, when income was introduced, the values of the phi coefficient decreased for both ranchers and non-ranchers. High income appeared to weaken the association for ranchers and completely destroy it for non-ranchers (table 41).

Supplementary Income—The employment of the wife was somewhat associated with ranching, but contributed much less to high income of the ranchers than to high income of non-ranchers (table 42).

Among the working wives, if they were engaged in skilled work, the ranchers were in the favored position, although the difference was not statistically significant. Nevertheless, the degree of relationship decreased in both the partials, indicating that skilled work by the wife contributed little to high income among the ranchers, but it may be more important to high income of the non-ranchers (table 43).

Employment of the wife prior to marriage was not significantly different between ranchers and non-ranchers, but when high income was considered, it took on greater importance. The value of the phi coefficient increased more for the ranchers than the non-ranchers, and this factor seemed to be highly associated with success in ranching (table 44).

Relatives living in the ranching households contributed materially by working more frequently than relatives living with non-ranching families. The association tended to disappear when high and low income non-ranchers were compared, and completely disappeared for ranchers (table 45).

Summary of Factors Associated with Economic Success

What were the factors associated significantly with economic success? The individual tables might be perused and by close analysis the answer to this question would eventually become apparent. The task can be simplified, however, by listing in a single table the values of the phi coefficients for

each of the social and economic variables investigated (table 46).

The values of the phi coefficient which have been starred in both columns two and three were found to be related to economic success for both ranchers and non-ranchers. These conditions were associated with economic success: (1) the ages of both family head and spouse were younger; (2) there were children in the family (either under or over five years of age); (3) the education of both family heads and spouses exceeded eight years; (4) the respondent had experience living off the reservation, had communicated with a relocation officer, and had relatives living off the reservation; (5) the respondent lacked any health problem which prevented full-time employment; (6) the respondent lived in a house constructed of a substantial material and was in above average condition for the reservation; (7) the respondent was employed full-time in a job in which he had experience and in work he preferred; (8) the family head had training for a job either in the service or in a special course; (9) the head of the family lived on land which he owned; (10) the head had received a loan; (11) his wife was working, especially in a skilled job, and she had been employed before marriage.

Why Non-Ranchers Successful

The variables that were more associated with success for non-ranchers than for ranchers: (1) education of the family head and spouse; (2) experience living off reservation; (3) communication with a relocation officer; (4) health problems preventing full-time employment; (5) employed in full time work, experience in this work and preference for it; (6) job training in the service or in special courses; (7) ownership of land and other property; (8) received loans; and (9) wife employed in skilled work and other working relatives living in the household.

The factors associated more with economic success in ranching were: (1) age of family head and spouse; (2) families with children over five; (3) relatives living off the reservation and willingness to migrate to Denver or Chicago for a job; (4) type and condition of housing; (5) loans refused; (6) estimate of cows needed to start ranching and attitude toward spending tribal money and (7) wife worked before marriage.

Table 8. Relation Between Age of Family Head and Occupational Choice, by Income

Age of family head (X)	Occupational choice (Y) Ranchers	Non-ranchers
Under 50	51 (54.8%)	109 (49.5%)
Over 50	42 (45.2%)	111 (50.5%)
	93 (100.0%)	220 (100.0%)
	$\theta = .048$	

	Earned income (T)			
	High	Low	High	Low
Under 50	43 (46.2%)	8 (8.6%)	21 (9.5%)	88 (40.0%)
Over 50	25 (26.9%)	17 (18.3%)	11 (5.0%)	100 (45.5%)
	68 (73.1%)	25 (26.9%)	32 (14.5%)	188 (85.5%)
	$\theta = .278$		$\theta = .133$	

Table 9. Relation Between Age of Wife and Occupational Choice, by Income

Age of spouse (X)	Occupational choice (Y) Ranchers	Non-ranchers
Under 50	48 (64.9%)	92 (62.2%)
Over 50	26 (35.1%)	55 (37.4%)
	74 (100.0%)	147 (100.0%)
	$\theta = .022$	

	Earned income (T)			
	High	Low	High	Low
Under 50	39 (52.7%)	9 (12.2%)	22 (15.0%)	70 (47.6%)
Over 50	15 (20.2%)	11 (14.9%)	7 (4.8%)	48 (32.6%)
	54 (72.9%)	20 (27.1%)	29 (19.8%)	118 (80.2%)
	$\theta = .253$		$\theta = .136$	

Table 10. Relation Between Age of Husband and Wife and Occupational Choice, by Income

Age of family head and spouse (X)	Occupational choice (Y) Ranchers	Non-ranchers
Under 50	102 (60.3%)	201 (54.8%)
Over 50	67 (39.7%)	166 (45.2%)
	169 (100.0%)	367 (100.0%)
	$\theta = .052$	

	Earned income (T)			
	High	Low	High	Low
Under 50	83 (49.1%)	19 (11.2%)	43 (11.7%)	158 (43.1%)
Over 50	41 (24.3%)	26 (15.4%)	18 (4.9%)	148 (40.3%)
	124 (73.4%)	45 (26.6%)	61 (16.6%)	306 (83.4%)
	$\theta = .223$		$\theta = .141$	

Table 11. Relation Between Families with Children and Occupational Choice, by Income

Children (X)	Occupational choice (Y) Ranchers	Non-ranchers
Families with children	76 (80.0%)	178 (80.9%)
Families without children	19 (20.0%)	42 (19.1%)
	95 (100.0%)	220 (100.0%)
	$\theta = -.016$	

	Earned income (T) High	Low	High	Low
Families with children	56 (58.9%)	20 (21.1%)	28 (12.7%)	150 (68.2%)
Families without children	13 (13.7%)	6 (6.3%)	4 (1.8%)	38 (17.3%)
	69 (72.6%)	26 (27.4%)	32 (14.5%)	188 (85.5%)
	$\theta = .025$		$\theta = .069$	

Table 12. Relation Between Families with Young Children and Occupational Choice, by Income

Age of children (X)	Occupational choice (Y) Ranchers	Non-ranchers
Families with children under five	19 (20.9%)	95 (43.4%)
Families without children under five	72 (79.1%)	124 (56.6%)
	91 (100.0%)	219 (100.0%)
	$\theta = -.211$	

	Earned income (T) High	Low	High	Low
Families with children under five	14 (15.4%)	5 (5.5%)	15 (6.8%)	80 (36.6%)
Families without children under five	54 (59.3%)	18 (19.8%)	17 (7.8%)	107 (48.8%)
	68 (74.7%)	23 (25.3%)	32 (14.6%)	187 (85.4%)
	$\theta = -.001$		$\theta = .028$	

Table 13. Relation Between Families with Older Children and Occupational Choice, by Income

Age of children (X)	Occupational choice (Y) Ranchers	Non-ranchers
Families with children over five	67 (73.6%)	151 (68.9%)
Families without children over five	24 (26.4%)	68 (31.1%)
	91 (100.0%)	219 (100.0%)
	$\theta = .047$	

	Earned income (T)			
	High	Low	High	Low
Families with children over five	53 (58.2%)	14 (15.4%)	25 (11.4%)	126 (57.5%)
Families without children over five	15 (16.5%)	9 (9.9%)	7 (3.2%)	61 (27.9%)
	68 (74.7%)	23 (25.3%)	32 (14.6%)	187 (85.4%)
	$\theta = .168$		$\theta = .082$	

Table 14. Relation Between Relatives Living in Household and Occupational Choice, by Income

