

ALASKA LEGISLATURE SPECIAL COMMITTEE / SUBJECT FILES 86/2

190 SCOMM 9: HOUSE SPEC. COMM. ON PERMANENT FUND 1977-78

45. Forest Products Task Force of the Federal Field Committee for Development Planning in Alaska, *Alaska Forest Resource Inventory Project*, March, 1968.
46. Johnson to Jones, *op. cit.*
47. This analysis ignores the possibility of a change in the round-log export prohibition as it relates to Region II. No analysis has yet been done on the various effects that might flow from such a change.
48. Alaska Department of Natural Resources, Division of Agriculture, 1967 *Alaska Agricultural Statistics*, and U. S. Department of Agriculture, Palmer, Alaska.
49. Transportation Task Force of the Federal Field Committee for Development Planning in Alaska, *Transportation and Economic Development in Alaska*, 1968, p. 28.
50. U. S. Department of the Interior, Bureau of Reclamation, *Livestock Industry in Alaska: Possibility of an Integrated Livestock Industry on Kenai Peninsula, Kodiak, and Adjoining Islands*, Juneau, Alaska, 1967.
51. Tussing, *op. cit.*, p. 74.
52. 1967 *Alaska Agricultural Statistics*, *op. cit.*
53. *Ibid.*
54. Howard Walters, Production Manager, Matanuska Maid Dairy, in a telephone conversation, July 11, 1968.
55. 1967 *Alaska Agricultural Statistics*, *op. cit.*
56. Leigh H. Hammond, *et al.*, *The Feasibility of Producing and Processing Certain Vegetables in Southeastern North Carolina*, Economic Research Report, Department of Economics, North Carolina State University, Raleigh, North Carolina, 1967.
57. Tussing, *op. cit.*, Part VIII.
58. There will also be forces at work which may cancel out any increased demand derived from either within the state or outside of Alaska; e.g., transportation advances and wage increases in other sectors of the economy may rise (hence, farming would become a less attractive source of employment).
59. Discussions following the proposal of the Rampart Dam indicate what a sizable impact man-made change can have on the physical environment.

60. For some specific recommendations as to what form this cooperation might take, the reader is referred to Jerome R. Saroff, *Alaska Recreation & Government Policies*, prepared for the Federal Field Committee for Development Planning in Alaska, 1967; and also Cresap, McCormick, and Paget's recently completed study, *A Program for Increasing the Contribution of Tourism to the Alaskan Economy*.
61. See for instance the survey reported in *Traveler's Profiles*, Alaska Department of Economic Development and Planning, 1964, p. 52.
62. Imposition of a travel tax to relieve pressure on the U. S. gold supply could temporarily alter this situation.
63. According to the Civil Aeronautics Board, the 29 percent reduction in fares between Anchorage and Seattle lead to a 100 percent increase in passenger travel between the two cities.
64. Much of this analysis is freely drawn from the recent Federal Field Committee publication, *Transportation and Economic Development in Alaska*, prepared by the Transportation Task Force of the Federal Field Committee, 1968.
65. A balanced view requires a realistic appraisal of how spatial analyses bear on Alaska as well as the recognition of some of the distinctive limitations of transport planning. The state enjoys (and must capitalize on) a prime position on the Polar air (and perhaps undersea) routes of the world; the crossroads between Europe, northeastern United States, and Asia; and the shipping lanes along the northwest Pacific Rim. Yet its "corner area" remoteness from traditional United States markets and mainstreams of commerce places Alaska at some disadvantage locationally.
66. The impact upon the transportation system for the more isolated processing plants along the Alaska Peninsula and the Aleutian Chain has been less significant, for the reduction in seasonality has been less evident and the increases in total tonnages relatively small for individual ports. The Kimbrell-Lawrence Transportation Company is preparing an additional vessel to service processing plants from Cook Inlet to the Aleutian Chain. The new ship will have a much larger capacity than the firm's existing vessel for northbound commodities as well as for southbound frozen and canned fish products. The new vessel will be an addition to the Kimbrell-Lawrence and Alaska Steamship fleet currently serving the area.
67. Air freight can, of course, be used effectively where other transportation modes do not exist at all or are available for only a part of the year. The movement of fresh salmon by charter cargo planes from isolated Arctic and Bering Sea fisheries appears feasible. Anchorage could be the point of transshipment or delivery for further

processing, or the salmon could move directly to the U. S. fresh-fish markets. Backhaul of salmon from outlying points of supply via certificated air carriers could also be utilized, provided the carriers offer incentive rates and dependable service.

68. King Salmon has been served seasonally by Western Airlines. The runway is adequate for jet service, but a new apron is required to serve not only the Western Airlines jets but also those of Wien Consolidated Airlines. There are no firm state plans for the programming of this work.
69. That the State of Alaska is at least partially ready for a shift from the traditional "connecting-of-cities" approach to one of "opening up the country" is evidenced in the considerable and broad planning it is now devoting to the possible construction of a developmental trunk road in southwestern Alaska, crossing the Alaska Peninsula from Iniskin Bay in the lower Cook Inlet to Bristol Bay by joining onto the Naknek-King Salmon road. The road would skirt the state's largest lake, providing access to the scenic northeastern end of Iliamna and surrounding Lake Clark as well as allowing motorists by a branch road to reach Katmai National Monument, an attraction made famous by National Geographic Society but until now barely visited. Metallic mineral deposits have been proven, fisheries and wildlife abound, but perhaps the greatest resource of the area is its wilderness character. The road could be integrated into the southcentral highway system at Homer by means of the state ferry system which would make the trip across Cook Inlet from Iniskin Bay, thus breaking the surface remoteness of the Bristol Bay communities with the economic heartland of the state. Another possibility, of course, in the longer term would be the construction of a road down the west side of Cook Inlet with perhaps a crossing of Knik Arm out of Anchorage. The whole matter could be hastened toward resolution if significant oil development should be indicated for Bristol Bay.
70. Portions of this section draw on the unpublished study, still in progress, by the Federal Power Commission, entitled, *Alaska Power Survey*.
71. *Ibid.* Utility and nonutility capacities are about equally divided in southeastern Alaska. The nonutility percentage is 86 in northwest and southwest Alaska combined and is 76 percent in interior Alaska. Data are for 1965.
72. *Ibid.* In 1965 there was approximately 559,000 kw of electric generating plant capacity located throughout the five Alaska geographic study areas. Of this, the capacity in all utility plants is about 240,000 kw. Of the remainder about 261,800 kw is installed on military bases and at communication centers. Of Alaska's total plant capacity, the largest part (about 250,000 kw) is located in the southcentral area around

Anchorage and on the Kenai Peninsula. Of this capacity, about 151,700 kw is in generating plants of the utilities. The next largest concentration of plant capacity (some 155,400 kw) is located around Fairbanks in the Interior area. Of this, about 35,200 kw is in generating plants of the utilities.

73. *Ibid.*
74. *Ibid.* An analysis of this subject (prepared in conjunction with the Federal Power Commission study) is under way, entitled, *Alaska Railbelt Transmission System*, by the Alaska Power Administration, Juneau, Alaska. Portions of the following discussion draw from this unpublished and uncompleted study.
75. The two military installations at Anchorage tie into this system for emergency service only.
76. *Alaska Power Survey, op. cit.*
77. *Ibid.*
78. *Ibid.* The lowest projected increase is for the southwestern Alaska area--6 to 7 percent annually over the period.
79. For a discussion of the possibilities of power cost reductions through changes in natural gas pricing practices see Arlon R. Tussing, *et al.*, *op. cit.*, pp. 59-62.
80. *Alaska Power Survey, op. cit.* In the Interior area it is expected that hydro generation will supply about 70 percent of the required load in 1985 with thermal power supplying the remaining 30 percent. In 1965 thermal power provided 93 percent of the kilowatt-hour requirements of this area. In the Northwest and Southwest areas no electric energy was produced by hydro power in 1965. Although there are several potential hydroelectric sites in these two areas, due to the small scattered load centers, the terrain and climatic conditions, it is expected that in 1985 the power generated will still be by fuel oil. Hydro power will supply about 87 percent of the Southeast area load requirements in 1985 with thermal plants fired by oil furnishing the remaining kilowatt-hour requirements. In the Southcentral area hydro power is expected to supply about 30 percent of the kilowatt-hour requirement for 1985. This area will require 83 percent of the total fuel requirements for the State of Alaska in 1985.
81. Standard Oil Company lists posted prices of diesel oil at 14.9 cents per gallon in San Francisco, 24.8 cents per gallon at Juneau and Ketchikan, and 26.2 cents per gallon at Anchorage. These prices are usually bettered, however, when quantity purchases are made. Ketchikan

Utilities reports paying about \$6 per barrel (14 cents per gallon) in 1966, but Golden Valley reports a cost of \$8.30 per barrel at Fairbanks and \$10.42 at Nenana. These prices amount to about 21 and 26 cents per gallon. Thus, transportation has increased the cost of diesel oil at Fairbanks by nearly 50 percent and at Nenana by almost 100 percent over Ketchikan prices. Of course, this is not to suggest that transportation charges are entirely controlling in the price and routing of fuel supplies; lines of credit and marketing patterns of long standing are other significant factors worthy of mention. Federal Field Committee for Development Planning in Alaska, Transportation Task Force study, *Transportation and Economic Development in Alaska*, 1968, p. 79.

82. Parts of this analysis are drawn directly from recent Federal Field Committee analyses of the Alaska Communication System and the present disposal action.
83. Alaska Communication System Headquarters, Seattle, 1968.
84. *Ibid.* This performance was made possible by growth in the number of messages (Anchorage) over the same years of 11 percent, 18 percent, and 25 percent.
85. At this writing the extension of new minimal telephone service to 42 villages in western Alaska is being actively considered by ACS. Advances for the bush area, like educational television, seem not to be on the foreseeable time horizon.
86. The same result could be reached if the municipalities were fully committed to lower charges and upgraded service to subscribers. Struggles over interconnecting charges and the division of revenues between the long-lines carrier and the exchanges are not the proper focus: the total charges paid by the Alaskan public for telephone and telegraph service are. Conceivably, lower charges might be arrived at by the long-lines carrier while total charges remained as high as ever because a municipality attempted to "protect its receipts." The history of local governments' using their telephone exchanges as tax instruments is almost an unbroken one.
87. A good discussion of the following points is found in Steven J. Weiss and Edwin C. Gooding, *Estimation of Differential Employment Multipliers in a Small Regional Economy*, Research Report to the Federal Reserve Bank of Boston, No. 37, November, 1966, pp. 10-13.
88. The notion is valid to the extent that, for a particular industry, regional factor costs, technology, and productivity are roughly the same as for other regions. On the other hand, it makes little sense to attempt to diversify a regional economy when the result is the creation of inefficient and noncompetitive producers.

89. The Alaska subregions contain many examples of situations where the above considerations have been real deterrents to growth of the export base. Lack of adequate transportation facilities is frequently cited as a prime barrier to the development of various resource potentials. Kobuk copper and various forest-product projects might be cited as cases in point. The high cost of long-distance communications is a deterrent to commercial activity. Problems with economies of scale and frequency of transportation service are obstacles to development of competitive sheep or cattle operations in the Aleutian Chain. In any event, consideration of the supportive sectors of Alaska's regions is of more importance than may be the case in other regional studies.
90. There are certain modifications that need to be made to this classification of the distributive sector. Data are not available in sufficient detail to quantify the magnitudes involved, but it is evident that some part of the distributive sector is engaged in export activity. Examples of this might include long-lines communications from other regions through Anchorage, the role of Anchorage as a wholesale distribution center to other regions, and the provision of medical services to the rest of Alaska.
91. Before the theory can be empirically utilized certain additional assumptions are necessary. The first deals with the explicit functional form of the relationship. Generally, a linear relationship is postulated to exist. Hence, the theory can be stated as,

$$TRA = a + b(EBA),$$

where TRA = total regional activity, EBA = economic base activity, "a" = a constant term, and "b" = the multiplier. The assumption of linearity in effect asserts that a stable, proportional relationship exists between total economic activity and economic-base activity. The linearity assumption also implies that all relevant technological relationships remain constant. If this is not the case then the constant term and/or the multiplier may change. In the presence of less than full employment of resources (particularly capital), the multiplier may overstate the effect of changes in the economic base (especially in the short run). On the other hand, assuming a linear relationship between export activity and total regional activity facilitates the quantitative handling of Region II and should not seriously distort reality in the short run.

92. The equations and calculations are as follows:

$$\begin{aligned} (1) \text{ DIST} &= -61.58 + 0.89 \times \text{Base} & r &= 0.8957 \\ & \quad (0.147) \\ & \quad t = 6.045 \end{aligned}$$

$$(2) \quad \text{SUPP} = -111.51 + 1.58 \text{ X Base} \quad r = 0.9405$$

$$(0.191)$$

$$t = 8.286$$

93. These multipliers were used with full awareness of their faults mentioned above (p.235). A fundamental assumption of the projections, therefore, is that the progress of import substitutions, the increase in fiscal transfer from the federal to state and local government, and the private investment accelerator, will have the same relative weight in total economic activity they had in the 1955-1965 period. Since this is a highly optimistic assumption, the projected figures for the distributive and support sectors are probably rather high.

94. Weiss and Gooding, *op. cit.*, pp. 29-31.

95. The following results were obtained:

$$(3) \quad \text{DIST} = -7.62 + 0.81 \text{ Gfc} + 1.73 \text{ P} \quad \text{Mult. } r = 0.9715$$

$$(0.257) \quad (0.404)$$

$$t = 3.15 \quad t = 4.28$$

$$(4) \quad \text{SUPP} = -30.0 + 1.9 \text{ Gfc} + 2.0 \text{ P} \quad \text{Mult. } r = 0.9489$$

$$(0.581) \quad (0.913)$$

$$t = 3.29 \quad t = 2.16$$

96. The following results were obtained:

$$(5) \quad \text{TCPU} = 8.80 + 0.09 \text{ Gfc} + 0.57 \text{ P} \quad \text{Mult. } r = 0.8888$$

$$(0.131) \quad (0.205)$$

$$t = 0.661 \quad t = 2.79$$

$$(6) \quad \text{FIR} = -6.00 + 0.13 \text{ Gfc} + 0.16 \text{ P} \quad \text{Mult. } r = 0.9828$$

$$(0.024) \quad (0.038)$$

$$t = 5.48 \quad t = 4.17$$

$$(7) \quad \text{W-R} = 0.00 + 0.29 \text{ Gfc} + 0.65 \text{ P} \quad \text{Mult. } r = 0.9592$$

$$(0.115) \quad (0.038)$$

$$t = 2.53 \quad t = 3.62$$

$$(8) \quad \text{SER} = 10.45 + 0.30 \text{ Gfc} + 0.35 \text{ P} \quad \text{Mult. } r = 0.9612$$

$$(0.083) \quad (0.130)$$

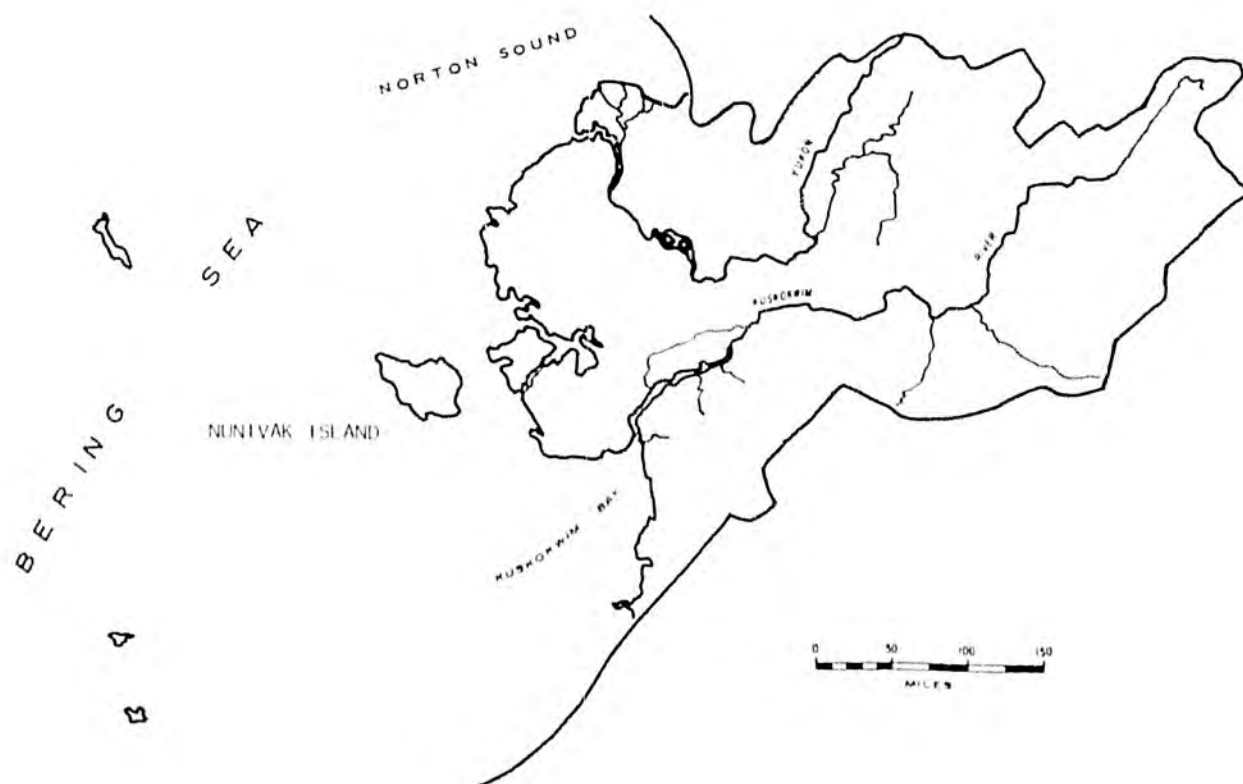
$$t = 3.64 \quad t = 2.68$$

97. Weiss and Gooding, *op. cit.*, pp. 37-39. Military activity in Region II is, of course, largely dominated by two large bases in the Anchorage area (Elmendorf Air Force Base and Fort Richardson). Both are largely self-contained units providing for most of the needs of the personnel.

Other studies also have found that the military employment multiplier can be significantly lower than for other types of export activity. In another study on Alaska it was concluded that for the post-1955 period, and particularly in the post-statehood period, the statewide military expenditure multiplier has been so weak as to be statistically nonidentifiable. The implication of the above is, of course, that the leakages from defense spending, both from Region II and from the state as a whole, are extremely high. See Robert C. Haring's "The Employment Multiplier Impact of Defense Spending in Alaska," *1966 Papers of the Regional Science Association--Western Section*, Institute of Social, Economic and Government Research, University of Alaska, College, Alaska, 1966, pp. 130-134.

SUBREGION III

Kuskokwim Area



CHAPTER 4

KUSKOKWIM--REGION III

1. DIAGNOSTIC CHARACTERISTICS OF THE REGION

Region III consists of the entire drainage of the Kuskokwim River together with that of the lower Yukon River plus Nunivak Island. Its 98,116 square miles are bordered on the east by the Mt. McKinley massif, but the population is concentrated in the western half of the region in the low, treeless *akola* of the Yukon-Kuskokwim delta. Temperatures in the interior, near McGrath and Lake Minchumina, typically range from -55° to $+85^{\circ}$ F., and in the delta and along the coast between -30° and $+70^{\circ}$ F. The region experiences storms, precipitation, high winds, and fogs the year round.

A. Population and Labor Force

The 1960 Census figure for resident population of the region was 10,966, of whom 9,660 were enumerated as Alaska Natives.¹ The population in 1967 was between 13,000 and 14,000, of which approximately 12,000 were Alaska Natives. Because of difficulties in enumerating the widely dispersed, highly migratory population, even the Census figures can be considered reliable only as indicators of orders of magnitude. Bureau of Indian Affairs annual estimates of the population of individual Native villages are reasonably reliable, but U. S. Bureau of the Census and State of Alaska figures for the non-Native population since 1960 are believed to be highly suspect. Figure 4-1 compares various population estimates for the region between 1929 and 1967. The State of Alaska Department of Health and Welfare figures show a more than threefold increase in the number of non-Native civilians since 1960--the authors simply do not know where these persons could possibly be. There is no evidence from employment data or from the appearance of the villages that there has been any increase in the non-Native civilian (or, for that matter, military) population. The virtual abandonment of the mining districts in the eastern part of the region has been offset by some growth in Bethel, but the relative numbers remain a matter of conjecture.

According to the estimates in Figure 4-1, more than 87 percent of the resident population in 1967 were Natives. About nine-tenths of these are Southern, or *Yupik*-speaking Eskimos; the remainder are *Ingalik* Athapascan Indians. About 1,750 persons live in Bethel, the largest settlement, main port, and center of government. The rest are scattered in about 45 smaller settlements along the rivers and the Bering seacoast. Figure 4-2 lists the settlements of Region III in order of their estimated 1967 population.

FIGURE 4-1

POPULATION OF REGION III, 1929-1967

YEAR	SOURCE	RESIDENT POPULATION			MILITARY	RESIDENT CIVILIANS		
		TOTAL	NON-NATIVE	NATIVE		TOTAL	NON-NATIVE	NATIVE
1929	Census	7,498						
1939	Census	7,739						
1950	Census	8,290						
1960	Census ^a	10,966	1,306	9,660 ^c	348	10,618	(958)	(9,660)
	Ak Dept H & W	11,000	1,300	9,770				(9,700)
1961	Ak Dept Labor	11,663			348	11,319		
	Ak Dept H & W	11,700	1,600	10,100				(10,100)
1962	Ak Dept Labor	12,997			350	12,647		
	Ak Dept H & W	12,400	2,000	10,400				(10,400)
1963	Ak Dept Labor	12,939			350	12,589		
	Ak Dept H & W	13,100	2,300	10,800				(10,800)
1964	Ak Dept Labor	13,254			350	12,904		
	Ak Dept H & W	13,900	2,800	11,100				(11,100)
1965	Ak Dept Labor	14,481			330	14,151		
	Ak Dept H & W	14,700	3,100	11,600				(11,600)
1966	Ak Dept Labor	15,351			470	14,881		
	Ak Dept H & W	15,400	3,500	11,900				(11,900)
	H. P. Gazaway	12,921	1,800	11,061				(11,061)
1967	Ak Dept H & W	15,900			500	15,400	3,200	12,200
	BIA-FFC ^b	12,628	787	11,841				(11,841)
	Our Estimated ^d	13,700	1,700	12,000	500	13,200	1,200	12,000

Note: Region is Bethel, Kuskokwim and Wade-Hampton Districts; in census years before 1960, add to these

FIGURE 4-1 (Continued)

Innoko, Mt. McKinley, and Otter Districts, plus Anvik and Holy Cross villages from Nulato District, and Mekoryuk and Cape Nash villages from Cape Nome District.

^aAlaska Department of Labor uses Census enumeration for 1960, U. S. Bureau of the Census estimates for subsequent years.

^bPopulation of places with 25 or more Natives.

^c"Indians" and "Other Races" (...than white, Negro, Japanese, Chinese and Filipino).

^dRounded to hundreds from Figure 4-2.

Figures in parentheses are for comparison and assume no Natives in armed forces.

FIGURE 4-2

VILLAGE POPULATION ESTIMATES, REGION III

VILLAGE	OLD ELECTION DISTRICT	CULTURE	1967 POPULATION BIA-FFC ESTIMATES			1966 GAZAWAY TOTAL	U.S. CENSUS POPULATION		
			NON-NATIVE	NATIVE	TOTAL		1960	1950	1939
Bethel	16	E-W	220	1,530	1,750	1,600	1,258	651	376
Hooper Bay	24	E	23	531	554	540	460	307	299
Alakanuk	24	E	10	437	447	385	278	140	61
Chevak	24	E	12	400	412	380	315	230	43
Mountain Village	24	E	18	394	412	352	300	221	128
Kwethluk	16	E	14	388	402	375	325	242	186
Nunapitchuk	16	E	9	382	391	405	327	125	121
Emmonak (Kwiguk)	24	E	9	405	414	375	358	67	42
Kwigillingok	16	E	7	330	337	363	344	245	146
St. Mary's (Andreavsky)	24	E	33	297	330	295	225		
Akiachak	16	E	12	299	311	310	229	179	156
Quinhagak	16	E	7	304	311	263	228	194	224
Mekoryuk	16	E	9	301	310	266	242	156	
Kipnuk	16	E	3	281	284	267	221	185	144
Napakiaik	16	E	4	275	279	254	190	139	113
Pilot Station	24	E	6	267	273	260	219	52	39
Holy Cross	17	I	19	241	260	235	256	157	226
Tununuk	16	E	3	244	247	236	183	112	65
Kotlik	24	E	8	237	245	160	57	44	35
Aniak	17	E	55	185	240	240	308	142	122
Kasigluk	16	E	3	227	230	235	224	111	66
Tooksook Bay	16	E	2	213	215	180	new		
Goodnews Bay (Mumtrak)	16	E	6	203	209	185	154	100	
McGrath	17	W-I	100	100	200	250	241	175	138
Eek	16	E	4	193	197	200	200	141	170

FIGURE 4-2 (Continued)

VILLAGE	OLD ELECTION DISTRICT	CULTURE	1967 POPULATION BIA-FFC ESTIMATES			1966 GAZAWAY TOTAL	U.S. CENSUS POPULATION		
			NON-NATIVE	NATIVE	TOTAL		1960	1950	1939
Scammon Bay	24	E	2	188	190	163	115	103	88
Napaskiak	16	E	5	183	188	215	154	121	167
Tuntuliak	16	E	2	181	183	165	144	68	
Akiak	16	E	6	173	179	155	187	168	209
Tuluksak	16	E	4	172	176	160	137	116	88
Lower Kalskag	17	E	6	163	169	145	122	88	
Kalskag	17	E	3	164	167	152	147	139	76
Shageluk	17	I	6	159	165	175	155	100	92
Grayling (Holikachuk)	17	I	14	141	155	130	122	98	77
Russian Mission	24	E	4	146	150	128	102	55	34
Stony River (Moose)	17	I	14	131	145	117	75		
Cheforak	16	E	8	135	143	146	133	105	
Marshall (Fortuna Ledge)	24	E	12	130	142	110	166	95	91
Newtok (Keyaluvik)	16	E	2	129	131	135	129	69	
Sleetmute	17	E	10	117	127	149	122	120	96
Anvik	17	I	10	115	125	120	120	99	110
Sheldon Point	24	I	0	117	117	111	125	43	
Nikolai	17	I	3	112	115	119	85	88	
Nightmute	16	E	6	104	110	103	237	27	78
Platinum	16	E	27	53	80	69	43	72	45
Crooked Creek	17	E	4	75	79	113	92	43	48
Oscarville	16	E	3	52	55	46	51	27	11
Russian Mission	17	E	0	50	50	40			
Kongigonak	16	E	2	47	44				
Pitkas Point	24	E	1	40	41	52	28	84	50
Hamilton	24	E	15	20	35	30	35	43	4
Georgetown	17	I	2	30	32	29			
Lime Village (Hungry)	17	I	0	25	25	27		29	38
Red Devil	17	W	10	15	25	25	152		
Medfra	17	W	10	15	25	25		25	

FIGURE 4-2 (Continued)

VILLAGE	OLD ELECTION DISTRICT	CULTURE	1967 POPULATION BIA-FFC ESTIMATES			1966 GAZAWAY TOTAL	U.S. CENSUS POPULATION		
			NON-NATIVE	NATIVE	TOTAL		1960	1950	1939
Chaneliak	24	W			30	93	100	93	
Flat	17	W			50	27	95	146	
Nyac	16	W			35	54	64	33	
Farewell	17	W			25				
Ophir	17	W				68	68	84	
Takotna	17	I				40	42	70	
Chakaktolik	24	A				32	98	60	
Napaimute	17	A				10	44	75	
Kashegelok	17	A				5			
Akulurak	16	A					197	162	
New Knockhock	24	A					122		
Nanvarnaluk	16	A					116		
Umkamute	16	A					99		
Chukfaktulik	16	A					59	34	
Cheching	16	A					54	55	
Chiftak	16	A					50		
Nash Harbor	16	A					49		
Nunachuk	16	A					44	17	
Paingakamiut	16	A					44		
Nilikluguk	16	A					40		
Takshak	24	A					39	18	
New Hamilton	24	E					27	25	
Okogamute	24	A					27	29	
Parks	17	A					11		
Cape Newenham	16	M	#	#	#				
Cape Romanzof	24	M	#	#	#				
Sparrevohn	17	M	#	#	#				
Tatalina	17	M	#	#	#				

FIGURE 4-2 (Continued)

VILLAGE	OLD ELECTION DISTRICT	CULTURE	1967 POPULATION BIA-FFC ESTIMATES			1966 GAZAWAY TOTAL	U. S. CENSUS POPULATION		
			NON-NATIVE	NATIVE	TOTAL		1960	1950	1930
ENUMERATED ABOVE			787	11,841	12,628	11,904	10,449	7,629	5,553
OTHER PLACES			900*	200*	1,100*	1,017	517	661	2,186
TOTAL			<u>1,687*</u>	<u>12,041*</u>	<u>13,738*</u>	<u>12,921</u>	<u>10,966</u>	<u>8,290</u>	<u>7,739</u>

*Our estimate.

= Military and non-Native Department of Defense and contractor employees living on military installations included in "OTHER PLACES."

A = Abandoned.

E = *Yupik*-speaking Eskimo.

I = *Ingalik* Indian.

M = Military.

W = Non-Native.

Figure 4-3 shows the number of births and deaths attributed to residents of the region by the Alaska Department of Health and Welfare between 1960 and 1966. The peculiar age-sex composition of the non-Native minority (a preponderance of young, adult males), together with the unreliability of current population figures for this group, make it difficult to deal with its characteristics in terms of birth and death rates. In any case, changes in the non-Native population are determined by employment opportunity, rather than by vital statistics. The Native population² between 1960 and 1967 showed an overall annual increase of 29.5 per thousand.³ Figure 4-4 gives estimates of the composition of this increase between 1960 and 1966. The crude birth rate of 47.2 is among the highest in the world, but there has been a marked drop since 1964, apparently as a result of the widespread introduction of intrauterine devices. The total death rate was not much higher than that of the total United State population, so that the annual rate of natural increase over the same period was exceptionally high. 36.4 per thousand.⁴

Natural increase of population was partially offset by migration of young adults from the region. We have no firm information on the distribution of outmigrants, but Dillingham and Anchorage are important recipients. One result has been a relative decline in the number of working-age adults. In 1960, persons 15 to 39 years of age comprised 34.8 percent of the non-white Census population, compared with 42.5 percent for the total population of Alaska. The Bureau of Indian Affairs estimates in Figure 4-9 suggest that the proportion of this age group in the region's Native population was less than 30 percent in 1967.

The most important migration within the region, apart from seasonal movements, is from the smaller villages to Bethel, which has increased its share of the region's population from 7.9 percent in 1950 to 12.7 percent in 1967. The establishment in Bethel of a regional high school and its dormitory facilities, a housing fabrication plant, and a fisheries cold-storage facility is expected to accelerate the growth of Bethel at the expense of other villages. Nevertheless, migration out of most small villages has not yet been rapid enough to prevent absolute increases in their population. The moderate pace of outmigration so far can be explained mainly by the low level of acculturation of the Native people. Even larger Eskimo communities, like Bethel and Dillingham, can be expected to have little pull on people who cannot effectively communicate in English, let alone read and write the language. Native population movements in the relatively more advanced northwest portion of Alaska (Region V) suggest, however, that rising levels of educational attainment, coupled with even limited employment opportunities, will cause a rapid movement from the smaller villages to the larger.

The distributions of most indicators of social and economic levels in the population are distinctly bimodal, reflecting the vast gulf between the Native majority and the white minority. In educational attainment, for

FIGURE 4-3
BIRTHS AND DEATHS, REGION III
1960-1966

	1960	1961	1962	1963	1964	1965	1966
<u>Births</u>							
All	492	534	520	539	482	501	517
White	33	27	24	26	20	13	18
Nonwhite	459	507	496	513	462	488	499
<u>Deaths</u>							
All	102	118	117	107	96	139	103
White	9	9	12	7	8	8	3
Nonwhite	93	109	105	100	88	131	100
<u>Native Birth and Death Rates per 1,000 Population*</u>							
Birth Rate	48	51	48	49	43	44	43
Death Rate	10	11	10	9	8	12	9
Natural Increase	38	40	38	40	35	32	33

Source: Numbers of births and deaths--Alaska Department of Health and Welfare.

*Nonwhite births and deaths against Native population estimated by exponential interpolation between 1960 Census figure and 1967 Bureau of Indian Affairs-Federal Field Committee estimate. Non-Native (white) rates were not estimated because of unreliability of population data. Non-Native rates for 1960, based on Census figures were births 25, and deaths 7, per 1,000.

FIGURE 4-4

ESTIMATED COMPONENTS OF POPULATION CHANGE
NATIVE POPULATION, REGION III, 1960-1966

		AVERAGE ANNUAL RATE PER THOUSAND	
		REGION III NATIVES	U. S. AVERAGE 1966
1960 Population (Census Count)	9,660		
1966 Population (exponential interpolation between 1960 Census and 1967 Bureau of Indian Affairs-Federal Field Committee estimate)	11,500		
Total Increase	1,840	29.5	10.9
Births (1/2 of 1960; 1961- 1965; 1/2 of 1966, Table III-3) nonwhite	2,946	47.2	18.6
Deaths (1.2 of 1960; 1961- 1965; 1/2 of 1966, Table III-3) nonwhite	675	10.8	9.5
Natural Increase	2,301	36.4	9.1
Net Migration (residual)	-431	-6.9	+1.8

instance, the median number of school years completed by the population 25 and over in 1960 was 12.7 for whites, far above the national average, and 1.9 for nonwhites, by far the lowest of any political subdivision in the fifty states (Figure 4-5). The pattern of income distribution is similar; the median income of nonwhite individuals in the region according to the 1960 population census was less than one-fourteenth that of whites and less than one-sixth of the United States average (Figures 4-6 and 4-7). Because of the inadequacy of the rural schools of the region, the median number of years of school probably understates the educational backwardness of the region. Likewise, high local prices (probably about twice national averages) compound the impact of extremely low money incomes.