Relatives living in household (X)	Occupational choice (Y) Ranchers	Non-ranchers
Yes	14 (14.7%)	50 (22.7%)
No.	81 (85.3%)	170 (77.3%)
	95 (100.0%)	220 (100.0%)
	$\theta = -.091$	

	Earned income (T)			
	High	Low	High	Low
Yes	9 (9.5%)	5 (5.3%)	5 (2.3%)	45 (20.4%)
No	60 (63.1%)	21 (22.1%)	27 (12.3%)	143 (65.0%)
	69 (72.6%)	26 (27.4%)	32 (14.6%)	188 (85.4%)
	$\theta = -.078$		$\theta = -.070$	

Table 15. Relation Between Education and Occupational Choice, by Income

Education (X)	Occupational choice (Y) Ranchers	Non-ranchers
More than 8	46 (52.3%)	66 (30.7%)
Less than 8	42 (47.7%)	149 (69.3%)
	88 (100.0%)	215 (100.0%)
	$\theta = .203$	

	Earned income (T)			
	High	Low	High	Low
More than 8	38 (43.2%)	8 (9.1%)	21 (9.8%)	45 (20.9%)
Less than 8	25 (28.4%)	17 (19.3%)	11 (5.1%)	138 (64.2%)
	63 (71.6%)	25 (28.4%)	32 (14.9%)	183 (85.1%)
	$\theta = .256$		$\theta = .317$	

Table 16. Relation Between Education of Wife and Occupational Choice, by Income

Education of wife (X)	Occupational choice (Y) Ranchers	Non-ranchers
More than 8 years	49 (64.5%)	50 (34.5%)
Less than 8 years	27 (35.5%)	95 (65.5%)
	76 (100.0%)	145 (100.0%)
	$\theta = .286$	

	Earned income (T)			
	High	Low	High	Low
More than 8 years	38 (50.0%)	11 (14.5%)	19 (13.1%)	31 (21.4%)
Eight years or less	17 (22.4%)	10 (13.1%)	10 (6.9%)	85 (58.6%)
	55 (72.4%)	21 (27.6%)	29 (20.0%)	116 (80.0%)
	$\theta = .156$		$\theta = .327$	

Table 17. Relation Between Migration and Occupational Choice, by Income

Migration (X)	Occupational choice (Y) Ranchers	Non-ranchers
Migrated	26 (29.5%)	67 (30.7%)
Never migrated	62 (70.5%)	151 (69.3%)
	88 (100.0%)	218 (100.0%)
	$\theta = -.020$	

	Earned income (T)			
	High	Low	High	Low
Migrated	21 (23.9%)	5 (5.7%)	17 (7.8%)	50 (22.9%)
Never migrated	43 (48.9%)	19 (21.6%)	15 (6.9%)	136 (62.4%)
	64 (72.8%)	24 (27.3%)	32 (14.7%)	186 (85.3%)
	$\theta = .117$		$\theta = .201$	

Table 18. Relation Between Favorable Attitude Toward Relocation and Occupational Choice, by Income

Favorable attitude towards relocation (X)	Occupational choice (Y) Ranchers	Non-ranchers
Yes	33 (37.9%)	104 (49.1%)
No	54 (62.1%)	108 (50.9%)
	87 (100.0%)	212 (100.0%)
	$\theta = -.071$	

	Earned income (T)			
	High	Low	High	Low
Yes	25 (28.7%)	8 (9.2%)	20 (9.4%)	84 (29.7%)
No	39 (44.9%)	15 (17.2%)	10 (4.7%)	98 (46.2%)
	64 (73.6%)	23 (26.4%)	30 (14.1%)	182 (85.9%)
	$\theta = .039$		$\theta = .143$	

Table 19. Relation Between Type of Migration and Occupational Choice, by Income

Type of migration (X)	Occupational choice (Y) Ranchers	Non-ranchers
Interstate	13 (48.1%)	18 (36.7%)
Intrastate	14 (51.9%)	31 (63.3%)
	27 (100.0%)	49 (100.0%)
	$\theta = .111$	

	Earned income (T) High	Low	High	Low
Interstate	4 (14.8%)	9 (33.3%)	11 (22.4%)	7 (14.3%)
Intrastate	5 (18.5%)	9 (33.3%)	27 (55.1%)	4 (8.2%)
	9 (33.3%)	18 (66.6%)	38 (77.5%)	11 (22.5%)
	$\theta = -.047$		$\theta = -.300$	

Table 20. Relation Between Communication with Relocation Officer and Occupational Choice, by Income

Communication with relocation officer (X)	Occupational choice (Y) Ranchers	Non-ranchers
Yes	6 (6.9%)	52 (24.1%)
No	81 (93.1%)	164 (75.9%)
	87 (100.0%)	216 (100.0%)
	$\theta = -.198$	

	Earned income (T) High	Low	High	Low
Yes	3 (3.4%)	3 (3.4%)	11 (5.1%)	41 (19.0%)
No	22 (25.3%)	59 (67.8%)	21 (9.7%)	143 (66.2%)
	25 (28.7%)	62 (71.2%)	32 (14.8%)	184 (85.2%)
	$\theta = .137$		$\theta = .181$	

Table 21. Relation Between Relatives Living Off Reservation and Occupational Choice, by Income

Relatives living off reservation (X)	Occupational choice (Y) Ranchers	Non-ranchers
Yes	81 (92.0%)	160 (73.7%)
No	7 (8.0%)	57 (26.3%)
	88 (100.0%)	217 (100.0%)
	$\theta = .204$	

	Earned income (T) High	Low	High	Low
Yes	61 (69.3%)	20 (22.7%)	28 (12.9%)	132 (60.8%)
No.	2 (2.3%)	5 (5.7%)	4 (1.8%)	53 (24.5%)
	63 (71.6%)	25 (28.4%)	32 (14.7%)	185 (85.3%)
	$\theta = .280$		$\theta = .130$	

Table 22. Relation Between Migration to Chicago or Denver for Job and Occupational Choice, by Income

Migration to Chicago or Denver for job (X)	Occupational choice (Y)	
	Ranchers	Non-ranchers
No	21 (63.6%)	22 (36.1%)
Yes	12 (36.4%)	39 (63.9%)
	33 (100.0%)	61 (100.0%)
	$\theta = .164$	

	Earned income (T)			
	High	Low	High	Low
No	6 (18.2%)	15 (45.4%)	16 (26.2%)	6 (9.8%)
Yes	3 (9.1%)	9 (27.3%)	30 (49.2%)	9 (14.8%)
	9 (27.3%)	24 (72.7%)	46 (75.4%)	15 (24.6%)
	$\theta = .039$		$\theta = -.047$	

Table 23. Relation Between Health Problems and Occupational Choice, by Income

Health problem (X)	Occupational choice (Y)	
	Ranchers	Non-ranchers
No	66 (79.5%)	90 (46.9%)
Yes	17 (20.5%)	102 (53.1%)
	83 (100.0%)	192 (100.0%)
	$\theta = .302$	

	Earned income (T)			
	High	Low	High	Low
No	50 (60.2%)	16 (19.3%)	23 (12.0%)	67 (34.9%)
Yes	11 (13.3%)	6 (7.2%)	6 (3.1%)	96 (50.0%)
	61 (73.5%)	22 (26.5%)	29 (15.1%)	163 (84.9%)
	$\theta = .101$		$\theta = .274$	

Table 24. Relation Between Military Service of Head and Occupational Choice, by Income

Military service of head (X)	Occupational choice (Y)	
	Ranchers	Non-ranchers
Yes	34 (35.8%)	64 (29.1%)
No	61 (64.2%)	156 (70.9%)
	95 (100.0%)	220 (100.0%)
	$\theta = .021$	