In 1960, less than one-third of Region III's working-age population and less than one-fifth of the nonwhite working-age population were attached to the labor force in its conventional definition. The labor force participation rates for white males and females over 14 was 92.9 percent and 68.5 percent, and for nonwhite males and females 30.9 percent and 8.3 percent respectively; 89.9 percent of white males were actually employed on the date of the census, compared to 21.9 percent of nonwhite males (Figure 4-8). Bureau of Indian Affairs estimates for September, 1967, which are not strictly comparable to the Census categories, show a labor force participation rate for Native males 16 years and over of 62.3 percent, and for females of 22.2 percent. A better indication of the labor force participation of Native residents is the fact that only 17.7 percent of Native males and 10.4 percent of Native females of working age had either permanent or temporary employment, and the bulk of this employment was temporary or seasonal (Figure 4-9).

B. The Subsistence Economy

The overwhelming majority of the Native people are still economically and culturally oriented to the same subsistence resources on which they depended prior to contact with Western civilization. The composition of subsistence resources utilized differs considerably from village to village. In the delta area, where most of the people live, there are no large land mammals--both the pattern of activity and the diet of the people reflect a water orientation. The most important wildlife resources in the area are fish (primarily chum and king salmon), seal, and waterfowl. Seal are important along the coast. In the upland areas, moose are available, and the McGrath area has access to caribou, but the place of these large mammals in the total diet or labor expenditure of the region is not large. Surveys of the five Eskimo villages in the region in the *Alaska Dietary Survey* found local foods accounting for 37 to 45 percent of the calories consumed and 67 to 88 percent of the protein. These proportions are probably typical of the region. Local materials are an important source of fuel, and furs are used for clothing. The proportion of goods from the subsistence

FIGURE 4-5

EDUCATIONAL ATTAINMENT OF THE POPULATION, REGION III, 1960

	TOTAL	WHITE	NONWHITE
Number of Persons Over 25 Years of Age	3,996	791	3,205
No Schooling	1,326	7	1,319
Elementary School			
1-4 years	1,176	7	1,169
5-6 years	435	16	419
7 years	190	14	76
8 years	175	65	110
High School			
1-3 years	175	23	52
4 years	264	231	33
College			
1-3 years	155	143	12
4 years or more	200	185	15
Median School Years Completed			
<u>Region III</u>	<u>3.6</u>	<u>12.7</u>	<u>1.9</u>
Alaska	12.1	12.4	6.6
United States	10.6	10.9	8.2

Source: U. S. Census of Population.

FIGURE 4-6
FAMILY INCOME DISTRIBUTION, REGION III, 1959

	TOTAL	WHITE	NONWHITE
Number of Families	1,849	252	1,597
Income			
Under \$1,000	550	4	546
\$1,000 to \$1,999	470	0	470
\$2,000 to \$2,999	264	6	258
\$3,000 to \$3,999	125	18	107
\$4,000 to \$4,999	50	4	46
\$5,000 to \$5,999	83	22	61
\$6,000 to \$6,999	68	24	44
\$7,000 to \$7,999	34	10	24
\$8,000 to \$8,999	43	34	9
\$9,000 to \$9,999	45	25	20
\$10,000 and over	117	105	12
Median Income of Families <u>Region III*</u>	<u>\$1,870</u>	<u>\$8,120</u>	<u>\$1,530</u>
Alaska	\$7,305	\$8,060	\$3,339
U. S.	\$5,660	\$5,893	\$3,711

Source: U. S. Census of Population.

*Medians calculated on assumption of proportional distribution within median income class.

FIGURE 4-7

INDIVIDUAL INCOME DISTRIBUTION, REGION III, 1959

	TOTAL	WHITE	NONWHITE
Number of Persons	6,158	1,003	5,155
Without Income	2,248	90	2,194
With Income	3,874	917	2,961
Income			
\$1 to \$499 or less	1,024	39	985
\$500 to \$999	827	156	771
\$1,000 to \$1,499	515	59	456
\$1,500 to \$1,999	225	37	188
\$2,000 to \$2,499	234	77	157
\$2,500 to \$2,999	167	65	102
\$3,000 to \$3,499	108	62	46
\$3,500 to \$3,999	66	44	22
\$4,000 to \$4,499	77	38	39
\$4,500 to \$4,999	55	28	27
\$5,000 to \$5,999	172	95	77
\$6,000 and over	404	313	91
Median Income All Persons*			
<u>Region III</u>	<u>\$ 410</u>	<u>\$2,830</u>	<u>\$ 200</u>
Alaska	\$1,980	\$2,670	\$ 690
U. S.	\$1,280	\$1,390	\$ 770

Source: U. S. Census of Population.

*Medians calculated on assumption of proportional distribution within median income class.

FIGURE 4-8

EMPLOYMENT CHARACTERISTICS OF THE WORKING AGE POPULATION, REGION III, 1960

	NUMBER OF PERSONS REGION III			PERCENTAGE OF TOTAL				
				REGION III			Alaska	U.S.
	Total	White	Non-White	Total	White	Non-White	Total	Total
<u>Persons 14 years and Over</u>	6,158	1,003	5,155	100.0	100.0	100.0	100.0	100.0
Labor Force	1,885	856	1,029	30.6	85.3	20.0	66.8	55.3
Armed Forces	348	299	49	5.7	29.8	1.0	21.8	1.7
Civilian Labor Force	1,537	557	980	24.9	55.5	19.0	45.0	53.9
Employed	1,232	536	696	20.0	53.4	13.5	39.1	51.1
Unemployed	305	21	284	5.0	0.2	5.5	5.7	2.8
(Percent of Civ. Labor Force)				(19.9)	(3.8)	(29.0)	(12.6)	(5.0)
Not in Labor Force	4,273	147	4,126	64.9	14.6	80.0	33.1	44.6
Inmates of Institutions	18	5	13	0.3	0.0	0.3	0.6	1.4
Enrolled in School	829	7	822	13.5	0.1	15.9	6.0	8.2
Other under 65	3,169	109	3,060	51.5	10.9	59.3	24.0	25.2
Other 65 and over	257	26	231	4.2	0.3	4.5	2.6	9.9
<u>Males 14 Years and Over</u>	3,351	692	2,659	100.0	100.0	100.0	100.0	100.0
Labor Force	1,466	643	823	43.8	92.9	30.9	85.3	77.4
Armed Forces	348	299	49	10.4	43.2	1.8	36.6	2.8
Civilian Labor Force	1,118	344	774	33.4	49.7	29.1	48.7	74.6
Employed	857	323	534	25.6	46.7	20.1	41.6	70.8
Unemployed	261	21	240	7.8	3.0	9.0	7.0	3.7
(Percent of Civ. Labor Force)				(23.4)	(6.1)	(31.0)	(14.3)	(5.0)
Not in Labor Force	1,885	49	1,836	56.2	7.1	69.1	14.7	22.6
Inmates of Institutions	18	5	13	0.5	0.7	4.9	0.7	1.7
Enrolled in School	421	0	421	12.6	0.0	15.8	5.3	8.2
Other under 65	1,306	22	1,284	39.0	3.1	48.3	6.3	4.8
Other 65 and over	140	22	118	4.2	3.1	44.4	2.4	7.9
<u>Females 14 Years and Over</u>	2,807	311	2,496	100.0	100.0	100.0	100.0	100.0
Civilian Labor Force	419	213	206	14.9	68.5	8.3	36.9	34.4
Employed	375	213	162	13.4	68.5	6.5	35.5	32.6
Unemployed	44	0	44	1.6	0.0	1.8	3.8	1.9
(Percent of Civ. Labor Force)				(10.5)	(0.0)	(21.4)	(10.3)	(5.5)
Not in Labor Force	2,388	98	2,290	85.1	31.5	91.7	60.3	65.5
Inmates of Institutions	0	0	0	0.0	0.0	0.0	0.3	1.1
Enrolled in School	408	7	401	14.5	2.3	16.1	7.1	8.2
Other under 65	1,863	87	1,776	66.4	28.0	71.1	50.0	44.5
W/own children under 6	1,045	36	1,009	37.2	11.6	40.4	27.4	17.2
Married, W/husband	982	36	946	35.0	11.6	37.9	26.7	16.4
Other 65 and over	117	4	113	4.2	1.3	4.5	2.9	11.7

Source: U. S. Census of Population.

FIGURE 4-9

EMPLOYMENT STATUS OF NATIVE POPULATION, REGION III, SEPTEMBER, 1967

	NUMBER OF PERSONS			PERCENTAGE OF WORKING AGE POPULATION		
	Total	Male	Female	Total	Male	Female
Total Resident Native Population	12,216	6,393	5,823			
Under 16 Years	6,511	3,354	3,157			
Working Age (16 Years and Over)	5,705	3,039	2,666	100.0	100.0	100.0
16-19	969	480	489	17.0	15.6	18.3
20-24	922	476	446	16.3	15.5	16.7
25-34	1,253	667	586	22.0	22.0	22.0
35-44	1,017	533	484	17.8	17.3	18.1
45-64	1,238	707	531	21.7	23.0	19.9
65 and over	306	176	130	5.4	5.7	4.9
Labor Force	2,486	1,894	594	43.6	62.3	22.2
Employed	814	537	277	14.2	17.4	10.4
Permanent (more than 12 mos.)	310	211	99	5.4	6.9	3.7
Temporary (incl. persons out of region on seasonal work)	504	326	178	8.8	10.6	6.8
Unemployed (actively seeking work)	1,671	1,357	314	29.4	44.2	11.8
(Percent of Labor Force)				(67.2)	(71.6)	(53.1)
Fully or Partially Unemployed (sum of two items above)	2,175	1,683	492	38.1	54.9	18.5
(Percent of Labor Force)				(87.4)	(91.5)	(82.9)
Not in Labor Force	3,220	1,145	2,075	56.4	37.6	77.8
Disabled, Ret., Institutionalized	606	292	312	10.6	9.5	11.7
Students (over 16 years of age, incl. those at school out of region)	832	448	384	14.6	14.6	14.4
Others	1,782	405	1,377	56.4	37.3	77.7
Women with children	1,135	--	1,135	19.9	--	42.6

Source: Bureau of Indian Affairs. Data rearranged for maximum comparability with 1960 Census figures, Figure 4-7. Compiler evaluated the reliability of these data as "reasonably accurate" to "unsatisfactory."

economy in the total input of goods and services understates their importance in the livelihood of the people. Virtually every Native family, even in Bethel, is culturally oriented to the subsistence sector and devotes the larger proportion of its total labor input to subsistence-type activities. A substantial proportion of the cash of the population is derived from commercial activities otherwise identical with subsistence pursuits (fishing and trapping), and a substantial proportion of the receipts is in turn used for inputs of capital goods (boats and motors, snow machines, rifles) and supplies used in the subsistence sector.

It is not clear that the Eskimo subsistence economy in this region can absorb further increases in population. The history of the region shows a continuing use conflict between commercial and subsistence fishing for salmon,⁵ but there is little information on the stocks of other fishes used, nor on their degree of utilization. There have, however, been severe local shortages and even starvation in comparatively recent times. In addition, the majority of waterfowl, which are the largest single source of food in some villages, are apparently taken illegally.⁶ As in other parts of Alaska, attempts to enforce laws relating to migratory waterfowl are regarded by the Natives as a threat to their livelihood and have provoked minor insurrections. In the absence of fundamental changes in the economy and culture, population growth, full commercial utilization of the salmon resource, enforcement of federal migratory bird laws can be expected to make village life as it exists next to impossible.

C. The Money Economy

The money economy of Region III is overwhelmingly in the hands of non-Natives. In September, 1967, Bureau of Indian Affairs semi-annual report on employment and unemployment showed 310 permanently employed Natives in the region. This is only 5.3 percent of the region's Native population of working age (16 years and over); despite the fact that Natives account for more than four-fifths of the population 16 to 64 years of age,⁷ they hold less than one-third of the permanent jobs.⁸

The money economy is dominated by the government sector, which directly accounted for almost three-fourths of wage and salary employment in 1966 and about two-thirds of permanent wage and salary employment (Figure 4-10). It accounted for 132 percent of the increase in average total employment between 1960 and 1966. All commodity production; i.e., mining, manufacturing, and contract construction, accounted for only 12 percent of average total employment in 1966 and for none of the permanent jobs.

Major government activities include four small military installations; Federal Aviation Administration and Weather Bureau facilities; Bureau of Indian Affairs schools, district office in Bethel, and demonstration

FIGURE 4-10

EMPLOYMENT AND UNEMPLOYMENT, REGION III
1961-1967, by Quarter

YEAR/ QUARTER	TOTAL WORK FORCE	UNEMPLOY- MENT	RATE OF UNEMPLOY- MENT	TOTAL EMPLOY- MENT	NONAGRICUL- TURAL WAGE AND SALARY EMPLOYMENT	COMMODITY PRODUC- TION	TRANSPORT., COMMUNICA- TIONS, UTILITIES	TRADE	SERVICES	GOVT.
1961 1	1,399	512	36.6	887	743	71*	72*	101*	111	383
2	1,783	466	26.1	1,317	1,030	304*	122*	128*	104	367
3	1,718	266	15.5	1,412	1,139	330*	122*	170*	107	405
4	1,493	331	22.2	1,162	950	132*	95*	184*	111	423
1962 1	1,682	732	43.5	950	824	78*	81*	102*	109	454
2	2,392	911	38.1	1,981	1,192	309*	83*	186*	121*	488
3	2,057	323	15.7	1,734	1,380	389*	107	210*	112*	557
4	1,644	410	24.9	1,234	1,055	111*	77	182*	120*	560
1963 1	1,565	502	32.1	1,063	864	22	50	189	121	547
2	2,123	740	34.8	1,383	1,170	180	96	176	117	596
3	1,853	443	23.9	1,410	1,209	201	94	161	122	626
4	1,721	561	32.6	1,160	1,024	91	55	146	127	600
1964 1	1,652	697	42.2	955	858	20*	52	101	110*	570
2	2,038	739	36.3	1,299	1,096	150	90	167	108*	576
3	2,038	421	20.6	1,617	1,331	218*	106	214	110	678
4	1,773	448	25.3	1,325	1,170	152*	61*	148*	105	699
1965 1	1,625	708	43.6	917	826	21*	57*	121	108*	514
2	2,248	957	42.6	1,291	1,090	154*	133	197	111*	495
3	2,411	463	19.2	1,948	1,658	330*	106*	164	112*	940
4	2,009	574	28.6	1,434	1,262	116*	106	137	115*	783

FIGURE 4-10 (Continued)

YEAR/ QUARTER	TOTAL WORK FORCE	UNEMPLOY- MENT	RATE OF UNEMPLOY- MENT	TOTAL EMPLOY- MENT	NONAGRICUL- TURAL WAGE AND SALARY EMPLOYMENT	COMMODITY PRODUC- TION	TRANSPORT., COMMUNICA- TIONS, UTILITIES	TRADE	SERVICES	GOVT.
1966 1	2,118	933	44.0	1,185	1,098	49	68*	120	98	758
2	2,555	1,164	45.6	1,391	1,199	170*	112*	165	117	630
3	2,500	605	24.2	1,895	1,618	339*	149*	175	119*	831
4	1,905	623	32.7	1,282	1,129	134*	79*	149	120*	642
1967 1					1,016	43*	76*	147	137	608
2					1,230	60*	117*	188	154	706
3					1,675	206*	138*	235	139	941
GROWTH RATE (Percent)	5.9	13.1		2.2	4.5	-7.5	0.7	0.5	0.0	11.2
Index of Seasonality	1.3	2.0		1.7	1.6	8.2	1.8	1.7	1.1	1.2

Note: Region consists of Bethel, Kuskokwim, and Wade-Hampton Labor Market areas. "Commodity Production" is mining, contract construction, and manufacturing.

An asterisk indicates synthetic figure; component of one labor market area was established by projection, interpolation, or seasonal adjustment.

Growth rate is exponential least squares regression coefficient; index of seasonality is ratio of highest quarter average to lowest quarter average. Growth rate and index of seasonality were calculated simultaneously with regression:

$$\log E_t = a + bT + cQ_2 + dQ_3 + eQ_4$$

where E_t is number employed in quarter T numbered consecutively from beginning of series; and Q_i is 1 in quarter i of each year, zero in all other quarters.

Source: Alaska State Department of Labor.

reindeer herd on Nunivak Island; a Public Health Service hospital; a state-operated school system in Bethel; and a variety of federal and state offices.

The Bethel Housing Project, financed jointly by the Economic Development Administration, Department of Housing and Urban Development, and Office of Economic Opportunity, and involving in total eight federal and four state agencies, began in 1968 to construct a multi-purpose housing prefabrication plant. This facility is intended initially to produce materials for 200 to 300 houses in Bethel, create at least 67 permanent jobs, and permit job training.

A large, but unmeasured, proportion of the private sector economic activity reflects direct government procurement or services to government employees.⁹ The small commodity-producing sector consists, apart from construction activity mainly for the government, of salmon dressing and freezing and of scattered small-scale mining.

2. ECONOMIC DEVELOPMENT POTENTIAL

A. Fisheries

The fishery resource in this region, with the possible exception of the Yukon River, is neither large nor divergent enough to permit a large-scale processing enterprise to operate at profit in a given area. This broad statement is true of Norton Sound, the Kuskokwim River delta, and also of Kotzebue Sound in Region V. While the lower Yukon area does have some processing facilities, both canning and freezing, it still shares the same basic problems as does the rest of the region.