	Earned income (T)			
	High	Low	High	Low
Yes	26 (27.4%)	8 (8.4%)	12 (5.5%)	52 (23.6%)
No	43 (45.3%)	18 (18.9%)	20 (9.1%)	136 (61.8%)
	69 (72.7%)	26 (27.3%)	32 (14.6%)	188 (85.4%)
	$\theta = .064$		$\theta = .077$	

Table 25. Relation Between Home Ownership and Occupational Choice, by Income

Home ownership (X)	Occupational choice (Y) Ranchers	Non-ranchers
Head	55 (59.8%)	131 (59.8%)
Other	37 (40.2%)	88 (40.2%)
	92 (100.0%)	219 (100.0%)
	$\theta = -.0003$	

	Earned income (T)			
	High	Low	High	Low
Head	40 (43.5%)	15 (16.3%)	16 (7.3%)	115 (52.5%)
Other	26 (28.2%)	11 (12.0%)	16 (7.3%)	72 (32.9%)
	66 (71.7%)	26 (28.3%)	32 (14.6%)	187 (85.4%)
	$\theta = .027$		$\theta = -.032$	

Table 26. Relation Between Type of House and Occupational Choice, by Income

Type of house (X)	Occupational choice (Y) Ranchers	Non-ranchers
Brick or frame	67 (74.4%)	100 (45.5%)
Log, tent, other	23 (25.6%)	120 (54.5%)
	90 (100.0%)	220 (100.0%)
	$\theta = .264$	

	Earned income (T)			
	High	Low	High	Low
Brick or frame	54 (60.0%)	13 (14.4%)	23 (10.5%)	77 (35.0%)
Log, tent, other	12 (13.4%)	11 (12.2%)	9 (4.1%)	111 (50.5%)
	66 (73.4%)	24 (26.6%)	32 (14.6%)	188 (85.5%)
	$\theta = .280$		$\theta = .219$	

Table 27. Relation Between Condition of House and Occupational Choice, by Income

Condition of house (X)	Occupational choice (Y) Ranchers	Non-ranchers
Better than average	42 (47.7%)	50 (22.8%)
Average or below	46 (52.3%)	169 (77.2%)
	88 (100.0%)	219 (100.0%)
	$\theta = .246$	

	Earned income (T)			
	High	Low	High	Low
Better than average	39 (44.3%)	3 (3.4%)	16 (7.3%)	34 (15.5%)
Average or below	25 (28.4%)	21 (23.9%)	16 (7.3%)	153 (69.9%)
	64 (72.7%)	24 (27.3%)	32 (14.6%)	187 (85.4%)
	$\theta = .310$		$\theta = .268$	

Table 28. Relation Between Employment Status and Occupational Choice, by Income

Employment status (X)	Occupational choice (Y) Ranchers	Non-ranchers
Employed	95 (100.0%)	160 (72.7%)
Unemployed	0 (0.0%)	60 (27.3%)
	95 (100.0%)	220 (100.0%)
	$\theta = .319$	

	Earned income (T) High	Low	High	Low
Employed	69 (72.6%)	26 (27.4%)	26 (11.8%)	134 (60.9%)
Unemployed	0(00.0%)	0 (00.0%)	6 (2.7%)	54 (24.6%)
	69 (72.6%)	26 (27.4%)	32 (14.5%)	188 (85.5%)
	$\theta = .000$		$\theta = .250$	

Table 29. Relation Between Type of Employment and Occupational Choice, by Income

Type of employment (X)	Occupational choice (Y) Ranchers	Non-ranchers
Full-time	56 (58.9%)	86 (39.1%)
Seasonal	39 (41.1%)	134 (60.9%)
	95 (100.0%)	220 (100.0%)
	$\theta = .183$	

	Earned income (T) High	Low	High	Low
Full-time	41 (43.1%)	15 (15.8%)	26 (11.8%)	60 (27.3%)
Seasonal	28 (29.5%)	11 (11.6%)	6 (2.7%)	128 (58.2%)
	69 (72.6%)	26 (27.4%)	32 (14.5%)	188 (85.5%)
	$\theta = .016$		$\theta = .424$	

Table 30. Relation Between Experience in Present Job and Occupational Choice, by Income

Experience in present job (X)	Occupational choice (Y) Ranchers	Non-ranchers
Yes	78 (82.1%)	110 (50.0%)
No	17 (17.9%)	110 (50.0%)
	95 (100.0%)	220 (100.0%)
	$\theta = .300$	

	Earned income (T) High	Low	High	Low
Yes	58 (61.0%)	20 (21.1%)	25 (11.4%)	85 (38.6%)
No	11 (11.6%)	6 (6.3%)	7 (3.2%)	103 (46.8%)
	69 (72.6%)	26 (27.4%)	32 (14.5%)	188 (85.4%)
	$\theta = .083$		$\theta = .233$	

Table 31. Relation Between Work Preference and Occupational Choice, by Income

Work preference (X)	Occupational choice (Y) Ranchers	Non-ranchers
Ranching	79 (90.8%)	27 (17.3%)
Other	8 (9.2%)	129 (82.7%)
	87 (100.0%)	156 (100.0%)
	$\theta = .711$	

	Earned income (T) High	Low	High	Low
Ranching	59 (67.8%)	20 (23.0%)	8 (5.1%)	19 (12.2%)
Other	5 (5.8%)	3 (3.4%)	26 (16.7%)	103 (66.0%)
	64 (73.6%)	23 (26.4%)	34 (21.8%)	122 (78.2%)
	$\theta = .080$		$\theta = .087$	

Table 32. Relation Between Service Training and Occupational Choice, by Income

Service training (X)	Occupational choice (Y) Ranchers	Non-ranchers
Yes	31 (32.6%)	46 (20.9%)
No	64 (67.4%)	174 (79.1%)
	95 (100.0%)	220 (100.0%)
	$\theta = .125$	

	Earned income (T) High	Low	High	Low
Yes	23 (24.2%)	8 (8.4%)	13 (5.9%)	33 (15.0%)
No	46 (48.4%)	18 (18.9%)	19 (8.6%)	155 (70.5%)
	69 (72.6%)	26 (27.4%)	32 (14.5%)	188 (85.5%)
	$\theta = .024$		$\theta = .197$	

Table 33. Relation Between Type of Service Training and Occupational Choice, by Income

Type of service training (X)	Occupational choice (Y) Ranchers	Non-ranchers
Skilled	20 (64.5%)	25 (54.3%)
Unskilled	11 (35.5%)	21 (45.7%)
	31 (100.0%)	46 (100.0%)
	$\theta = .100$	

	Earned income (T) High	Low	High	Low
Skilled	15 (48.4%)	5 (16.1%)	9 (19.6%)	16 (34.7%)
Unskilled	8 (25.8%)	3 (9.7%)	4 (8.7%)	17 (37.0%)
	23 (74.2%)	8 (25.8%)	13 (28.3%)	33 (71.7%)
	$\theta = .025$		$\theta = .187$	

Table 34. Relation Between Special Training and Occupational Choice, by Income

Special training (X)	Occupational choice (Y) Ranchers	Non-ranchers
Yes	82 (88.2%)	181 (81.5%)
No	11 (11.8%)	41 (18.5%)
	93 100.0%)	222 (100.0%)
	$\theta = .082$	

	Earned income (T) High	Low	High	Low
Yes	58 (62.4%)	24 (25.8%)	32 (14.4%)	149 (67.1%)
No	9 (9.6%)	2 (2.2%)	1 (.5%)	40 (18.0%)
	67 (72.0%)	26 (28.0%)	33 (14.9%)	189 (89.6%)
	$\theta = -.105$		$\theta = .156$	