The grand total of all salmon species landed in Regions III, IV, and V¹⁰ was far less than a million fish in 1966. The largest subtotal, the Yukon's 412,227, cannot match the processing volume of even one large salmon cannery; and the commercial catch there was only 183,974 or about 4 or 5 percent of the handling volume of a typical large cannery.

It is estimated that the construction cost of a plant in the region would be one-fourth to one-half higher than in parts of Alaska Southeast of the Alaska Peninsula; utilities and other operating expenses would be comparably higher.

In the absence of local processing facilities, commercial utilization of the resource has been both incomplete and inefficient. Only the best quality fish of the high-value species, kings and silvers, have been able to bear the cost of air shipment to Anchorage or Fairbanks, and then often to Seattle after minimum primary processing. This mode of

FIGURE 4-11
REGION III'S SALMON HARVEST, 1966

	KINGS	REDS	COHOS	PINKS	CHUMS	
Kuskokwim:						
Commercial	25,545	--	22,985	--	--	
Subsistence	49,280	--	--	--	180,054	
	<u>74,825</u>		<u>22,985</u>		<u>180,054</u>	<u>277,864</u>
Kanektok:						
Commercial	278	1,030	--	268	2,610	
Subsistence	--	--	--	--	--	
	<u>278</u>	<u>1,030</u>		<u>268</u>	<u>2,610</u>	<u>4,186</u>
Yukon:						
Commercial	93,315	--	19,254	--	71,405	
Subsistence	14,017	--	--	369	215,867	
	<u>107,332</u>		<u>19,254</u>	<u>369</u>	<u>285,272</u>	<u>412,227</u>
Norton Sound (largely Region V):						
Commercial	1,553	14	5,755	12,778	80,245	
Subsistence	269	--	2,210	14,325	21,873	
	<u>1,822</u>	<u>14</u>	<u>7,965</u>	<u>27,113</u>	<u>102,118</u>	<u>139,032</u>

Source: Alaska Department of Fish and Game.

operation has, among other things, precluded the region from producing its own permanent pool of trained labor, local management capability and organizational know-how, all of which are needed for the growth of industry. Under these conditions, this region's salmon fisheries have remained a high-risk as well as high-cost operation, and the operating inefficiency has been long subsidized by the region's fishermen in the form of fish prices far below the state's average.¹¹

There are in the region in addition to salmon a number of saltwater, freshwater, and anadromous species of lower unit value, including whitefish, sheefish, arctic char, herring, and bottom fish. In none of these species, however, are the prospective catch volumes sufficient to sustain local processing facilities, nor is the present price at the point of processing or consumption outside the region high enough to bear the cost of air transport.

All these circumstances indicate that efficient utilization of the region's fisheries resource requires processing and storage facilities mainly built around the salmon catch but handling all species. Any plant(s) must be of sufficient scale to pool the catch to the point where low-cost surface transportation can be utilized. There is little indication that the small-scale fish buyers, who operate on a thin margin at high risk, will be able to develop other fisheries which are bound to be less profitable than salmon.

Additional constraints on commercial fisheries development arise from the heavy use of fish products (even the highest value species) for subsistence, from the sacrifice of time and effort required in subsistence pursuits, and from the additional cash inputs required by fishermen to engage in commercial fishing. On the other hand, a large proportion of the catch is now dried for dog food, and the replacement of sled dogs with snow machines will free part of this quantity for sale.

B. Advent of Fishing Cooperatives

The 1967 summer fishing season witnessed the establishment of a fisheries cooperative made up of seven commercial fishermen in Bethel. They fished for their own cooperatives; processed their catch in the co-op's name; and marketed the end products, frozen dressed salmon, by themselves. The enterprise turned out a modest business success. Some of the implications of their success are far reaching. They managed to retain the "middleman's" profit, which would have been taken out of Bethel if they had sold in the customary way to fish buyers from outside the area. As a locally conceived enterprise, the cooperative generated greater local profit and local wages and convinced some of the fishermen that they could succeed not only as fishermen but also as fish processors.

The cooperative's small freezer plant burned down during the fall, but the 1968 season saw the return of the cooperative to the Kuskokwim's salmon fisheries. It increased its membership from seven to over one hundred and took almost half of the river's commercial king salmon landings for processing and marketing. In addition to becoming the largest processing enterprise on the Kuskokwim River, the cooperative has more than doubled the cash income of the member fishermen.¹² At the same time, the cooperative's competition with the established fish buyers seems to have raised the average prices paid even to nonmembers by about one-fourth.

The Economic Development Administration has approved a loan to the cooperative to reestablish the freezer-smoker plant on a larger scale. Completion of the plant is expected further to increase local receipts from salmon sales, to attract more members, and to allow the cooperative to diversify into other fisheries. The cooperative's plan, partly because of the lack of its own freezer plant, to sell directly to a Japanese freezer ship in the Kuskokwim River during the 1968 season involved the organization in a turbulent political controversy with the state government.¹³ Despite the controversy, which induced one of the Japanese principals to withdraw from the arrangement, the possibility of selling the entire catch including inferior fish directly to Japanese exporters, saving the fishermen the cost of air shipment to Anchorage, the dangers of spoilage, and at least part of the middleman's profit, was influential in the apparent success of the cooperative.¹⁴

Figure 4-12 presents a rough estimate of the potential volume and FOB value of produce of the fisheries industries in Region III. Keeping in mind that these estimates are upper limits and represent gross values rather than net value added within the region, it can be seen that the region's only significant commodity industry has a potential for expansion of perhaps \$150 per year per capita.

With Bethel as its only deepwater harbor and its many natural and economic handicaps, the region offers no attractions, especially in competition with Bristol Bay or Aleutian sites, for the basing of offshore or high-seas commercial fleets. Fleets based in these areas and processing plants there undoubtedly would provide some seasonal employment openings for workers from Region III.

C. Minerals

The region is not generally considered a promising petroleum province. The Kuskokwim Mountains have been one of Alaska's major placer gold provinces, accounting for about 10 percent of the state's recorded production; but in the absence of radical changes in the price of gold or in technology, there is no prospect for a revival of the placer mining industry.

FIGURE 4-12

POTENTIAL GROSS VALUE OF FISHERIES, REGION III

	VOLUME (1,000 LBS)			AVERAGE RAW FISH PRICE	PROCESSED PRICE	FOB GROSS VALUE (\$1,000)		
	1966 (Actual)	1970	1973 on	1966 (Actual)	1970 on	1966 (Actual)	1970	1973 on
<u>Lower Yukon</u>								
King Salmon	2,000	2,100	2,100	\$.20	\$.30	400	630	630
Chum Salmon	500	1,250	1,250	.08	.30	40	375	375
Coho	140	450	450	.10	.35	14	158	158
Salmon Roe		190	190		1.00		190	190
Other Species		250	750		.30		75	225
TOTAL VALUE						<u>454</u>	<u>1,428</u>	<u>1,578</u>
<u>Kuskokwim</u>								
King Salmon	450	600	600	.12	.30	54	180	180
Chum Salmon		500	500		.30		150	150
Coho	150	500	500	.067	.35	10	175	175
Red		150	150		.30	30	45	45
Salmon Roe							88	88
Whitefish		300	300		.30		90	90
Herring			300		.07			21
Other Species			300		.30			90
TOTAL VALUE						<u>94</u>	<u>728</u>	<u>839</u>
GRAND TOTAL						<u>548</u>	<u>2,156</u>	<u>2,417</u>

Note: Assumptions of this table are: approach to maximum commercial utilization of the product by 1973 based on local storage and freezing or processing in optimum scale facilities along lines contemplated by Kuskokwim Fishermen's Cooperative. Further assumptions are: no major change in technology, ability of local enterprise to sell directly to highest price market in U. S. or Japan, and no change in CIF, U. S., or Japan prices. Norton Sound estimates are presented with Region V discussion. Average FOB prices are converted on the basis of round fish weight equal to the fishermen's delivery weight.

The area is also one of North America's most important mercury provinces--one quicksilver mine is presently active, and there are some thirty known prospects. Some production of tungsten, lead, and antimony is recorded from the region. As in most of Alaska, the mineral potential is poorly known, but in general this region is considered the least promising in the state.¹⁵

D. Timber

Recent estimates of the commercial timber resources in the Kuskokwim basin amount to about 800 million board feet on 170,000 acres. The lower Yukon portion of the region may account for about half as much. The timber is preponderantly spruce, of small diameter and sparse, suitable mainly for pulpwood. The rotation time for sustained-yield production would not be less than 125 years. Even for export as round logs, the stands would probably not yield a stumpage price of greater than \$7 to \$12 per thousand board feet. A primary-processing requirement could be expected to make utilization prohibitive as the direct cost of logging, transport, and processing in this area would likely be higher than the market price of the final product. The rationale for sustained-yield or "even-flow" timber harvesting is the provision of a stable supply for local processing facilities of the population they support. Since processing itself, except perhaps for local use, seems to be an unrealistic objective, the benefits generated by the resource would probably be optimized by their rapid "mining." Logging in this region would probably be largely a winter operation;¹⁶ a twenty-year logging program for the area, cutting 60 million board feet annually using techniques employed in the upper Midwest, would employ 50 to 60 men per season in logging and transport operations.

3. ECONOMIC FUTURE OF THE REGION

Bluntly put, Region III has no apparent base for economic growth. It has a rapidly growing population, without local employment prospects, and generally without the cultural, educational, or skill prerequisites for successful outmigration. In the foreseeable future, outside of the growth of a moderate-size fisheries industry, any growth of opportunity either for employment or for enterprise in the region will result directly from government action. The only prospect for expansion of the public sector, in turn, can be anticipated as a result of efforts to overcome the cultural and economic handicaps of the region's population.

The regional "multiplier" effect of injections of income from commodity exports or government activity is remarkably weak; the coefficient of 1.18 calculated for total wage and salary employment against employment in commodity production and government between 1961 and 1967 means that five

additional jobs in these sectors are necessary to create one in trade, transportation and communications, services, and miscellaneous activities.¹⁷

The government sector will inevitably grow, and will almost certainly grow mainly in Bethel. This growth will, in turn, attract population into the community, primarily because of the superior health and school facilities there, and the wider range of amenities. So long as Bethel remains a predominantly Eskimo settlement, it will provide a stepping stone into the modern economy for some of the more acculturated youth of smaller villages.¹⁸ The hope of employment will also attract Natives into Bethel, but the labor force in the money economy, in both its private and public sectors, will probably continue to be largely non-Native transients in the absence of concentrated efforts to create or earmark jobs for the local people.

Figure 4-13 presents a relatively optimistic projection of the population, labor force, employment, and unemployment of Region III through 1974, based upon foreseeable economic developments there. The perhaps unrealistically optimistic assumptions on which it is based include fulfillment of the fisheries development potentials set forth in Figure 4-12 and the proposition that half of the new jobs created in the region will be filled by resident Natives. Despite these assumptions, however, the future of the region appears exceptionally gloomy.

FIGURE 4-13

PROJECTIONS OF POPULATION, LABOR FORCE, EMPLOYMENT AND UNEMPLOYMENT
REGION III, ANNUAL AVERAGE, 1967-1974

	1967	1968	1969	1970	1971	1972	1973	1974
<u>Civilian Population</u>	13,200	13,623	14,024	14,767	15,187	15,614	16,074	16,545
Non-Native	1,200	1,311	1,392	1,470	1,544	1,616	1,712	1,810
Native	12,000	12,312	12,632	12,297	13,643	13,998	14,362	14,735
<u>Civilian Labor Force</u>	3,509	3,832	4,138	4,520	4,844	5,182	5,552	5,936
Non-Native	1,073	1,173	1,245	1,315	1,381	1,445	1,531	1,619
Native	2,436	2,659	2,893	3,205	3,463	3,737	4,021	4,317
<u>Unemployment</u>	2,078	2,200	2,362	2,604	2,795	3,005	3,202	3,410
Percent of Civilian Labor Force	59	57	57	58	57	58	58	58
<u>Total Employment</u>	1,431	1,632	1,776	1,916	2,049	2,177	2,350	2,526
<u>Nonagricultural Wage & Salary Emp.</u>	1,255	1,432	1,558	1,681	1,798	1,910	2,061	2,216
Mining & Manufacturing		124	128	132	136	137	137	138
Construction	110	70	92	104	104	90	99	99
Trade, Transport, Communications								
Services, Misc.	420	447	465	482	499	515	537	559
Government	725	791	873	963	1,059	1,168	1,288	1,420

Note: Population base for 1967 is from Figure 4-1. Native population was projected using 1966 rate of natural increase from Figure 4-3 and 1961-66 rate of outmigration from Figure 4-4. Non-Native population was calculated as a function of labor demand, using a constant labor force participation rate for whites (0.894) from 1960 census and attributing half of employment increment to non-Natives. The Native labor force participation rate was assumed to increase from 20.3 percent (BIA 1967 Bethel district figure, Figure 4-9) at a constant rate to reach 26.7 percent (1967 Nome district figure, Figure 6-5) in five years and to continue increasing at the same rate. Employment in mining, manufacturing, and construction assumed all new developments to be increments over 1967 level; that fisheries potential in Figure 4-12 would be realized; that present plans of Bethel Housing Project, construction plans of FAA, Department of Defense, and Alaska Department of Education will be carried out. Government employment figures are based on actual agency plans where available, and for other agencies on projection of 11.2 percent annual growth rate from 1961-67. Employment in trade, transportation, communications, utilities, services, and miscellaneous activities was calculated by use of multiplier described in footnote 17.

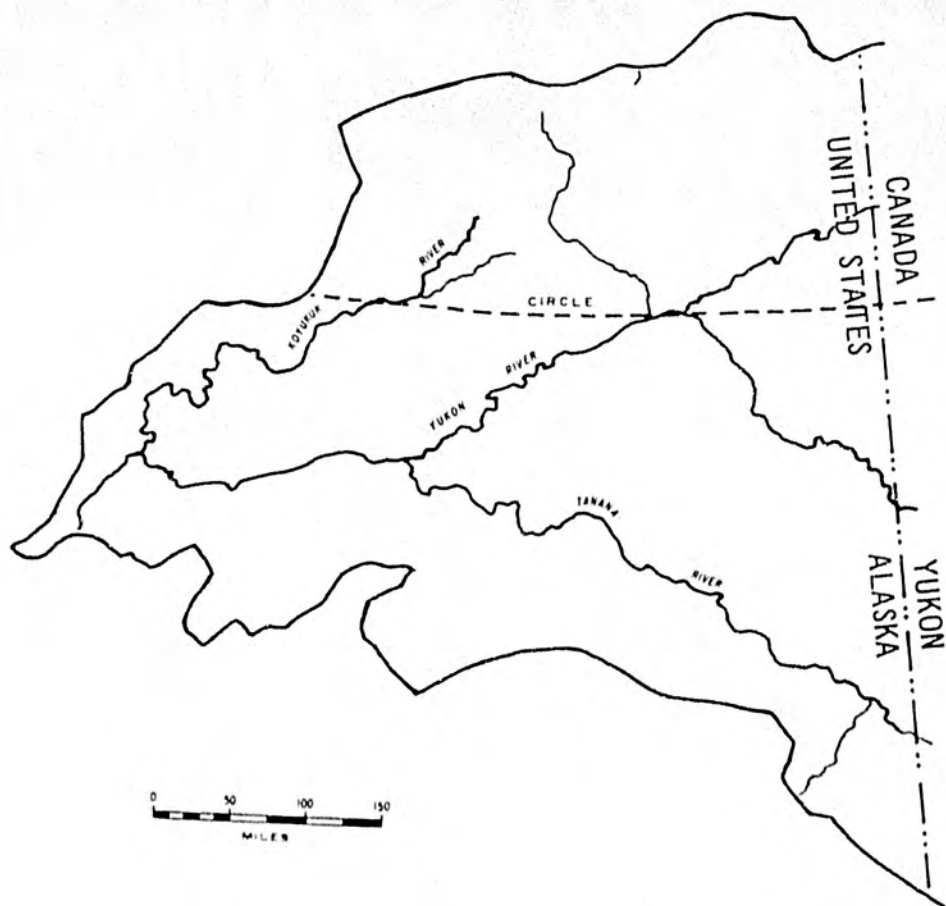
FOOTNOTES

CHAPTER 4

1. Indian Population amounted to 907, and the remainder "Other Races" (i.e., other than white, Negro, Indian, Chinese, Japanese, or Filipino) were presumably Eskimo.
2. "Native" and "nonwhite" are virtually interchangeable in this region. The 1960 Population Census shows 32 Negro and 2 Japanese residents.
3. Figure for 1960 is Census enumeration; 1967 is Bureau of Indian Affairs-Federal Field Committee estimate.
4. Age-sex specific death rates for the region's nonwhites are expectably higher than national averages.
5. Stephen Pennoyer, Kenneth R. Middleton, and Melvan E. Morris, Jr., "Arctic-Yukon-Kuskokwim Area Salmon Fishing History," Alaska State Department of Fish and Game Informational Leaflet 70 (1965).
6. See the *Alaska Dietary Survey*, p. 272-3, for reference to spring wildfowl hunting at Hooper Bay.
7. In 1960, 85.7 percent.
8. The number of permanent jobs in the region in 1966-1967 was estimated at 950 in the following manner: For each of the three labor market areas and for each of eight industrial categories, the lowest employment in any month in the last two quarters of 1966 and the first two quarters of 1967 was taken as permanent employment. These were aggregated to achieve a figure for permanent wage and salary employment of 865. Total permanent employment was estimated as the same proportion of average total employment as permanent wage and salary employment was of wage and salary employment.
9. For instance, a survey of traffic on two airlines serving the region shows that well over half the passenger traffic originating at points in the region is paid for by government travel requests.
10. The Alaska Department of Fish and Game's Arctic-Yukon-Kuskokwim (AYK) region.
11. Prices in 1967 for whole salmon in Regions III and V ranged between 3 and 15 cents per pound.

12. Preliminary figures indicate that the Kuskokwim Fishermen's Cooperative, Inc., has paid 16 cents to its member fishermen, dressed the fish, and shipped them by air to Anchorage for sale at an average of close to 50 cents per pound. On Quinhagak River below the Kuskokwim mouth, the same cooperative will increase its members' cash income on small salmon through July, 1968, by five times their customary receipts.
13. The best account of this dispute is found in John Wiese, "What the Kuskokwim Fisheries Flap is About," Anchorage Daily News, June 16, 1968, and "The Native Fish Co-op: Economic Prop for the Kuskokwim Region," Anchorage Daily News, June 17, 1968.
14. Another benefit to cooperative members from dealing directly with the Japanese vessel was the purchase of imported gear and supplies at about half the alternative prices.
15. A June, 1968, report of the U. S. Geological Survey calls attention to mineral potentials in the extreme southeast portion of Region III. Bruce L. Reed and Raymond L. Elliott, *Geochemical Anomalies and Metal-liferous Deposits Between Windy Fork and Post River, Southern Alaska Range*, Geological Survey Circular 569, Washington, 1968.
16. Rapid and widespread timber cutting here would not be expected to have the same deleterious effects on water resources it has on the steep, high rainfall areas of the Pacific Northwest or southeastern Alaska.
17. The multiplier expression, $E_1 = 245.5 - 1.62T + 1.18E_2$, was obtained by least-squares regression analysis of quarterly data from the first quarter of 1961 to the third quarter of 1967. E_1 is total wage and salary employment; T is the quarter numbered consecutively from the beginning of 1961; and E_2 is employment in mining, manufacturing, construction, and government. Standard errors of the two coefficients and of the estimate were 1.58, 0.06, and 46.6 respectively. The multiple correlation coefficient was 0.981.
18. Dillingham, in Region II, may play a similar role for the people of Region III as does Bethel. It has two major differences: (1) Commodity production and the private sector generally offer a greater proportion of employment opportunities in the Bristol Bay area than they do in Region III. (2) Dillingham is regarded as more white-dominated than is Bethel and less congenial to village people, especially those less acculturated to Western ways. The *Ingalik* people of the Kuskokwim district may be expected for cultural reasons to be oriented in a similar fashion perhaps not to Bethel, Dillingham, and Anchorage, but to places such as Tanana and Fairbanks.

SUBREGION IV
Interior Alaska



CHAPTER 5

INTERIOR ALASKA--REGION IV

Interior Alaska, stretching from the Canadian border to the Yukon-Kuskokwim divide and from the Wrangell Mountains to the summit of Brooks Range, has been one of Alaska's "problem" regions. Although income shows significant improvement in the past several years, population and employment have advanced very little. The mineral industry, once a key element in the area's economy, has virtually disappeared and revival would depend upon suspected but largely unknown deposits. The principal present supports are government, military and civilian, and distributive activities, the "basic" element of which is represented by businesses dependent upon tourism and services to areas outside the region. The latter is mostly attributable to the role of Fairbanks, the region's center, as a distribution point. Leading potential growth sectors are forestry, tourism, and services to oil development on the North Slope.

1. POPULATION AND EMPLOYMENT

Figure 5-1 indicates the stable nature of interior Alaska's population in the 1960's. Since 1960, the population has only grown by 1,400 persons, attributable entirely to natural increase. While there was an out-migration of 8,200 persons, natural increase provided 9,600 new persons. Within the total, the military sector of the population has declined slightly during the 1960's.

Approximately 10 per cent of the interior Alaska population are Natives. As of April 1, 1967, the Native population was 5,200 persons out of a total population of 51,400. This is considerably below the state average of 52,000 Natives per 279,000 total population. While the rate of natural increase of the Native population has decreased markedly in the 1960's from a high of 40 per thousand in 1961 to 29.6 in 1966, there has been a steady migration of Natives from outlying villages to the region's center, Fairbanks, where they form a large proportion of the poor.¹ The rate of non-Native natural increase has also decreased, but less rapidly than that of the Native group.

Total employment in Region IV has grown about twice as fast as the population in the 1960's, although about one-third as fast as the state growth (Figure 5-2). Interior Alaska followed the state pattern in government employment. The military declined slightly, and federal civilian employment showed a small increase. State and local government employment was the fastest-growing government sector in interior Alaska, although not as fast as for the state as a whole.

FIGURE 5-1

ESTIMATES OF TOTAL RESIDENT POPULATION, REGION IV-INTERIOR ALASKA, 1940-1967

July 1	POPULATION COMPOSITION				COMPONENTS OF CHANGE				
	Total Population	Military	Civilian		Total	Natural Increase	Net Migration ^a		
			Non-Native	Native					
			(12 month average,	thousands of persons)					
1940	11.0	-- ^b	7.5	3.5	(not available on comparable basis)				
1945	18.0	6.0	8.4	3.6					
1950	25.0	5.5	15.8	3.7					
1955	47.0	12.0	30.9	4.1					
1960	50.0	10.9	34.5	4.6					
1961	48.5	10.9	32.9	4.7	(1.5)	1.3	0.2	--	(3.0)
1962	51.0	10.9	35.3	4.8	2.5	1.3	0.2	--	1.0
1963	51.9	10.9	36.1	4.9	0.9	1.3	0.2	--	(0.6)
1964	51.0	10.5	35.5	5.0	(0.9)	1.3	0.2	(0.4)	(2.0)
1965	50.8	10.7	35.0	5.1	(0.2)	1.1	0.2	0.2	(1.7)
1966	51.1	10.6	35.3	5.2	0.3	1.1	0.1	0.1	(0.8)
1967	51.4	10.4	35.8	5.2	0.3	1.1		(0.2)	(0.6)

Notes: ^aDecreases and net out-migrations shown in parentheses.

^bLess than 50.

Source: Estimates for 1940, 1950, and 1960 rounded from regional population in decennial census reports, 1945 and 1955 estimated from vital statistics and school enrollment data (as index of migration). Annual estimates for 1961 through 1966 rounded from total of estimates for election districts within region. Alaska Department of Labor, *Current Population Estimates-Alaska, by Election District*; Alaska Department of Health and Welfare, *Estimated July 1st Population by Race and Election District*.

FIGURE 5-2

TOTAL EMPLOYMENT, REGION IV, INTERIOR ALASKA, 1955-1966

Calendar Year	Civilian Workforce	Unem- ployment Rate	Total	GOVERNMENT			PRIVATE ^a		
				Military	Federal	State & Local	Construction	Other Commodity Producing ^b	Distributive ^c
1955			22.1	12.0	2.7	0.7	1.4	0.9	4.4
1956			22.3	11.5	2.8	0.8	1.5	0.9	4.8
1957			23.0	12.0	3.3	0.9	1.4	0.8	4.6
1958			22.4	12.0	2.9	1.0	0.9	1.1	4.5
1959			22.2	11.0	2.9	1.2	1.2	0.9	5.0
1960			23.1	11.0	2.7	1.6	2.1	0.9	5.0
1961	13.9	12.2	23.2	11.0	2.6	1.7	1.1	1.0	5.7
1962	14.2	11.3	23.6	11.0	2.8	2.1	0.9	1.0	5.8
1963	14.9	8.8	24.6	10.9	3.3	2.1	1.2	0.7	6.4
1964	15.1	7.9	24.4	10.5	3.1	2.4	1.1	0.6	6.7
1965	16.0	8.1	25.4	10.7	3.2	2.7	1.2	0.6	6.9
1966	16.1	7.5	25.5	10.6	3.3	3.0	1.2	0.6	6.8

^aIncludes estimate of agricultural workers, self-employed, and unpaid family workers, distributed by industry.

^bOther Commodity Producing Industries: Agriculture, fishing, hunting, forestry, mining, and manufacturing.

^cDistributive Industries: Transportation, communications, public utilities, trade, finance, insurance, real estate, services.

Source: Military personnel from U. S. Bureau of the Census, 1960 and prior years, Alaska Department of Labor, *Revised Workforce Estimates--Alaska, by Industry, 1950-1962*, Juneau, Alaska, August 1, 1966; same for 1963, 1964, 1965, and 1966; Alaska Department of Labor, *Current Population Estimates by Election District*.

The principal explanation of Interior's stagnation can be found in the commodity-producing sector. Construction employment declined by over 40 per cent and other commodity-producing industries, principally mining, by approximately one-third, reflecting the shutdown of all gold mining except for small operations. Although the commodity-producing sector of total Alaskan employment increased only slightly in the same years, interior Alaska fell markedly behind in this area, especially compared with the southcentral region.

The principal distributive activities in the interior region are trade, services, and transportation-communications-public utilities. Employment in distributive sector increased by almost 80 per cent in interior Alaska, compared to the 20 per cent increase for all Alaska, but it occupied a less important position in the overall employment picture in this region than in the state, comprising 27 per cent of total employment in 1966 compared to 31 per cent.

When the military are excluded from employment data, the balance of the principal employment sectors in the interior region changes considerably vis-a-vis the state. Distributive employment made up 46 per cent of total civilian employment in the Interior, compared to 44 per cent in Alaska. Similar comparisons for government employment and commodity-producing employment are: 42 per cent against 37 per cent and 12 per cent against 19 per cent. This explains the lesser difference between high-month and low-month employment in the Interior than in Alaska as a whole. The seasonality factor appears to be improving in (Figure 5-3) the Interior; however, this is mainly due to the unhealthy sign of reduction of peak season employment rather than a greater increase in off-season work.

2. INCOME

Personal income increased moderately between 1960 and 1966, and the equal increase in population is reflected in the roughly equivalent rate of increase of per capital income (Figures 5-4 and 5-5). The composition of personal income reinforces the analysis of the interior Alaska economy obtained through employment data. Government is the principal sector with state and local government income increasing most rapidly. Distributive and service industries are the second most important income-generating segment, with transportation, communications, and public utilities the fastest-growing category.

The faster growth of employment and wages than population boosted interior Alaska's per capita income so that per capita income in the Interior increased at a faster rate than in the rest of the U. S. Between 1960 and 1966 (Figure 5-5) per capita income in all of Alaska increased at a slower rate than per capita income in the U. S. In 1960, Alaska's per capita income of \$2,846 was 28 per cent above the United States average of \$2,215,

FIGURE 5-3

SEASONALITY IN EMPLOYMENT
INTERIOR ALASKA

High Month and Low Month Employment
as a Percentage of Average Monthly Employment
1961-1966

	1961		1966	
	Interior Alaska	Alaska	Interior Alaska	Alaska
High Month as Percent of Average Monthly Employment	119	116	115	117
Low Month as Percent of Average Monthly Employment	86	87	88	87

Source: Alaska Department of Labor, Employment Security Division,
Workforce Estimates, 1961-1966.

FIGURE 5-4

DISTRIBUTION OF PERSONAL INCOME IN INTERIOR ALASKA BY MAJOR SOURCES
1960 AND 1966
(\$1000)

	<u>1960</u>	<u>1966</u>
Total Personal Income	\$ 143.0	\$ 198.0
Less: Personal Contributions for Social Insurance	<u>3.7</u>	<u>5.4</u>
TOTAL:	<u>\$ 139.3</u>	<u>\$ 192.6</u>
Wage and Salary Disbursement	\$ 121.3	\$ 173.3*
Government	72.1	101.8
Federal - Civilian	17.7	24.4
Federal - Military	44.7	52.7
State and Local	9.7	24.7
Earnings of Persons in Private Industry	49.2	58.6
Commodity-Producing Industries	21.6	23.2
Mining	2.7	2.9
Contract Construction	17.2	18.4
Manufacturing	1.7	1.9
Distributive and Service Industries	27.6	35.4
Wholesale and Retail Trade	11.8	12.6
Finance, Insurance and Real Estate	1.8	2.7
Transportation, Communications and Public Utilities	6.9	11.8
Services	7.1	8.3
Property Income, Proprietors' Income, Transfer Payments and Other Income	21.7	24.7

*Discrepancies between total and components for 1966 due to omissions in data for Upper-Yukon and Yukon-Koyukuk Election Districts to avoid disclosure of data for individual firms.

Source: Alaska Department of Labor, Employment Security Division, *Statistical Quarterly*, 1966; and Transportation Consultants and Wilbur Smith and Associates, *Alaska Highway Study*, 1965, *Working Papers*.

FIGURE 5-5
PER CAPITA INCOME, 1960 AND 1966
INTERIOR ALASKA, ALASKA, AND UNITED STATES

	1960	1966
Interior Alaska	\$ 2,786	\$ 3,767
Alaska	2,846	3,421
United States	2,215	2,963

Source: U. S. Department of Commerce, *Survey of Current Business*, August, 1967, Tables 1 and 4.

but by 1966 the spread had narrowed to 15 per cent. At least prior to the Fairbanks flood the increase in Region IV's per capita income was made more significant by the decline in the cost of living relative to the nearest conterminous United States center, Seattle (Figure 5-6). Of the cities in Alaska that were sampled, the decline in the relative costs of all items in Fairbanks has been second only to Anchorage and more than Juneau and Ketchikan.

The Native employment situation has been a countervailing trend to the increasing per capita income, as in other areas of Alaska. A recent study states that Eskimos and Indians comprise most of the poor in Fairbanks (the level of poverty being defined as an annual gross income level of \$4,500 for a family of four).² Native unemployment in the Interior region is almost five times that of the total workforce.³

Before leaving the subject of income in the Interior region, note should be taken of the income effects of the Fairbanks flood of August 1967 and the post-flood recovery. Both the public and private sectors sustained substantial damage, and the city was declared a disaster area. Homes, personal property, and store inventories were ruined, and public services were put out of commission. Estimates of damage and funds put in for restoration have not yet been completed, but, the Federal Field Committee for Development Planning in Alaska prepared shortly after the disaster a model of the effects on the Fairbanks economy of various levels of government inputs to the income stream. One of the principal concerns of the piece was "how much assistance Fairbanks can absorb without setting off undue upward pressures on prices. A corollary question was, "At what *rate* can Fairbanks absorb these funds?"⁴

Indications are that combined government income inputs for flood recovery will be in the order of magnitude of the highest amount of dollar response contemplated in the model. The study concludes that this amount would be "moderately inflationary."⁵ One indication of pressure on prices is the possible rate of increase of wages and salaries suggested in the model. Under preflood conditions, wages and salaries were projected to rise statewide 10 per cent from 135.9 million dollars in the third quarter of 1967 to 157.9 million dollars in the third quarter of 1968. If, as it appears, the highest magnitude response was made, an increase of approximately 24 per cent is possible, and there is evidence that there is pressure on prices in the Fairbanks area more than double what might have been expected without postflood income inputs by the government.

3. ECONOMIC SECTORS AND GROWTH POINTS

Total civilian employment in the interior region grew at a pace about 10 per cent slower than for all Alaska in the 1961-1966 period. However, the even slower rate of increase in the workforce related to the net outflow of population resulted in a considerable decrease in the unemployment rate of the region (Figure 5-2).

FIGURE 5-6
COST OF LIVING INDEXES
FAIRBANKS, ALASKA, COMPARED WITH SEATTLE, WASHINGTON,^a AUTUMN, 1960-1966
(Cost in Seattle = 100)

	1960	1961	1962	1963	1964	1965	1966	1967
All items	136	136	135	136	134	133	132	132
Food ^b	144	146	143*	142	138	140	139	142
Housing ^c	154	153	152	151	143	141	141	140
Rental housing ^d	219	213	202	205	188	187	180	179
Apparel and upkeep	118	122	119	119	124	124	122	120
Other goods and services ^e	122	120	120	122	127	123	122	121
All items less housing	128	128	127*	128	130	129	127	127

*Revised since publication of April 1963 comparison.

^aBased on the average pattern of expenditures of Alaskan wage- and clerical-worker families of two or more persons who were full-year residents in the State during 1959 or 1960. (Average expenditures of families living in Anchorage, Fairbanks, Juneau, or Ketchikan were combined with a system of weights based on the estimated number of consumer units in each city as derived from the 1960 Census of Population.)

^bIncluded food at home and away from home.

^cIncludes rent, hotel and motel rates, homeownership costs (mortgage principal and interest payments, taxes, insurance, maintenance and repairs), fuel and utilities, household furnishings and operation. (Intercity indexes measure differences in the costs of maintaining a home as reflected in principal payments and mortgage interest charges. These indexes cannot be used to measure changes in acquisition costs, i. e., interest rates and the prices of owned homes purchased in current markets.)