Table 35. Relation Between Land Ownership and Occupational Choice, by Income

Land ownership (X)	Occupational choice (Y) Ranchers	Non-ranchers
Head	40 (42.1%)	60 (27.3%)
Other	55 (57.9%)	160 (72.7%)
	95 (100.0%)	220 (100.0%)
	$\theta = .146$	

	Earned income (T) High	Low	High	Low
Head	29 (30.5%)	11 (11.6%)	8 (3.7%)	52 (23.6%)
Other	40 (42.1%)	15 (15.8%)	24 (10.9%)	136 (61.8%)
	69 (72.6%)	26 (27.4%)	32 (14.6%)	188 (85.4%)
	$\theta = .003$		$\theta = .021$	

Table 36. Relation Between Property Ownership and Occupational Choice, by Income

Property ownership (X)	Occupational choice (Y) Ranchers	Non-ranchers
Yes	71 (78.9%)	117 (54.7%)
No	19 (21.1%)	97 (45.3%)
	90 (100.0%)	214 (100.0%)
	$\theta = .153$	

	Earned income (T) High	Low	High	Low
Yes	47 (52.2%)	24 (26.7%)	24 (11.2%)	93 (43.5%)
No	17 (18.9%)	2 (2.2%)	6 (2.8%)	91 (42.5%)
	64 (71.1%)	26 (28.9%)	30 (14.0%)	184 (86.0%)
	$\theta = -.236$		$\theta = .205$	

Table 37. Relation Between Owing Money and Occupational Choice, by Income

Owing money (X)	Occupational choice (Y) Ranchers	Non-ranchers
Yes	55 (59.8%)	22 (10.3%)
No	37 (40.2%)	191 (89.7%)
	92 (100.0%)	213 (100.0%)
	$\theta = .525$	

	Earned income (T)			
	High	Low	High	Low
Yes	48 (52.2%)	7 (7.6%)	4 (1.9%)	18 (8.4%)
No	19 (20.6%)	18 (19.6%)	26 (12.2%)	165 (77.5%)
	67 (72.8%)	25 (27.2%)	30 (14.1%)	183 (85.9%)
	$\theta = -.396$		$\theta = -.040$	

Table 38. Relation Between Loans Received and Occupational Choice, by Income

Loans received (X)	Occupational choice (Y) Ranchers	Non-ranchers
Yes	155 (96.3%)	74 (34.9%)
No	6 (3.7%)	138 (65.1%)
	161 (100.0%)	212 (100.0%)
	$\theta = .624$	

	Earned income (T)			
	High	Low	High	Low
Yes	110 (68.3%)	45 (27.9%)	23 (10.8%)	51 (24.1%)
No	2 (1.2%)	4 (2.5%)	13 (6.1%)	125 (59.0%)
	112 (69.5%)	49 (30.4%)	36 (16.9%)	176 (83.1%)
	$\theta = .155$		$\theta = .275$	

Table 39. Relation Between Loans Refused and Occupational Choice, by Income

Loans refused (X)	Occupational choice (Y) Ranchers	Non-ranchers
Yes	45 (47.4%)	14 (6.4%)
No	50 (52.6%)	206 (93.6%)
	95 (100.0%)	220 (100.0%)
	$\theta = .482$	

	Earned income (T)			
	High	Low	High	Low
Yes	34 (35.8%)	11 (11.6%)	1 (0.4%)	13 (6.0%)
No	35 (36.8%)	15 (15.8%)	31 (14.1%)	175 (79.5%)
	69 (72.6%)	26 (27.4%)	32 (14.5%)	188 (85.5%)
	$\theta = .062$		$\theta = -.055$	

Table 40. Relation Between Estimate of Cows Needed by Respondent to Start Ranching and Occupational Choice, by Income

Estimate of cows needed to start ranching (X)	Occupational choice (Y) Ranchers	Non-ranchers
100 or more	71 (82.6%)	19 (65.5%)
Less than 100	15 (17.4%)	10 (34.5%)
	86 (100.0%)	29 (100.0%)
	$\theta = .179$	

	Earned income (T)			
	High	Low	High	Low
100 or more	55 (64.0%)	16 (18.6%)	7 (24.1%)	12 (41.4%)
Less than 100	9 (10.4%)	6 (7.0%)	1 (3.4%)	9 (31.0%)
	64 (74.4%)	22 (25.6%)	8 (27.5%)	21 (72.4%)
	$\theta = .152$		$\theta = .285$	

Table 41. Relation Between Attitude Toward Spending Tribal Money and Occupational Choice, by Income

Attitude toward spending tribal money (X)	Occupational choice (Y) Ranchers	Non-ranchers
Loans, land purchase	44 (69.8%)	107 (50.0%)
Per capita	19 (30.2%)	107 (50.0%)
	63 (100.0%)	214 (100.0%)
	$\theta = .160$	

	Earned income (T)			
	High	Low	High	Low
Loans, land purchase	33 (52.3%)	11 (17.5%)	14 (6.5%)	93 (43.4%)
Per capita	13 (20.7%)	6 (9.5%)	17 (7.9%)	90 (42.1%)
	46 (73.0%)	17 (27.0%)	31 (14.4%)	183 (85.5%)
	$\theta = .068$		$\theta = -.040$	

Table 42. Relation Between Type of Work of Wife and Occupational Choce, by Income

Wife working (X)	Occupational choice (Y) Ranchers	Non-ranchers
Yes	18 (24.0%)	22 (13.0%)
No	57 (76.0%)	147 (87.0%)
	75 (100.0%)	169 (100.0%)
	$\theta = .135$	

	Earned income (T)			
	High	Low	High	Low
Yes	15 (20.0%)	3 (4.0%)	14 (8.3%)	8 (4.7%)
No	42 (56.0%)	15 (20.0%)	12 (7.1%)	143 (84.6%)
	57 (76.0%)	18 (24.0%)	26 (15.4%)	151 (89.3%)
	$\theta = .097$		$\theta = .521$	

Table 43. Relation Between Type of Work of Wife and Occupational Coice, by Income

Type of work of wife (X)	Occupational choice (Y) Ranchers	Non-ranchers
Skilled	22 (81.5%)	28 (59.6%)
Unskilled	5 (18.5%)	19 (40.4%)
	27 (100.0%)	47 (100.0%)
	$\theta = .225$	

	Earned income (T) High	Low	High	Low
Skilled	19 (70.4%)	3 (11.1%)	11 (23.4%)	17 (36.2%)
Unskilled	4 (14.8%)	1 (3.7%)	5 (10.6%)	14 (29.8%)
	23 (85.2%)	4 (14.8%)	16 (34.0%)	31 (66.0%)
	$\theta = .059$		$\theta = .134$	

Table 44. Relation Between Wife Worked Before Marriage and Occupational Choice, by Income

Wife worked before marriage (X)	Occupational choice (Y) Ranchers	Non-ranchers
Yes	26 (30.2%)	49 (25.7%)
No	60 (69.8%)	142 (74.3%)
	86 (100.0%)	191 (100.0%)
	$\theta = .048$	

	Earned income (T) High	Low	High	Low
Yes	24 (27.9%)	5 (5.8%)	15 (7.9%)	34 (17.8%)
No	12 (13.9%)	18 (20.9%)	14 (7.3%)	128 (67.0%)
	36 (41.8%)	23 (26.7%)	29 (15.2%)	162 (84.8%)
	$\theta = .438$		$\theta = .253$	