^dAverage contract rent for tenant-occupied, 2-, 3-, 4-, and 5-room dwellings meeting defined standards, plus cost of heating fuel, utilities, and specified equipment when the cost of these items is not included in the monthly rent.

^eIncludes transportation, medical care, personal care, recreation, reading and education, tobacco, beverages, and miscellaneous expenses.

A. Civilian Government

Civilian government employment has been the principal contributor to the overall employment increase, and state and local government employment has been most important in this growth. Employment in state and local government almost doubled between 1960 and 1966 while federal civilian employment increased by approximately 25 per cent.

Expansion of the University of Alaska has been an important part of the state government employment growth. On-campus enrollment at College, Alaska has more than doubled since the 1960-61 year to approximately 2,000, and the budget for academic services more than quadrupled to about \$10 million. Government-financed research has become an important factor at the University. It operates a satellite tracking station for the National Aeronautics Space Agency and one for a European space organization, and additional work of this kind is being planned. Extensive research projects in Arctic biology, fisheries, minerals, and other fields are carried out, taking advantage of the University's unique location.

This rapid rate of growth cannot be expected to continue because basic staffing of University functions and local government (the other fast-growing governmental area) has been accomplished. The subsequent section, "Future Economy," projects an annual rate for state and local government growth, exclusive of the University, at 1.5 per cent. A possible influence on slowing the basic state government growth would be a dispersion of University functions from the Fairbanks area, especially with the growth of the Anchorage Community College. Further growth of state government employees through whole offices shifting to Fairbanks, such as the State Division of Mines and Minerals, is not expected to be a significant factor in the future. The University may continue to act as a magnet for federal research-oriented activities, like the Institute of Northern Forestry and the water pollution control laboratory.

B. Tourism

Interior Alaska possesses some of the state's outstanding tourist attractions. Chief among them is Mt. McKinley National Park, containing the highest mountain in North America. Riverboat trips, including visits to Native villages and entertainment displaying the colorful gold-mining period are other outstanding attractions.

It is estimated (Cresap, McCormick & Paget study cited elsewhere) that approximately 50,000 tourists visited interior Alaska in 1967 and were responsible for some 350 jobs and 2.1 million dollars of income. According to the study, the number of tourists visiting Alaska has increased at an annual average rate of 14 per cent since 1964. It is likely that, especially because of the attraction of Mt. McKinley National Park, interior Alaska's

tourism has increased somewhat faster. Future increases are partly dependent upon continued development within the region. Most frequently mentioned are arguments that the present McKinley Park Lodge is located in the wrong place to see the mountain to its full advantage, and, it is too small for the tourist season; and that easier access to the park's wildlife should be provided, and consideration given to expanding the airfield at the park for air tours of the area. In the Fairbanks area, the Alaska Centennial exhibition (A-67) may be further developed with additional exhibits and fairground facilities. The museum and research institutes at the University of Alaska may be promoted as tourist attractions.

The rate of increase in the Interior tourism industry should exceed past experience into the long-term future. Improvements in air transport should be a significant factor. The two air mergers have led to better equipment and service as well as more active promotion. If the route awards made by the Civil Aeronautics Board in the Trans-Pacific Route Case are upheld, Pan American Airways will serve Fairbanks on the New York-Tokyo route. Although under the present decision passengers cannot originate or terminate in Fairbanks to or from New York, they can do so on the Fairbanks-Orient segment, and stopovers are a possibility.

C. Forestry Sector

The interior region contains vast areas of forest, but only very small production for the local market is now taking place. Considerable attention is being focused on development of Interior timber, chiefly in the Tanana River Basin. Estimates are that approximately 4.3 million acres of commercial forest land in the Basin support a volume of 7.4 billion board feet of sawtimber, mostly spruce, with an annual allowable cut of 138 million board feet.⁶ Considerable interest has been expressed by industry in developing the Tanana River timber, and the aerial photography inventory which will start this year with the aid of an Economic Development Administration grant can be expected to spur development here.

The Yukon River Valley provides another area of potential development. The entire Yukon is estimated to contain 15.4 million acres with 5.9 million acres containing commercial forests with a total stand volume of 8.9 billion board feet. This could provide 194 million board feet per year. All but 1.6 million acres are in the middle and upper Yukon, which flows through interior Alaska. The timber is mostly spruce with some high-value white spruce stands.⁷

Considerable development of the Tanana River timber may be taking place in the intermediate term, and limited development of the Yukon Valley can be expected in ten years or so. However, whether the

mill dependent upon the Tanana stands is located in the Interior or at tidewater will depend on the effects of climate and transportation rates. It is expected that, within the short term, about one-half the presently calculated annual allowable yield of the Tanana Forest will become used, with full development in the intermediate term. This should add approximately 100 employees in each period, 65 loggers and 35 cantmill workers. The logging estimates especially could be overoptimistic in view of advances in cutting machinery in similar Canadian forests. Assuming continuation of present high demand in the export market, it is likely that at least one-half the Middle and Upper Yukon forests will be developed in the long term with resultant employment of 250 loggers and 150 mill workers, again leaving out the possibility of labor-saving breakthroughs in cutting small timber.

D. Utilities Sector

Transportation: Development of transportation in the Interior is important for development and shipment of raw material products as well as further growth of tourism and more efficient movement of people and goods. The principal route for goods coming into the region is the Alaska Railroad from Whittier, Seward, and Anchorage. Freight tonnage, passenger traffic, and revenue of the railroad are shown in Figure 5-7. Freight tonnage has increased at an average rate of about 2 per cent a year since 1960 while passenger traffic has declined by nearly one-third in the face of air and highway competition.

The railroad could play a more significant part in the region's economy if the extensions to the Northwest and the North Slope become a reality. However, the Bornite copper deposit and the promising oil discoveries on the North Slope appear to be the only traffic generators in the immediate future, and as presently contemplated, the railroad extension is subject to the federal budget. If additional economic mineral deposits were located on the railroad, its feasibility would increase. Such development is contingent upon increased exploration of the Interior and Northern regions where detailed knowledge of the economic geology is sparse. An intensified search for minerals would require increased funds for basic work by government agencies as well as simple roads to allow prospectors to do more detailed, on-the-ground work. Initially, such roads could be multipurpose, serving timber areas, recreation sites, and mineralized zones. Such an approach would spur each of these key potential contributors to the region's growth, while maximizing the chances of paying off the roads.

Furthermore, if the interior region is to benefit significantly from the railroad extension, Fairbanks or Dunbar, the proposed jumping-off place for the extension, must become a gathering or processing point for crews and minerals.⁸

FIGURE 5-7

FREIGHT AND PASSENGER TRAFFIC--TO AND FROM FAIRBANKS
FISCAL YEARS 1957 THROUGH 1966

	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>
<u>Grand Totals</u>					
Tons	581,550	675,176	573,834	557,573	549,467
Revenues	\$5,824,359	\$5,676,163	\$5,616,082	\$5,032,808	\$5,049,263
<u>Passenger Traffic</u>					
No. of Passengers	57,884	52,762	47,677	46,195	49,645
Revenue	\$ 543,652	\$ 479,408	\$ 460,439	\$ 391,119	\$ 298,305
	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>
<u>Grand Totals</u>					
Tons	665,047	667,150	695,074	668,139	712,868
Revenues	\$5,799,214	\$6,266,348	\$6,597,590	\$6,212,196	\$6,230,495
<u>Passenger Traffic</u>					
No. of Passengers	45,020	38,209	35,576	30,520	31,862
Revenue	\$ 278,203	\$ 317,206	\$ 311,770	\$ 312,000	\$ 298,881

Source: Fairbanks North Star Borough Official Statement, June, 1967, p. 29.

The interior region contains a range of air services from interstate jet service to "bush" service for the villages. The regional center, Fairbanks, is served by Pan American World Airways and Alaska Airlines from Seattle, and the Fairbanks International Airport is presently an alternate for international flights to Anchorage. Fairbanks also serves as a center for intra-Alaska flights by multi and single-engine aircraft to cities and villages in northwest and interior Alaska. One of the most heavily traveled intrastate routes is between Fairbanks and Anchorage, which is served by jet aircraft as well as propeller planes of two carriers.

Significant growth has taken place in air traffic at Fairbanks. Originating passengers increased about 20 per cent from 61,600 in 1962 to 75,200 in 1966, while inbound freight and mail rose from 3,600 to 5,600 tons, an increase of 61 per cent and outbound freight and mail 27 per cent from 8,800 to 11,200 tons.⁹ Fairbanks is second only to Anchorage as a center for air activity in Alaska.

Before their merger, Wien Air Alaska and Northern Consolidated Airlines has made significant improvements to their bush fleets with the addition of such planes as the Pilatus Porter, a single-turboprop plane and the two-engine Skyvan which is readily adaptable to passenger and freight operation into short fields. New generations of short takeoff and landing aircraft should open additional possibilities of this nature.

The possibility of continuous international air service through Fairbanks could also have significant economic impact. Fairbanks might gain from attracting visitors coming from the Orient and from stopovers. Assuming service by one Boeing 747 or similar aircraft per day each way and slightly less than a 50 per cent load factor on 450 seats, approximately 1,800 persons per year might stop over in Fairbanks if 1 per cent of the total were to take advantage of the opportunity. With a stay of two days in the region, expenditures of visitors might total approximately \$75,000 under present estimates.¹⁰

Fairbanks would also benefit from aircraft servicing - the brief prepared for the Trans-Pacific Route Investigation by the Fairbanks parties indicates its direct economic impact. Taxes on fuel and airport landing charges would provide approximately \$20,000 a month, and the cost of providing ground support for sixteen to twenty crew members would be approximately \$12,000 per month, plus around twenty additional employees involved in ground service with an estimated monthly payroll of \$16,000. The brief also indicates that hotels in the Fairbanks area had a 1965 occupancy rate of 88 per cent. Although a new motel has been completed on Airport Road and other expansion has taken place, any significant stopover traffic would necessitate new hotel capacity.¹¹

Interior Alaska is served by a highway system centering in Fairbanks which serves as the second most important conveyor of freight after the Alaska Railroad. Trucks move to Fairbanks mainly from Seward over the Seward, Glenn, and Richardson Highways, with some truck traffic coming the length of the Richardson Highway from Valdez. Smaller amounts are shipped directly from the conterminous United States over the Alaska Highway. This route also serves as the principal one for tourists coming by land to Alaska, although many branch off to Anchorage or Haines before reaching Fairbanks.

The principal change in the highway situation in interior Alaska is the completion of the Anchorage-Fairbanks Highway, a federal-aid primary highway route now under construction and planned for completion during fiscal year 1972-73.¹² Providing an alternate route to the Alaska Railroad, the highway might offer rate competition in certain articles. It will also provide an additional tourist route. The increased tourist travel will have special impact on Mt. McKinley National Park with increased use of the lodge (already at capacity during the tourist season). Creation of a circle route from either Anchorage or Fairbanks to Mt. McKinley National Park would be an added boost to tourism in the area. Such development would require improvement of the Denali Highway from Cantwell to its junction with the Richardson.

Another transport mode that could have a changing significance for interior Alaska in selective cases further in the future is the pipeline from Haines in southeastern Alaska, presently owned and operated by the military to supply aviation fuel and petroleum products to bases in the Fairbanks area. The recent report by the Federal Field Committee for Development Planning in Alaska recommends consideration to making the Haines-Fairbanks pipeline a limited public utility to supply civilian demand.¹³ Such competition could be beneficial in reducing rates, assuming that a balance between modes (particularly the railroad) is maintained.

The Yukon River could be an important adjunct to the surface transportation system of interior Alaska, especially in connection with exploration or development roads designed to open mineralized areas. Such roads might be more economically built if they were connected to the Yukon and adequate transshipment facilities were present at Fairbanks and road connection points along the river.

One of the principal questions affecting interior Alaska and, in particular, Fairbanks, is the relationship of developments on the Arctic Slope to the area. This has been thrown into sharp relief by the recent announcement of significant oil finds by Atlantic-Richfield Company at their Prudhoe Bay and Sag River wells. Reserve figures of 5-10 billion barrels have been authoritatively mentioned for the North Slope. Several companies have announced plans for drilling exploration wells in the area. There will be an immediate need for better transportation to the North Slope and an even greater demand as time progresses. One company is planning to

bring in its equipment down the Mackenzie River; another by barge through the Bering Sea.¹⁴ The NORTH Commission of the state government is contemplating the building of a well-surveyed winter road to the North Slope.

The Department of the Interior in *Alaska Natural Resources and the Rampart Project* and the Federal Field Committee in its meeting with the President's Review Committee for Development Planning in Alaska last year recommended that the federal government immediately look to extending the Alaska Railroad first to Kobuk, and in a second state from Alatna to Gubic to serve the North Slope.¹⁵ It is conceivable that if development of North Slope oil accelerates, the priority for the analysis of the two phases of construction might be reversed. Recent estimates are that construction to the North Slope could take at least three years if work began immediately.

The railroad would be of key importance in making movement of inbound freight cheaper and easier. However, a decision on the best transport system will involve an analysis of all movement to the North Slope, both inbound and outbound. The use of polar icebreakers for commercial operation and pipeline construction have both been prominently mentioned.

The impact of developments on the North Slope on interior Alaska, chiefly the Fairbanks area, will be linked to transportation methods. If the railroad extension is built both to the North Slope and the Kobuk area, supplies would be expected to move directly from Seward, Whittier, or Anchorage without being handled at Fairbanks beyond separating cars headed further north. Intensified air and cat-train supply activities would benefit employment in the Fairbanks area; barging through the Bering Sea or down the Mackenzie River would have no impact. Assuming the railroad were extended and development of the North Slope oil and Kobuk copper took place, around 500 new workers might be needed in the intermediate term for construction, with an estimated 100 in the long term to work trains. The section on the region's future economy includes estimates of distributive and service employment under various assumptions of transportation links to the North.

Electric Power: The present nameplate capacity of electric generating equipment in interior Alaska is estimated at 115,000 kilowatts. The principal electric power organizations are the Golden Valley Electric Association, stations on the military bases, the City of Fairbanks, and miscellaneous small installations. The latter include diesel plants at far-flung Native villages as well as small plants located at the University of Alaska, Healy, McKinley Park, Cantwell, and Tok.¹⁶

One of the principal problems confronting development in the Interior is the high cost of electricity, which is among the highest in the nation. Average generation cost for the Fairbanks area is approximately twice that in the Anchorage area-itself comparatively high. A proposed Alaska railbelt transmission system appears to carry the possibility of significantly reducing the power costs in the Interior and in

Southcentral through providing a large gas-fired plant in the gas fields south of Anchorage with a high voltage interconnection to the Fairbanks area. Projections indicate that the proposed 150,000 kilowatts capacity would be underutilized through 1970, but that less efficient plants could be placed in reserve. By 1975, additional units would have to be added to the projected plant, and by 1985 over four times its capacity would be needed.

The high cost of electric power generation in the villages would not be solved by the intertie. A recently funded program, however, seeks to bring electricity to 67 villages over the next few years. Under this program a statewide cooperative, Alaska Village Electrification Cooperative, Inc., is obtaining an REA loan to purchase generators and related equipment. It is expected that five villages will be served the first year. Other agencies are providing grants for initial administrative costs, training of villagers as power plant operators, and for other purposes. While the cooperative will bring lower cost electricity and its benefits to villages, a breakthrough to central generation for large groups of villages appears beyond the time of this study.

E. Agriculture

The Tanana Valley of interior Alaska is the state's second-ranking agricultural area measured by value of production. However, outputs per district show sharp annual fluctuations during the 1960's, and a sharp decline in 1966. From 1960 through 1965, the Tanana Valley supplied approximately 16 per cent of Alaska's small agricultural production, but declined to 12 per cent in 1966.

Principal commercial agricultural products are milk, potatoes, and hay, most of which is used in the area. The value of both milk and potatoes declined sharply in 1966, illustrating the principal weakness of agriculture in the Interior--its dependence on the military market and competition from other states and in southcentral Alaska. Alaskan farmers are heavily dependent on purchases by the military which gives preference to local producers. The fluctuations in the value of production in the Tanana Valley indicate success or failure in obtaining military contracts.

Based on statewide statistics, an annual average of 100-120 persons are employed on commercial farms in interior Alaska. This figure is probably overstated since it is based on four survey weeks during the year, and many of the persons involved in agriculture in the region are only part-time farmers.

The prospects for interior Alaska agriculture in the short-and intermediate-term future approximate continuation of the situation in the present and immediate past. Value of production should fluctuate in the same range--between mid-\$600,000 and mid-\$900,000. The position of farms

in this area will continue to be affected by transportation improvements elsewhere and from the Matanuska Valley competition. Only a slight improvement can be foreseen in the long term when increased population both within and outside the region might lead to higher production.

Mention should be made of non-commercial agriculture. Of principal importance are the herds of caribou which form a principal food source for the Native people of northern Interior.

4. CANADA TIES

Connections between the interior region and Canada have been largely centered on common use of the Yukon River. The river was a principal route for miners during the Yukon Gold Rush at the turn of the century, but, since the river is not navigable between the Interior and Yukon Territory for boats of appreciable size and other means have developed to give the Yukon Territory access to the sea, its relative importance has decreased.