Table 45. Relation Between Relatives Working and Occupational Choice, by Income

Relatives working (X)	Occupational choice (Y) Ranchers	Non-ranchers
Yes	10 (71.4%)	7 (13.7%)
No	4 (28.6%)	44 (86.3%)
	14 (100.0%)	51 (100.0%)
	$\theta = .540$	

	Earned income (T) High	Low	High	Low
Yes	6 (42.9%)	4 (28.6%)	1 (2.0%)	6 (11.8%)
No	3 (21.4%)	1 (7.1%)	4 (7.8%)	40 (78.4%)
	9 (64.3%)	5 (35.7%)	5 (9.8%)	46 (90.2%)
	$\theta = -.140$		$\theta = .060$	

IV. Prediction of Success in Ranching

Reviewing the findings recorded in previous sections of this study, it was apparent that certain social and economic variables were associated with economic success in ranching. Once these variables had been isolated and identified, their usefulness in prediction depended upon their causal relationship to success. Some are conditions encouraging success; others may be contingent upon other variables. There may be spurious relationships, i.e., resulting from more basic conditions. In other cases they may provide new interpretations of the original relationships. It is the purpose of this chapter to discuss the factors in these four classifications in order to evaluate their predictive value.

Conditions

In those instances where the value of the phi coefficient was greater in one partial and less in the other than the value of the phi coefficient in the original relationship, it was possible to specify the condition (ranching or non-ranching) that strengthened the original relationship, and some explanation for the stronger relationship appeared to be in order. These cases will be discussed more fully here.

Education of spouse.—The years of education completed by the wife of the family head was essential to the economic success of the non-ranchers. There was reason to believe that the more highly educated wives not only encouraged their husbands to improve their standards of living, but supplemented family income in many cases by their own employment.

In ranching the working wife was perhaps less of an economic advantage, since the success of the cattle operation depended more on the managerial ability of the husband. Likewise, since the level of living was higher on the average for all ranchers, the need for supplemental income earned by the working wife was usually not necessary to raise the income of the family above the mean.

Relatives living off reservation.—One contention which has been made was that the path of migration was eased by relatives who had successfully moved into non-Indian communities. It has also been proposed that higher income residents of the reservation were more likely to move because they had more relatives living off the reservation who might encourage them to migrate.

This might have been the case with the ranchers, if they desired to move, but since in many cases they were firmly established in a successful cattle enterprise, owned land, and were community leaders, they were generally less likely to express a desire to migrate, and the more successful they were, the less they would be willing to chance a move that might jeopardize their position or even result in loss of their achieved level of living. The non-ranchers expressed more in-

terest in migrating and were more likely to hope for something better, if they had little or nothing to lose by moving. Thus, the non-ranching population in the low income category, who could least afford to move in terms of income, were frequently without relatives living in non-reservation situations who might assist them.

Home ownership.—The reservation had a unique situation in which home ownership was only slightly associated with higher income because no matter how humble the quarters, they customarily belonged to the family or some relative. This circumstance was largely a result of the allotment system through which the government encouraged every family to build their own home on their allotted acreage, and even the most economically depressed families were able to maintain their own log huts, although sometimes they were reduced to living in tents or forced to move in with relatives. Consequently, among the non-ranchers there was slightly more ownership in the lower income group. The ranchers were moving in the other direction, probably as they improved their housing, and high income had a slightly larger proportion of home owners than low income ranchers.

Type of Housing.—The newer substantial homes of brick and frame construction were the most common owned by high income ranchers, while the low income

Non-ranchers generally occupied the older, inferior types of living quarters, such as this shack. So poor is some of the housing that residents take to living in tents when weather permits.

non-ranchers occupied the older homes, log huts, tents, and other inferior types of living quarters. This evidence seemed to support the previous finding and resulted from the same historical development of reservation living.

Type of employment.—Seasonal employment has been an exceedingly common mode of employment for the residents of non-ranching communities on the reservation. The great majority of the ranchers were regarded as working full-time in the cattle business. Therefore, the difference in full-time employment was slight between high and low income ranchers. At the same time the high income non-ranchers were more likely to have full-time jobs than their low income counterparts. The condition of full-time employment for non-ranchers then was highly associated with economic success.

Job training in service.—Training for both skilled and unskilled employment obtained by service veterans was more likely to contribute to the economic success of non-ranchers than of ranchers. This fact may have resulted from the circumstances which seemed to prevail in regard to the kinds of training received in the service.

Some service acquired skills might have been helpful in preparing the trainee for non-ranching employment, but ranching skills seemed to be acquired through direct experience in working on a ranch. The decision to enter ranching may have originally depended upon the economic resources available, but secondarily, experience in ranching probably influenced the decision.

Ownership of property.—When the respondents were asked, "Do you own any property, such as horses, a car, or cattle, on which you could get credit?", the ranchers gave a positive answer more frequently than the non-ranchers.

Although the percentages of non-ownership were small, the high income ranchers were less likely to own this type of property than the low income ranchers, perhaps because land ownership was emphasized more among the former group. It was possible that the last part of the question was interpreted to mean only property not already unincumbered by mortgage, and then the answer would have been influenced by the existing debts which were more frequently owed by high income than low income ranchers. As anticipated, property ownership was significantly greater among high income than low income non-ranchers.

Estimate of cows needed to start ranching.—Some knowledge of ranching was obviously required as a condition to success in the business. On this question the difference appeared greatest between high and low income non-ranchers. The explanation probably lies in the fact that there would be little difference between high and low income ranchers in knowledge of the requirements of their business. As might be expected low income non-ranchers would probably estimate low because realistically they

Table 46. Summary of Association Between Selected Social and Economic Factors and Occupational Choice, by Income

Selected variables	Values of Phi Coefficient (θ) in comparing (1) ranchers and non-ranchers, (2) ranchers, high income and low income, and (3) non-ranchers, high income and low income		
Social variables	(1)	(2)	(3)
1. Age			
a. Of family head	.048	.278*	.133*
b. Of spouse	.022	.253*	.136*
c. Of family head and spouse	.052	.223*	.136*
2. Family			
a. With children	–.016	.025	.069
b. With children under five	–.211	–.001	.028*
c. With children over five	.047	.168*	.082*
d. With relatives in household	–.091	–.078	–.070
3. Education			
a. Of family head	.203	.256*	.317*
b. Of spouse	.286	.156*	.327*
4. Migration			
a. Experience living off reservation	–.020	.117*	.201*
b. Favorable attitude towards migration	–.071	.039	.143
c. Type of migration preferred	.111	–.047	–.300
d. Communication with relocation officer	–.198	.137*	.181*
e. Relatives living off reservation	.204	.280*	.130*
f. To Denver or Chicago for job	.164	.039*	–.047
5. Health			
a. Problems preventing full-time work	.302	.101*	.274*
6. Military service			
a. Of family head	.021	.064	.077
Economic variables			
1. Housing			
a. Home ownership	.000	.027	–.032
b. Type of housing	.264	.280*	.219*
c. Condition of house	.246	.310*	.268*
2. Employment			
a. Status (employed/unemployed)	.319	.000	.250*
b. Type (full-time/seasonal)	.183	.016*	.424*
c. Experience in present job	.300	.083*	.233*
d. Work preference	.711	.080*	.087*
3. Job training			
a. In service	.125	.024*	.197*
b. Type of service training	.100	.025	.187
c. Special courses	.082	.105*	.156*
4. Ownership			
a. Of land	.146	.003*	.021*
b. Of other property	.153	–.236	.205*

5. Debt			
a. Owe money	.525	−.396	−.040
b. Loans received	.624	.155*	.275*
c. Loans refused	.482	.062*	−.055
6. Ranching			
a. Estimate of cows needed	.179	.152*	.285*
b. Attitude towards spending tribal money	.160	.068*	−.040
7. Supplementary income			
a. Wife working	.135	.097*	.521*
b. Type of work of wife	.225	.059*	.134*
c. Wife worked before marriage	.048	.438*	.251*
d. Relatives working	.540	−.140	.060*

*Variables associated with economic success.

could never hope to begin on a sound economic basis.

Wife working.—Economic success of non-ranchers was highly associated with employment of the wife, but such employment was less important to the success of the ranchers. The main reason seemed to be related to the educational differences discussed previously. In addition supplemental income from the wife's employment might have a drastic influence on the lower mean income of the non-ranchers while in the cases where the income from ranching was already high, additional income obtained by a working wife would not change the classification of the ranching family from low to high income.

Contingencies

If the value of the phi coefficient in both ranching and non-ranching income partials were increased, the independent variables were considered intervening factors which increased the chances of economic success in the chosen occupational area. These were causal factors because the chances of economic success were contingent upon their presence once the occupational choice had been made. The social and economic variables which fell in the category will be listed in the following paragraphs.

Age of family head.—Economic success was more common in those instances in which the family head was under 50 years of age. The earning power in non-Indian groups located off the reservation usually is highest after the individual reaches 50. But the influences of assimilation probably reversed this situation among the Indians. The chance for better education and training, more experience with the non-Indian world, and greater acceptance of Western values were some of the influences of acculturation which have modified the traditional cultural practices on the reservation and made it possible for younger Indians to gain a greater degree of success in the monetary terms of the non-Indian society. The handicaps of illness, which are more frequent among the aged, and the lowering of income by retirement may have been other con-

tributing factors, and their greater prevalence among the non-ranchers could account for the opportunities of economic success being decreased for this group below the chances of success for the younger rancher.

Age of Spouse.—The results were virtually the same on this factor as on the previous one, and the same assimilation conditions undoubtedly prevailed. Furthermore, when the ages of husband and wife were combined the results were modified only slightly and the explanation for these findings obviously would not change.

Families with children.—There was inconclusive evidence that the presence of children in the family contributed to economic success for both ranchers and non-ranchers. The same pattern was observed if the children were under or over 5, except that younger children appeared to provide the greater incentive to the non-ranching family, and older children to the ranching family.

Perhaps children in the family cause some parents to exert more effort to provide for their material needs. The trend of the results for other relatives in the household was in this same direction, but the increase was so small that there could be little confidence that it was important except to further substantiate the findings regarding the presence of children in the family.

Education of family head.—Economic success was highly associated with education of the family head. This was somewhat more true for the non-ranchers than for the ranchers, but was essential to economic success whatever the choice of occupation. Education was unquestionably one of the most effective means of changing the individual from his traditional value orientation toward acceptance of the ideas of competition, steady employment, and management of material resources which are so necessary to success in non-reservation society.

Experience living off reservation.—High income non-ranchers were benefited by experience living in non-reservation communities where they could acquire some of the habit patterns of their non-Indian neighbors. The high income ranchers were to a lesser extent also benefited by the experience. A favorable attitude was shown toward migration factors which supported the findings regarding non-reservation living experience. Evidently if the respondents had lived off the reservation, retained a favorable attitude toward migration, and had consulted a relocation officer regarding the possibility of assisted migration, their attitudes were likely to be guided by a desire to improve their economic position.

Unfortunately, the more successful residents who have the greatest potential for permanent off-reservation living are less likely to desire to migrate than the low income non-ranchers who are more frequently candidates for relocation and contribute to the high incidence of failure.

Military service of family head. There was a slight increase in the direction of economic success for those who had served in one of the branches of the military, but the evidence was not conclusive for either ranchers or non-ranchers. It was even possible that other factors—younger age, better education, and experience living off the reservation—were more instrumental in explaining the increase, and had these things been equal, military service might have displayed the reverse trend—the returning veteran would rest on his laurels in a traditional society where the warrior was highly honored.

Condition of house.—Above average housing on the reservation was more likely to be observed among high income families. The tendency for economic prosperity to be reflected in better housing was probably emphasized in the families which had been able to raise themselves above the minimum level of subsistence. When this happened they were emulating one of the economic patterns of the middle class in the larger society and demonstrating an essential facet of the assimilation process.

Special training courses.—The high income non-ranchers had more frequently participated in special training courses than the high income ranchers, although chances for economic success in both groups were increased for those who had participated in these courses. This finding was anticipated for the same reasons that education of the family head contributed to success, and the results were remarkably similar. These courses seemed to accomplish more for the rancher than training received in the military service.

Wife worked before marriage.—There was a sharp increase in the financial success of ranchers whose wives had been employed prior to their marriage. The increase was not quite as dramatic for the non-ranchers, but both high income groups were apparently spurred to greater aspiration by the wife who had the experience of supporting herself before marriage.

This result, considered in relation to the discussion above of working wives, supported the conclusion that the non-ranching wife contributed more substantially to the economic level of the household if she were employed and brought supplementary income to the family. The contribution of the ranching wife was not in supplementary income, but rather in the encouragement and assistance she gave her husband in improving the economic efficiency of the ranch. If she had savings, they may have contributed to the original investment in ranching property, thus either holding down the debt or making the purchase of additional land or equipment possible.

SPURIOUS RELATIONSHIPS

When the relationship between occupational choice and the social and economic variables was significant, but the introduction of the test variable, earned income, reduced the value of the phi coef-

ficient in both partials, the original relationship was regarded as spurious if the test variable was determined to be antecedent to the relationship between the independent and dependent variables.

Owe money.—Ranchers were more likely to owe money than non-ranchers, while high income ranchers were most likely to be in debt. The income factor appeared to be crucial as an antecedent factor here because obtaining a loan usually requires security, and thus ownership of some property was a prerequisite to borrowing. Ownership would indicate that some capital which may have come from earned income was available when the individual started in ranching.

Loans received and refused.—The spurious relationship here was evidently because loan application was an antecedent factor. The low income non-rancher had little opportunity to receive or be refused because he was unlikely to apply. The applications would most usually come from individuals who felt that they had some chance of getting the loan, and these were likely to be individuals who owned property and had sufficient earned income to offer some guarantee that the loan would be repaid.

INTERPRETATION

This classification differed from spurious relationships only in the time sequence. In a spurious relationship the test variable was antecedent to the relationship between the independent variable and dependent variable; in an interpretation it was an intervening variable which modified and reduced the original relationship.

Type of migration preferred.—The question of interstate migration and moving to Chicago or Denver for a job was apparently predetermined by the fact that the respondents considered only those alternatives which might reasonably be hoped to provide employment. The lowest income groups indicated a preference for a major long-distance migration in the largest proportion of cases. Perhaps this foretells something of their desperation about finding employment on the reservation, or it may have meant that the relocation program has been sold to them as their only salvation. Again these were the people who had the poorest potential for becoming successful relocatees.

Health problems preventing full-time employment.—It would be unlikely that an individual suffering from a severe health handicap would choose ranching as an occupation, and if they did, the opportunities of economic success would be strictly limited. Health problems were limiting conditions which discouraged the individual from choosing ranching as an occupation and decreased his chances of economic success in either ranching or non-ranching.

Employment status.—Unemployment was non-existent among the ranching respondents and thus the relationship between high and low income ranchers completely disappeared. Higher income was re-

lated to employment of non-ranchers, but the association was not as significant as existed between unemployment of ranchers compared with non-ranchers.