The Yukon River in recent times has been the subject of agreements between the United States and Canada protecting the interest of each nation in use of the waters. The recent study on Alaska-Canada relations for the Federal Field Committee for Development Planning in Alaska characterizes these contacts in the following terms:

The obvious international development relations and problems here focus on the joint use of this international river system as reflected in part in the treaties and agreements designed to protect the interests of each nation in its different uses of this international river system. This has given these relationships a defensive rather than a dynamically constructive tone. For example, in a number of instances proposals for Alaskan hydro-electric development (e.g., Rampart, Woodchopper, Yukon-Taiya, etc.) have been hampered where there might have been adverse effects upon upstream fisheries and other resources and river transportation. On the other hand, as noted earlier, a joint United States-Canada plan and program for the maximum multiple-use development of the entire Yukon River system could result in greater overall benefits than unilateral development of each political division of the system. The existing legal arrangements and history of attempted or proposed uses of the river system and its resources suggest possible arrangements which would maximize benefits to all parties. Mutually advantageous transportation and trade arrangements should be considered. It is quite possible that Fairbanks

and the Railbelt could handle export shipments from Yukon Territory, as might Valdez (especially after the road through Skolai Pass to the Alaska Highway is completed), more economically than present routes overland through Canada.¹⁷

It should be noted that neither the State of Alaska nor the Canadian side have yet done any concrete planning for any road links between interior Alaska and the Yukon Territory. Furthermore, a detailed cost analysis would be necessary to decide whether it would be more economical to ship mineral products from the Yukon Territory through southeastern Alaska ports or through interior and southcentral Alaska. These comments apply also to the idea presented in the aforementioned study of extending the Alaska Railroad eastward to link up with a northern extension of the Canadian Railroad system, especially in view of the interest expressed by the British Columbia railroad authorities in extending north.

There does seem long-run potential in exploiting the mutual interest of interior Alaska and the Yukon Territory in improved access to the Arctic Ocean, which is increasingly discussed as a route to Europe. In the longer term, joint facilities might include a port at the mouth of the Mackenzie River and necessary transport facilities to reach it.

In addition to ties with the Yukon Territory, presently centering mainly on common interest in the Yukon River, interior Alaska has, of course, connections with all Canada in the field of communications. The Alaska Communications System (ACS) has one contract with the communication subsidiary of Canadian National Railways (CNR) under which CNR provides voice and record communications from the Alaska-Yukon border through the Yukon and Alberta to the conterminous states. Only a small number of messages has been flowing over this channel between Alaska and Canada. In 1966, a total of 17,444 calls was recorded with 7,714 to Canada and 9,730 from Canada.

Given the elasticity of demand for communications services, the expansion of use between interior Alaska and Canada depends in part on evolution of service and reduced prices. In particular, there seems to be considerable pent-up demand for a TELEX system by enterprises in the Fairbanks area.¹⁸

5. ECONOMIC FUTURE

A. Fairbanks, The Regional Center

The Fairbanks area, including the populated areas on the highways north and south of the city, contained approximately 45,000 people in 1967, including military and dependents, approximately 80 per cent of the interior

Alaska population. (The Fairbanks area is defined as the North Star Borough plus Big Delta, site of Fort Greely, southeast of the borough, as shown on Figure 5-8.) The population of the Fairbanks area has increased only about 4.5 per cent from 1960 through 1967. A negative net migration of nearly 6,000 persons was recorded in the period, indicating that the population growth came entirely from natural increase.¹⁹

Increased employment and the out-migration have improved the overall employment situation in the area, although adversely affecting the balance between the tax-providing population and the consumers of government services. From 1961 through 1966, the total civilian labor force increased 17 per cent (a little less than 12,000 to 14,000) while civilian employment grew by 30 per cent, resulting in a decline of roughly 36 per cent in the unemployment rate (from 11.2 per cent in 1961 to 7.2 per cent in 1966).

Employment in government, transportation, services, and construction are the main props of the Fairbanks economy (Figure 5-9).

Federal, state, and local government provided approximately one-half of all nonagricultural wage and salary employment in 1966, although employment in transportation and contract construction increased at a faster rate than government in 1961-66.

Despite the lack of specific data, a considerable amount of employment in the main sectors of the Fairbanks area is related to activities outside the area. Fairbanks is the headquarters for government activities in northern Alaska, and much of the transportation and some trade and construction employment is geared to supporting activities outside Fairbanks which are largely government-financed.

Federal and state agencies involved in such activities as education contribute significantly to the use of air transport in administering villages in the region and in financing construction projects outside the Fairbanks area.

Another principal employment sector in the Fairbanks area, civilian government, is expected to show a mixed picture. The growth of federal civilian employment in the 1960's is attributable to a general expansion of federal government activities in the region and to a centralization of federal employees from northern and western Alaska posts.²⁰

Assuming that the centralization has largely been completed, federal employment should expand at approximately one-half the 3 per cent annual rate of the 1960-66 era. This projection leaves out the possibility of a greatly expanded program of assistance to Native communities headquartered in Fairbanks.

FIGURE 5-8

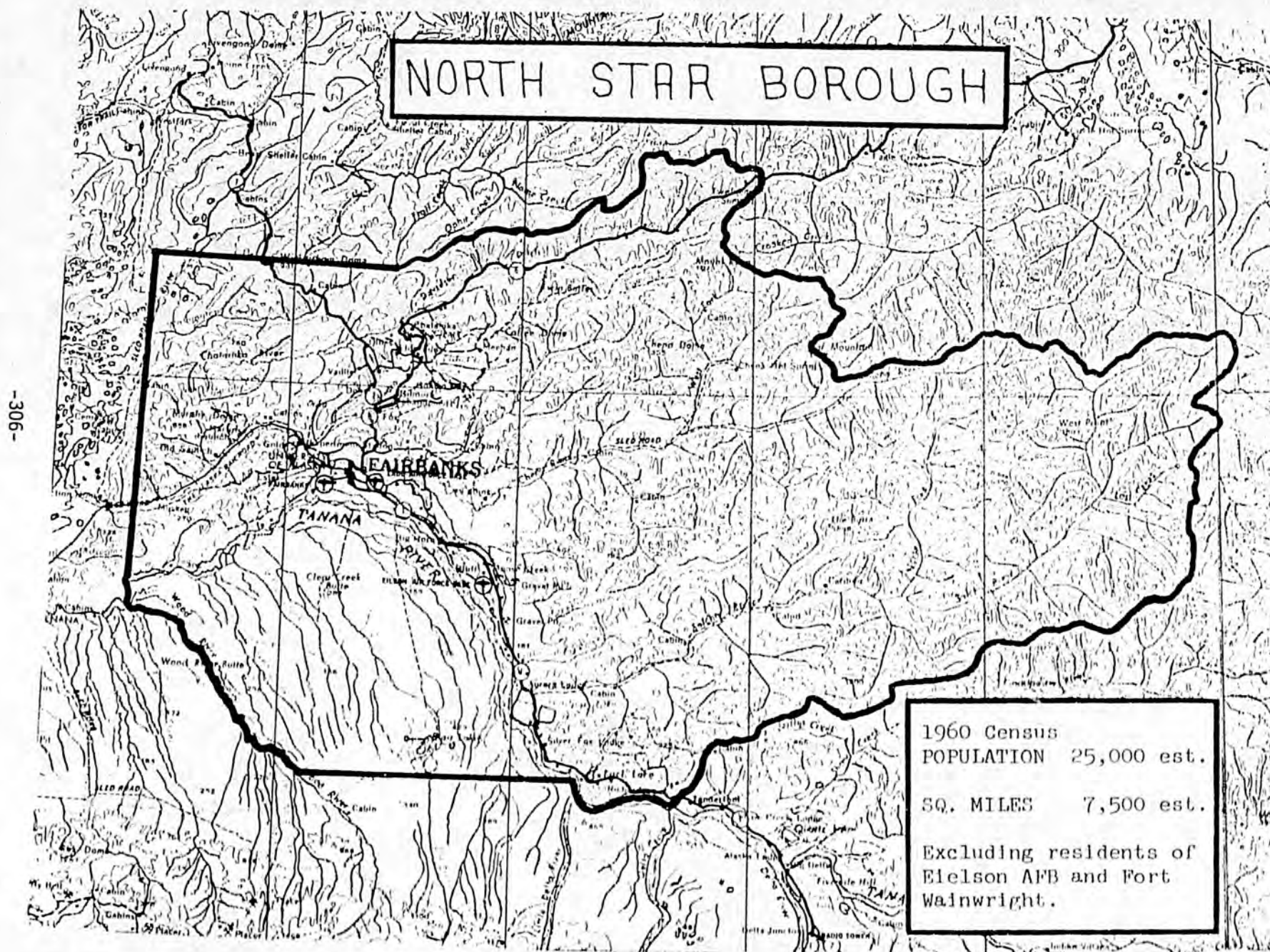


FIGURE 5-9

NONAGRICULTURAL WAGE AND SALARY EMPLOYMENT BY INDUSTRY--FAIRBANKS
1961-1967

	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>
Total Employment	10,336	10,857	11,716	12,013	12,885	13,009	N.A.
Nonagricultural Wage and Salary Employment	9,068	9,632	10,454	10,681	11,508	11,765	11,535*
Mining	199	177	182	162	152	132	100*
Contract Construction	940	866	1,160	1,085	1,229	1,183	902*
Manufacturing	254	237	242	235	224	208	217*
Transportation, Communi- cations and Utilities	746	817	841	982	1,037	1,068	1,074*
Wholesale Trade	230	234	253	292	287	(	
Retail Trade	1,242	1,132	1,261	1,284	1,377	(	
Finance, Insurance and Real Estate	317	371	414	385	386	401	432*
Service and Miscellaneous	1,133	1,362	1,230	1,272	1,393	1,319	1,295*
Government	4,007	4,436	4,871	4,984	5,423	5,685	5,789*

*Projected on basis of first two quarters' data.

Source: University of Alaska, *Economic Base of the Fairbanks North Star Borough, Alaska*, by Robert C. Haring and Clem Correia, June, 1967, pp. 24-25.

The principal determinant of growth in the state and local sector is the University of Alaska. The University presently employs approximately 400 professionals with about 50 per cent additional in technical, administrative, clerical, and maintenance positions. The 1966-67 enrollment of 1,900 represents a 100 per cent increase over 1960-61.

Appropriations for research in fiscal years 1966-67 through 1968-69 are also impressive. Total expenditures for the Geophysical Institute, the Marine Science Institute, the Institute of Arctic Biology, the Institute for Social, Economic and Government Research, and the Alaska Agricultural Experiment Station rose from 6.7 million dollars in 1966-67 to 8.8 million dollars in 1967-68 to an estimated 9.8 million dollars in the present year, an average growth of approximately 20 per cent a year. The funding is heavily oriented to the Geophysical Institute, which is budgeted for about 5 million dollars this year, followed by the Marine Science Institute with 1.6 million dollars.

The differential growth of the funding by state and other, primarily federal, sources is significant for projections. Between 1966-67 and 1967-68 state research funds grew 4 per cent while federal and other funding increased 42 per cent. This year, however, state funding will increase 23 per cent and federal and other sources will grow by 12 per cent. For the short, intermediate, and long-run future, a 10 per cent rate of increase in research funds has been assumed, but if the federal component continues to slow, the growth of the University's research programs could be in jeopardy.

Since the teaching expense per student at the University of Alaska is extremely high, it is reasonable to assume that there will not be a rate of increase in faculty commensurate with expected enrollment increase. If enrollment increases by 50 per cent in the short-run (1971), we expect employment related to enrollment increase to grow by approximately one-half that rate. With a 10 per cent increase for research-related employment, total growth of 35 per cent is projected by 1971. The same rate is expected to hold in the medium and long-term futures. The University accounts for approximately 20 per cent of state and local government employment in the Fairbanks area. Assuming that most local government staffing has been accomplished, this area, excluding University employment, should increase at about the same rate as federal employment, approximately 1.5 per cent a year.

The other principal area of expected growth in the Fairbanks vicinity is construction and distributive employment. These activities are, in the end, dependent on primary expenditures in the federal and state government, mining, manufacturing, and tourism sectors. (About one-half of the state and local government employment is assumed in the primary category, as part of the state component is supported by funds from outside the region.) The previous assumptions regarding government employment lead to

a "judgment" projection of 6,300 employees in the short term, 7,000 in the intermediate term, and 8,400 in the long term.²¹

As described earlier, the possibility of constructing the extensions to the Alaska Railroad or some surface transport facility to the north - road or pipeline - has been included in the intermediate estimates, with 500 additional employees projected in the intermediate term as construction proceeds, decreasing to a hundred operational employees. The possibility of missile-site construction and manning has been covered by a 200-man addition in the high estimates, and the possibility of a complete military withdrawal has been included in the low projections.

Fairbanks area mining employment, which has declined sharply during the 1960's, is presently confined to small operations and explorations, together with supporting activities for the coal mining in the Healy area. At the minimum, the complete elimination of mining employment by the end of the intermediate term has been projected. The intermediate prospective is for development of North Slope oil to have an effect on mining employment in Fairbanks through the intermediate term roughly similar to the Anchorage area experience in the early 1960's. Assuming a continued decline of other mining employment in the short term, this would mean 150 mining employees by 1971 and 200 by 1974. The long-term projection calls for a doubling of mostly oil-related employment to 400. The high prospective assumes that intensive development of North Slope oil will take place by the intermediate term and continue into the long term, and, in addition, other mineral activities will have an impact on the Fairbanks area. Under this prospective, 350 employees are foreseen in the intermediate term and 500 in the long term.

Manufacturing in the Fairbanks area is presently heavily oriented to supporting other areas of the economy and is composed primarily of printing, making construction materials, bakeries, etc., rather than being truly primary industries. (An exception is several small lumber mills.) The high prospective includes the possibility that an oil refinery, employing some 100 persons, will be established in the Fairbanks area in the intermediate term. The timber industry will be largely located outside the Fairbanks area, which will benefit only from providing supporting services.

The present ratio of distributive and service employment to primary employment is .5 to 1, including mining, federal, civilian, and part of state government employment, plus military in the primary category. Three different levels of distributive and service employment have been projected, all of which assume development of the timber industry as outlined in the forestry section. Under the assumption that only limited development of oil will take place, no significant changes in the present transportation system will be made, and no increase in the rate of tourism growth, the ratio is projected to fall to .4 to 1; with intensive oil development, extension of the railroad, which would require few persons

involved in transshipment, and moderate increase in the growth of tourism, the ratio is projected at .6 to 1; with intensive development of oil, no railroad extension, and high tourism increase, the ratio is estimated at .8 to 1. The justification for the latter as far as oil development is concerned is that a higher level of supporting services will be established in Fairbanks, although Anchorage will continue as the management center for the North Slope. In addition, the railroad would require less transshipment than the present system of supplying the North Slope or an improved version of the present system. The three alternative ranges for distributive and service functions have been applied to the intermediate and long terms. For the short term, the ratio of .5 to 1 has been applied. Figure 5-10 indicates prospective levels of primary, secondary, and military employment as well as alternative populations for the Fairbanks area.

The prospective population has been calculated under several assumptions:

(1) During the 1960-66 period, the rate of natural increase in the Fairbanks area declined by almost 28 per cent from 29 per 1,000 to 21 per 1,000. The Native sector, although comprising less than 2,000 in 1967, was the population segment with the fastest-declining rate of natural increase, from 49 per 1,000 to 36 per 1,000. The white population rate of natural increase declined from 28 per 1,000 to 20 per 1,000. The rate is expected to continue declining during the period under study, but at a slower rate, approximately 3 per cent per year.

(2) Under the "low" prospective, a heavy out-migration is foreseen which, partly because of the military outflow, would be especially heavy in younger, single people. For this reason and because of the greater proportion of Natives left in the population, the population-employment ratio would be expected to increase to about 2.2 to 1 in the short term, and 2.5 in the intermediate term, compared to the 2 to 1 of 1960-66. With the continued decline of the Native rate of natural increase, the ratio would be expected to return to around 2 to 1 in the long term.

(3) Under the intermediate prospective, a continued out-migration would be expected, although at a slower rate than in the earlier 1960's. Accompanied by a slowing down and decline of natural increase, the slower out-migration would imply a slight increase in the population-employment ratio in the intermediate and long terms to 2.1 and 2.2, respectively.

(4) The high prospective would call for small in-migration in the intermediate and short terms, which with the declining rate of natural increase, would tend to lower the population-employment ratio. The ratio has accordingly been set slightly lower than the 2.0 average of the earlier 1960's, at 1.9. The population projected under the previous assumptions is shown in the following table.

FIGURE 6-10
PROJECTED EMPLOYMENT--FAIRBANKS

	Short Term (to 1971)			Intermediate Term (1971-74)			Long Term (1975-85)		
	Low	Inter- mediate	High	Low	Inter- mediate	High	Low	Inter- mediate	High
<u>Primary:</u>									
Government	6,300	6,300	7,000	7,000	7,000	8,750	8,400	8,400	10,500
Mining	50	100	150	-0-	200	350	-0-	400	500
Manufacturing-Refinery						100			100
Railroad Construction					500			100	
Military	-0-	11,000	11,000	-0-	11,000	11,000	-0-	11,000	11,000
Missile Base			200			200			200
TOTAL PRIMARY AND MILITARY:	6,350	17,400	18,350	7,000	18,700	20,400	8,400	19,900	22,300
Distributive and Service	3,175	8,700	9,175	2,800	11,220	16,320	3,360	11,940	17,840
TOTAL EMPLOYMENT:	9,525	26,100	27,525	9,800	29,920	36,720	11,760	31,840	40,140
POPULATION:	20,900	52,400	55,100	24,500	56,800	61,800	23,500	60,509	76,200

FIGURE 5-11
POPULATION PROJECTIONS-FAIRBANKS AREA

	Short Term	Intermediate Term	Long Term
Low	20,900	24,500	23,500
Intermediate	52,200	56,800	60,500
High	56,100	69,800	76,200

Source: Author's computations.