Experience in present job.—High income was only slightly related to experience for the ranching population, and although the relationship was greater for non-ranchers, it did not exceed the difference between ranchers and non-ranchers.

Work preference.—Preference for ranching was obviously higher among ranchers than non-ranchers, but income differences reduced the relationships sharply in both partials. Higher income apparently did not provide the individual with the incentive to choose ranching as an occupation.

Land ownership.—The allotment system was responsible for distributing land to nearly all of the older generation of reservation residents, and heirship ownership of land was likewise very widely distributed among the younger generation. Thus, while the ranchers did own land in more cases than the non-ranchers, income was an intervening factor which served to reduce the difference. It might have been more meaningful to analyze the size of the land holdings instead of the simple fact of ownership.

Attitude toward spending tribal funds.—Economic success decreased the original relationship which found the ranchers expressing a desire for tribal funds to be used for loans and buying land, and the non-ranchers were more concerned with direct per capita payments. Earned income was an intervening variable which caused the high income non-ranchers to desire per capita payments in the majority of cases, and high income ranchers to want this payment more frequently than expected. It seemed likely that economically successful individuals, having absorbed the individualistic material values of Western society, wished to decide for themselves how their share of the money should be used.

Type of work of wife.—The work of employed wives was classified in skilled and unskilled categories, and again income reduced the orriginal relationship for both ranchers and non-ranchers. This appeared to be related to the fact that working wives were not nearly so important in providing supplementary income to the high income ranching families as they were in the high income non-ranching families.

Relatives working. – Relatives were much more frequently employed if they lived in a ranching household than with a non-ranching family, but their economic contribution appeared to be relatively important for the non-ranchers and completely disappeared for the ranchers. In the case of the ranchers they were usually employed in the cattle enterprise and their contribution was probably included with the earned income of the family.

PREDICTIONS

Summarizing the discussion in this last section, it could be concluded that the following independent variables were conditions contributing to success in ranching: (1) more than eight years of education for the wife of the family head; (2) relatives living off the reservation; (3) home ownership; (4) superior type of housing construction; (5) full-time rather than seasonal employment; (6) job training in the service; (7) knowledge of the number of cows needed to start ranching; and (8) employment of the wife of the family head.

Independent Variables

The chances of economic success in ranching were directly contingent upon these independent variables: (1) family head was under fifty years of age; (2) wife of family head was under fifty; (3) there were children in the family, either under or over five years of age; (4) education of the family head exceeded eight years; (5) the family head had experienced off-reservation living; (6) the housing conditions of the family were above average; (7) the family head had taken special training courses; (8) the wife of the family head worked before marriage.

Spurious relationships were discovered between occupational choice and various aspects of debt because earned income was probably an antecedent factor which determined the original relationship. Variables which may have contributed to economic success in ranching, subject to proper interpretation, were: (1) lack of a health problem preventing full-time employment; (2) experience in ranching; (3) preference for ranching employment; (4) land ownership; (5) attitude toward spending tribal funds for loans and land purchases; (6) wife of family head in skilled employment.

Utilizing the above factors, table 47 was developed listing in order of importance the factors which contributed to economic success in ranching.

From table 47 prediction of the probability of economic success in ranching is possible. Those individuals who possess those characteristics listed as conditions and contingencies can be predicted to have a high probability for economic success in ranching. In making predictions, greater confidence should be placed in the characteristics listed first and in the greater number of characteristics from the list possessed by the individual under consideration.

SUMMARY AND IMPLICATIONS FOR THE ADMINISTRATION OF SOCIAL CHANGE

Social change must be accepted as an essential fact of social life. It is doubtful that any community, no matter how small or isolated, could remain exactly the same for a prolonged period of time. Studies of communities in a wide variety of cultural settings uniformly conclude that while change is inevitable, great variability in the rate and manner is apparent. This

study is cast in the mold of the social change process, and proports to contribute to the understanding of the process on the Pine Ridge Indian Reservation.

Social Relations Uncomplicated

The Pine Ridge community is an excellent laboratory for the investigation of social change because in a folk society social relations are not as complex and confused as in urban mass society. The gradual accumulation of relatively simple changes are more readily apparent because traditions are tabulated and remembered and deviations from earlier customs are exaggerated by comparison with traditional behavior. Homogeneity and group concensus in folk communities restrict the variety of innovations which operate to transform the society.

Cooperative to Competitive

The problem of this study was to learn more about one phase of this social change process. The shift from traditional cooperative economic attitudes to the values of competitive economic success has been taking place among the ranching population on Pine Ridge. The non-ranchers have been more reluctant to accept this change in values.

The question raised regards the social and economic conditions of the people on Pine Ridge which are associated with this change in values, and suggests a general hypothesis. In the process of transition from folk to modern society on the Pine Ridge Reservation there are specified social and economic characteristics of individuals which are associated with their economic success or failure in the competitive economic system of the dominant society.

Pursuant to the elaboration of the general hypothesis of this study a selection of crucial social and economic variables was made, and ranchers and non-ranchers were compared on each variable. The differences which appeared significant are listed below:

1. Age—The ranchers and their wives were slightly younger in average age than the non-ranchers.
2. Family—There were significantly larger numbers of young children in the non-ranching households.
3. Education—The average number of years of completed education was considerably higher for ranchers than for non-ranchers.
4. Migration—The non-ranchers expressed somewhat more favorable attitudes toward migration, more frequently communicated with a relocation officer, and were more willing to undertake an inter-state move to find a job; however, the ranchers were better prepared for migration and had more relatives living in nonreservation communities.
5. Non-ranchers greatly exceeded ranchers in reporting health problems preventing their full-time employment.
6. Ranchers generally enjoyed homes of superior construction and in above average condition for the reservation.
7. Ranchers were more frequent-

ly engaged in full-time employment and had more experience in and more preference for their present jobs, as well as more job training than non-ranchers.

8. Ownership of land and other property favored the ranchers.

9. The ranching population was more likely to be in debt—they received and were refused more loans—since the non-rancher had little basis for making a loan application.

10. The non-ranchers were more likely to want tribal funds distributed in direct per capita payments.

11. Supplementary income from the wife and other working relatives in the household was more evident in the ranching household.

12. The earned income of the ranchers was considerably more adequate than for non-ranchers.

Comparisons of high and low income ranchers revealed that some of the selected social and economic variables were conditions associated with ranching success. A second series of contingent factors were discovered which contributed to economic success in the occupation of the family head's choice. Two factors were found to be spuriously related to success, and the final group were significantly related to success in ranching but required further interpretation of the results. A predictive device listing the variables in each of these categories was prepared in table 47.

This prediction of economic success in ranching requires discretion and judgment, but the information obtained in this study may

Table 47. Factors Contributing to Economic Success in Ranching

Conditions

1. Relatives living off reservation
2. Type of housing
3. Education of spouse
4. Estimate of cows needed to start ranching
5. Wife working
6. Home ownership
7. Job training in service
8. Type of employment

Contingencies

1. Wife worked before marriage
2. Condition of house
3. Age of family head
4. Education of family head
5. Age of spouse
6. Age of family head and spouse
7. Family with children over five
8. Communication with relocation officer
9. Experience living off reservation
10. Special training courses
11. Family with children
12. Family with children under five

Spurious Relationship

1. Loans received
2. Loans refused

Interpretations

1. Health problems preventing full-time employment
2. Experience in present job
3. Work preference
4. Attitude toward spending tribal funds
5. Type of work of wife
6. Type of migration preferred
7. Land ownership

serve as a useful guide in increasing the accuracy of such predictions. Any administrator assigned to responsibility for selecting applicants for ranching enterprises must necessarily proceed cautiously to undertake these minimum procedures:

1 .Obtain all the background information available on the social and economic circumstances of the applicant.

2. Compare these data with the factors given under conditions and contingencies in table 47.

3. Determine how many of the qualifications for success are met and how great the probability of success is for each qualification.

4. Consider other factors which have not been included in this study which might materially influence the resultant success or failure of the applicant.

5. Make an objective judgment of the individual's potential for ranching and decide if it fits predetermined criteria of probability for economic success in ranching.

A final word of caution is required regarding the management of social change. Even if the administrator conscientiously heeds the advice given above, he must be prepared to accept the fact that in exceptional cases this method will not result in accurate predictions. He must thus be aware that implicit in his work of administration is the concept that he is initiating and directing social change. The administrator with the prerogative for establishing policy and achieving goals has a crucial role in the management of social change and must be prepared to accept the probability of success or failure.

Appendix I. Method of the Study

Analysis of a wide variety of social and economic factors was undertaken from the answers given on the questionnaires. Factors customarily thought to be associated with financial success in American society, such as education, occupational preparation, veteran status, mobility and many others, were included in the schedule. The information secured was classified into three categories:

1. The dependent variable (Y)—The original division of the families interviewed was determined by their participation or nonparticipation in ranching. Occupational choice was then the crucial factor in distinguishing differences between the people interviewed and will be regarded as the dependent variable (Y) in this study.
2. The test variable (T)—A single measure of economic success, the reported income earned by the family during the preceding year (1955), was utilized as a basis for dividing the interviewees into two groups: (a) High income—earned income above the mean income for the total population interviewed, and (b) Low income—earned income below this mean. For the purposes of this study reported income was called the test variable (T) and was regarded as the final measure of economic success.
3. The independent variables (X)—The selected social and economic factors referred to above were regarded as independent variables (X).

The first step in analysis of the data was to examine the differences between the ranchers and non-ranchers on each of the selected social and economic factors. The chi-square test of statistical significance was chosen for this purpose.[10] To illustrate: If a specific independent variable, education, is selected for purposes of comparing the ranchers and non-ranchers, the procedure can be summarized as follows:

When the chi-square test was applied to this type of four-cell table, the result answered the question: What was the probability that the differences in the distribution occurred by chance? If this probability was less than five chances in a hundred cases, the relationship was regarded as statistically significant.

Comparison of occupational choice and the other independent variables can be followed up by two other "cross tabulations": (a) occupational choice can be compared to economic success (TY), and (b) economic success can be compared with the selected social and economic factors (TX). In other words, this analysis starts out with an original relation (XY), and then introduces a test variable, and thus creates two more relationships (TX) and (TY). Even more revealing, however, are the results of

[10] Lillian Cohen, **Statistical Methods for Social Scientists,** pp. 120-127.

the next step. With the help of the test variable the original relationship (XY) is divided into two partial relations.[11] Again using the example of education, the question can be posed: If high and low income groups are studied separately what happens to the relationship between education and occupational choice? The answer was obtained by splitting the original relationship (XY) into two conditional relationships for high and low incomes.

The statistical measurement of association applied to these tables was the phi coefficient.[12] When this measurement was made the

[11]Paul F. Lazarsfeld, "Interpretation of Statistical Relation as a Research Operation," in **The Language of Social Research,** edited by Paul F. Lazarsfeld and Morris Rosenberg, p. 116. The fundamental principles in the rest of this methodology section are taken from this article.

[12]James E. Wert, Charles O. Neidt, J. Stanley Ahlmann, **Statistical Methods,** pp. 300-303.

Occupational Choice (Y)

	Ranchers (Y_r)	Non-ranchers (Y_n)
Education	(X_{high})	$X_{high}Y_r$	$X_{high}Y_n$
	(X_{low})	$X_{low}Y_r$	$X_{low}Y_n$

Occupational Choice (Y)

	Ranchers (Y_r)	Non-ranchers (Y_n)
Education (X)		
X_{high}	$X_{high}Y_r$	$X_{high}Y_n$
X_{low}	$X_{low}Y_r$	$X_{low}Y_n$

Earned Income (T)

X_{high}	T_{high}	T_{low}	T_{high}	T_{low}
X_{low}	$X_{low}Y_rT_{high}$	$X_{low}Y_rT_{low}$	$X_{high}Y_nT_{high}$	$X_{low}Y_nT_{low}$
	$X_{low}Y_rT_{high}$	$X_{low}Y_rT_{low}$	$X_{low}Y_nT_{high}$	$X_{low}Y_nT_{low}$

results could be analyzed as performing one of four possible functions:

1. **Condition.** In the case of a "condition," the value of the phi coefficient (θ) was greater in one of the partials and less in the other than the value of (θ) in the original relationship. If in the table above the (θ) for XY were zero, then for one of the partials for example, TXY, the θ would be greater than zero and than for the other, TXYn, it would be less than zero. In this case it was possible to "specify the circumstances under which the original relationship holds true more strongly,"[13] and further analysis was indicated to seek an explanation for the stronger relationship on one side of the test dichotomy.

2. **Contingency.** In the case of contingency, the value of the phi coefficient (θ) was greater in both partials, and in addition, the test variable followed the independent variable in the time sequence and was considered as an intervening factor which increased the value of (θ) by its introduction into the situation. For example, if one were working, the conditions of employment would influence his production, and then it can be concluded that working conditions were an intervening factor between occupational choice and production. In addition, "condition" and "contingency" were interdependent, since in the case that the test variable (T) was a condition then the independent variable (X) was a contingency, and the reverse was likewise true—if (T) was a contingency then (X) was a condition.

3. **Spurious relationship.** In the case of spurious relationship, the original relationship (XY) was significant, but when the test variable was introduced the value of the phi coefficient (θ) was reduced in both partials. In such a case the original relationship was regarded as spurious. It is customary to rectify the original relationship by elaborating on the improbable relationship between two variables which are both determined by an antecedent variable. For example, it has been found that the more fire engines that come to a fire, the greater the damage, and since fire engines were normally used to reduce fires, the relationship was startling and required elaboration. When the size of the fire was introduced, it became apparent that both the number of engines and the damage were a result of size.

4. **Interpretation.** In this case, as in the previous one, the original relationship (XY) was significant and the introduction of (T) reduced the value of the (θ) in the partials. The distinction between (3) and (4) is a matter of the time sequence. If the test variable was an intervening rather than an antecedent factor, it could be interpreted as a new factor which modified and reduced the original association. An example may clarify this operation. The suicide rates were higher in urban than in rural areas, but if the greater intimacy and cohesion of rural areas was

[13] Lazarsfeld, **op. cit.,** p. 122.

introduced as an intervening variable, a new interpretation could be given—the suicide rates were lower in rural areas because of the greater social cohesion.

It can be assumed that a causal relationship has been discovered in those cases in which there was an original association between the independent (X) and the dependent (Y) variables and when an antecedent test variable (T) was introduced the partials relationship between (X) and (Y) did not disappear. This principle will be fundamental to testing the hypothesis of this study. Consequently, those social and economic variables, which were found to be significantly associated with occupational choice upon application of the chi-square test, and for which this association did not disappear when the intervening variable (earned income) was introduced, will be ultimately regarded as causal factors of economic success. When the test variable (T) results in an increase in the value of the phi coefficient (θ) in both partials from the original (XY) value of (θ) it will be concluded that the independent variable was a probable cause of success which could be appropriated for predictive purposes.