B. Regional Economic Future

There are indications that the area outside the Fairbanks vicinity grew faster in population than the latter. Figure 5-12 presents the populations of villages outside the Fairbanks area, and the totals check closely with other sources such as the 1967 statistics of the state Department of Labor.²² Only Election District No. 20, of which Fort Yukon is the principal city, showed a decline in population (with Fort Yukon losing 51 inhabitants between 1960 and 1967). Tok with a 1967 population of 550 compared to 129 in 1960 was the fastest-growing place, spurred by travel-related establishments.

Although Tok and a few other places are not primarily Native communities, most of the area is heavily Native in population, and projections based on rates of Natives' natural increase are therefore valid. Between 1960 and 1966, Native natural increase throughout interior Alaska declined from 36.8 per 1,000 population to 27.2 per 1,000, a decrease of approximately 25 per cent. The low population projection assumes that the rate of natural increase will decline slightly faster than in the 1960 to 1966 period to about 20.5 by 1971, 18 by 1974, and 10 by 1985. The intermediate prospective calls for a decline in the rate of natural increase at 3 per cent a year, and the high projection is for a decline in the rate of natural increase at 2 per cent a year.

Present data on migration indicates an outflow at about 2 per cent a year in 1960 to 1967, and under the low prospective the same annual rate is projected.²³ This is based on the assumption of no significant development of timber, minerals, or other employment-generating activities. The intermediate prospective calls for an out-migration rate of 1 per cent a year, and the high prospective no in or out-migration, reflecting increased levels of employment in timber and minerals.

FIGURE 5-12

1960 AND 1967 POPULATION
OF VILLAGES IN INTERIOR ALASKA

		1960	1967
Election District No. 18	Allakaket	115	158
	Bettles	77	80
	Cantwell	85	100
	Galena	261	298
	Hughes	69	90
	Huslia	168	180
	Kaltag	165	226
	Koyukuk	128	125
	Manley Hot Springs	72	42
	Minto	161	202
	Nenana	286	470
	Nulato	283	307
	Rampart	49	47
	Ruby	157	168
	Tanana	349	400
	Election District No. 18 Total:	2,425	2,893
Election District No. 19	Dot Lake	56	50
	Northway	196	131
	Tanacross	102	112
	Tetlin	122	92
	Tok	129	550
	Election District No. 19 Total:	605	935
Election District No. 20	Arctic Village	110	82
	Beaver	101	106
	Birch Creek	32	33
	Canyon Village	N.A.	41
	Chalkyitsk	57	96
	Circle	41	86
	Eagle	92	89
	Fort Yukon	701	650
	Stevens Village	102	98
	Venetie	107	135
	Election District No. 20 Total:	1,343	1,334*
	TOTAL:	4,373	5,162
	TOTAL:**	4,373	5,121

*Ex-Canyon Village: 1,293. **Ex-Canyon Village.

Source: Federal Field Committee for Development Planning in Alaska, *Villages in Alaska and Other Places Having a Native Population of 25 or More, Estimates, 1967*. U. S. Bureau of the Census, *U. S. Census of Population: 1960, Number of Inhabitants, Alaska*, pp. 3-1G, 11. State of Alaska, *Community Gazetteer of Alaska*.

The following tables show the projected population in the ex-Fairbanks region and the summary for the villages and the Fairbanks region (Figures 5-13 and 5-14, respectively).

FIGURE 5-13
POPULATION EX-FAIRBANKS AREA

	Short Term	Intermediate Term	Long Term
Low	5,200	5,200	4,700
Intermediate	5,500	5,700	6,100
High	5,800	6,300	7,400

Source: Author's computations.

The sums of the prospectives for the Fairbanks area and the rest of the region are shown in the following table.

FIGURE 5-14
POPULATION FOR TOTAL REGION

	Short Term	Intermediate Term	Long Term
Low	26,100	29,700	28,200
Intermediate	57,700	62,500	66,600
High	61,900	76,100	83,600

Source: Figures 5-11, 5-12, 5-13.

FOOTNOTES

CHAPTER 5

1. Alaska Department of Health and Welfare, *Estimated July 1st Population by Race and Election District*.
2. University of Alaska, *Fairbanks Community Survey: A Profile of Poverty*, p. 1.
3. Bureau of Indian Affairs, *Report of Labor Force Employment and Unemployment as of March, 1967, Fairbanks District*.
4. Federal Field Committee for Development Planning in Alaska, *Fairbanks Flood Disaster and Alaska's Economy*, prepared by Bradford H. Tuck with Douglas N. Jones, p. 7. Three policy "sets" concerning income input are tested. Under Set 1, no special disaster loans or grants are made available by any government agency. The federal government would only maintain levels of civilian and military employment in effect at the time of the flood and reconstruct its own facilities. Policy Sets 2 and 3 would distribute funds in larger amounts by quarterly injection into the economy. The time distribution was based on assumptions of such factors as the ability of the Fairbanks economy to absorb inputs to its income stream without undue inflationary pressures.
5. *Fairbanks Flood Disaster and Alaska's Economy*, *op. cit.*, p. 15. It should be mentioned that the Senate recently passed the Omnibus Rivers and Harbors Bill, including \$113.5 million for the Fairbanks Flood Control project. Assuming two-thirds of this amount will enter the income stream and the project will take three years, approximately \$25 million will become part of regional income.
6. *Alaska Forest Resource Inventory Project*, a project proposal by the Forest Products Task Force of the Federal Field Committee for Development Planning in Alaska, March, 1968, p.22.
7. *Ibid.*, p. 22. The Yukon River Valley is considered by the Forest Service to be the area of second priority after the Tanana for aerial photography. Since the export market is most likely, the river should be studied for transportation of logs and lumber. In addition, dock or at least anchorage sites at the mouth of the river should be investigated.
8. For a more detailed analysis of the railroad extension, see (among other possible citations) *Transportation and Economic Development in Alaska*, prepared for the Federal Field Committee for Development Planning in Alaska, pp. 180-190. (Prepared by the Transportation Task Force, Lyle K. Brown, Chairman, with Douglas N. Jones.)

9. *Ibid.*, p. 21. Included in the outgoing air freight from Fairbanks is that carried by the Hercules C-130 aircraft of Alaska Airlines. The craft has carried loads up to 50,000 pounds to oil exploration activities north of the Brooks Range and to the copper development at Bornite northeast of Kotzebue.
10. Alaska Department of Economic Development and Planning, *Traveler Profiles*, December, 1964, p. 21 and Cresap, McCormick & Paget, *A Program for Increasing the Contribution of Tourism to the Alaskan Economy*, 1968.
11. *Direct Exhibits submitted by the City of Fairbanks, North Star Borough, and Fairbanks Chamber of Commerce, Inc. (Fairbanks Parties)*, November 15, 1966, Exhibit FAI 900, pp. 6-7 and Supplemental Request for Evidence, dated June 11, 1966, p. 1.
12. State of Alaska, Department of Highways, *Long-Range Highway Program*, January, 1968.
13. Federal Field Committee for Development Planning in Alaska, *Transportation and Economic Development in Alaska*, *op. cit.*, p. 11. The Department of Defense is presently exploring the feasibility of such action.
14. *Anchorage Daily News*, July 21, 1968, p. 11.
15. U. S. Department of the Interior, *Alaska Natural Resources and the Rampart Project*, p. 41; Report of the President's Review Committee for Development Planning in Alaska, transmitted to the White House March, 1968.
16. Data for this section were obtained from a working paper of the Alaska Power Administration entitled *Alaska Railbelt Transmission System*, December, 1967. Golden Valley Electric Association, an REA cooperative, provides electric power to the heavily-settled area around Fairbanks, to an area extending about 30 miles southeast along the Alaska Highway, and to the community of Delta, approximately 70 miles from Fairbanks. Interconnections are maintained with Fort Wainwright Army Base near Fairbanks, Fort Greely near Delta, the City of Fairbanks, and the University of Alaska. GVEA has recently constructed a 22,000 kilowatt mine-mouth steam plant using subbituminous coal in the Healy area. The plant has more than doubled the previous capacity of GVEA and should take care of the load into the middle or late 1970's, assuming the 10 per cent annual increase experienced since the early 1950's. The Fairbanks municipal system increased consumption at an average annual rate of 7 per cent since the late 1950's. Most of the requirements are supplied by the city's coal-fired plants, and the utility also operates a 5,000 kilowatt oil-fired turbine.

17. Federal Field Committee for Development Planning in Alaska, *Alaska-Northwest Canada Economic Activities*, Part II, prepared by George W. Rogers with Douglas N. Jones, 1968, pp. 15, 19.
18. *Ibid.*, p. 112.
19. Alaska Department of Labor, *Current Population Estimates-Alaska*, by Election District, July 1, 1967.
20. University of Alaska, *Economic Base of the Fairbanks North Star Borough*, p. 41.
21. *Alaska Natural Resources and the Rampart Project*, *op. cit.*, p. 40. Several factors could favorably affect the government employment picture. One is expanded commitment to Native development. Another is the mineral research program suggested in *Alaska Natural Resources and the Rampart Project*, including the Institute of Arctic Mineral Resources at the University of Alaska.
22. Alaska Department of Labor, *Current Population Estimates by Election District-Alaska*, July 1, 1967.
23. *Ibid.*

SUBREGION V
Northwest Alaska



CHAPTER 6

NORTHWEST ALASKA--REGION V

1. DIAGNOSTIC CHARACTERISTICS OF THE REGION

Region V consists of all of Alaska north of the Yukon River drainage. Its approximately 150,000 square miles¹ make up the most "arctic" region under United States jurisdiction. The area is generally north of the treeline and consists mainly of tundra and mountains, and the climate is inhospitable to most human activity. Typical temperature ranges in the interior are -55° to +80° F. On the north and west coasts, where most of the people are concentrated, the extremes are more moderate--in the vicinity of -30° to +50° F.--but there the cold is aggravated by overcast or fog most of the year and average wind velocities of 8 to 25 knots.

A. Population and Labor Force

The population, estimated at 13,400 in 1967, is scattered along the seaboard and in a handful of villages on the Kobuk and Noatak rivers (Figure 6-1). This is the home country of the "Northern" or *Inupiat*-speaking Eskimo; of the total resident population, about 83 percent are estimated to be Alaska Natives, all but a few of whom are Eskimo. About 43 percent of the Natives and more than half of the non-Natives live in the three largest villages, Nome (1967 population 2,450), Kotzebue (1,774), and Barrow (1,560). (See Figure 6-2.) Thirty-two other villages with year-round residents plus a handful of defense and communications installations account for the rest.

As in Region III, the Bureau of Indian Affairs estimates of Native population can be accepted as reasonable indicators of orders of magnitude, and they are in close agreement with the current estimates of the U. S. Bureau of the Census and of the State of Alaska. Both of the latter, however, show a rapid growth of non-Native population for Region V, which growth is not confirmed by any other evidence, such as employment statistics or qualitative examination of individual communities (including remote defense installations). On the contrary, there has probably been a slight decline in the non-Native population.² In any case, the non-Native population, both military and civilian, contains a large proportion of young, adult male transients,³ and the primary determinant of the size of this group in Region V is labor demand rather than birth and death rates.

The Native population of northwest Alaska increased at an annual rate of 22.7 per thousand between 1960 and 1967.⁴ (Figure 6-3.) This growth resulted in part from a very high crude birth rate, 42.6 per thousand

FIGURE 6-1

POPULATION OF REGION V, 1929-1967

YEAR	SOURCE	RESIDENT POPULATION			MILITARY	RESIDENT CIVILIANS		
		TOTAL	NON-NATIVE	NATIVE		TOTAL	NON-NATIVE	NATIVE
1929	Census	6,101						
	Rogers-Cooley	7,730	1,360	6,370				
1939	Census	7,633						
	Rogers-Cooley	9,211	1,549	7,662	5	9,206		(7,762)
	Rogers	10,000				10,000	2,300	7,700
1950	Census	9,717						
	Rogers-Cooley	9,624	1,961	7,663	477	9,177		(7,633)
	Rogers	10,000			500	9,500	1,800	8,400
1960	Census ^a	11,784	2,411	9,373 ^b	742	11,042	(1,669)	(9,373)
	Rogers-Cooley	11,784	2,411	9,373	748	11,036	(1,663)	(9,373)
	Rogers	12,000			800	11,200	(1,800)	(9,400)
	Ak Dept H & W	11,800	2,400	9,400				
1961	Rogers	12,300			800	11,500	2,000	9,500
	Ak Dept Labor	12,309			792	11,566		
	Ak Dept H & W	12,000	2,400	9,600				(9,600)
1962	Rogers	12,300			800	11,500	1,800	9,700
	Ak Dept Labor	12,338			792	11,546		
	Ak Dept H & W	12,200	2,500	9,700				(9,700)
1963	Rogers	12,700			800	11,900	1,900	10,000
	Ak Dept Labor	12,690			792	11,898		
	Ak Dept H & W	12,600	2,700	9,900				(9,900)
1964	Rogers	12,300			800	12,500	2,300	10,200
	Ak Dept Labor	13,343			792	12,551		
	Ak Dept H & W	12,700	2,700	10,000				(10,000)

FIGURE 6-1 (Continued)

YEAR	SOURCE	RESIDENT POPULATION			MILITARY	RESIDENT CIVILIANS		
		TOTAL	NON-NATIVE	NATIVE		TOTAL	NON-NATIVE	NATIVE
1965	Rogers	13,200			700	12,500	2,200	10,300
	Ak Dept Labor	13,242			575	12,667		
	Ak Dept H & W	12,900	2,800	10,100				(10,100)
1966	Rogers	13,000			700	13,900	1,800	10,500
	Ak Dept Labor	13,022			688	12,334		
	Ak Dept H & W	13,300	3,000	10,300	700	12,600	(3,500)	(10,100)
	H. P. Gazaway ^c	13,325	2,062	11,263				
1967	Ak Dept H & W	13,300	3,000	10,300	700	13,700		
	BIA-FFC ^d	12,506	1,534	10,972				
	Our Estimate ^e	13,400	2,200	11,200	500	12,700	(1,700)	(11,200)

Note: Region is Barrow, Kobuk, and Nome districts plus Barter Island, except for censuses before 1960 in which it is Cape Nome District less Mekoryuk and Cape Nash; Fairhaven and Noatak-Kobuk districts, plus Kaktovik village in Fairbanks District. Rogers-Cooley and Rogers estimates are for "Northwest Alaska."

^aAlaska Department of Labor uses unadjusted Census figures for 1960, U. S. Bureau of the Census estimates for other years.

^bNatives are taken as "Indians" and "Other Races" (...than white, Negro, Japanese, Chinese, and Filipino).

^cNome area, plus Barrow, Barter Island, Meade River, Point Lay, Wainwright, and a proportional part of population in places not listed by name in Fairbanks area.

^dPopulation of places with Native population of 25 or more.

^eRounded from Figure 6-2.

Figures in parenthesis are presented for comparison, and assume no Natives in armed forces.

FIGURE 6-2

VILLAGE POPULATION ESTIMATES, REGION V

VILLAGE	OLD ELECTION DISTRICT	CULTURE	1967 POPULATION BIA-FFC ESTIMATES			1966 GAZAWAY TOTAL	U. S. CENSUS POPULATION		
			NON-NATIVE	NATIVE	TOTAL		1960	1950	1939
Nome	23	E-W	816	1,634	2,450	2,700	2,316	1,876	1,559
Barrow	21	E	160	1,651	1,811	1,560	1,314	951	363
Kotzebue	22	E	227	1,513	1,740	1,774	1,290	623	372
Unalakleet	23	E	109 ^a	513	622 ^a	650	574	469	329
Selawick	22	E	16	420	436	387	348	273	239
Noorvik	22	E	8	437	445	468	384	248	211
Gambell	23	E	15	402	417	360	358	309	296
Savoonga	23	E	5	402	407	390	299	249	209
Point Hope (Tiagara)	22	E	11	313	325	340	324	264	257
Wainwright	21	E	8 ^a	310	318 ^a	307	253	227	341
Kiana	22	E	10	253	263	227	253	181	167
Shishmaref	23	E	7	242	249	221	217	194	257
Teller	23	E	25	224	249	238	217	160	118
Stebbins	23	Y	3	218	221	202	158	115	98
Noatak	22	E	8	192	200	296	275	326	336
Kivalina	22	E	3	190	193	153	142	117	98
St. Michael	23	Y	15	180	195	196	205	157	142
Shaktolik	23	E	5	186	191	181			
Koyuk	23	E	4	170	174	139	129	134	100
Shungnak	22	E	4	163	167	153	135	141	193
Barter Island (Kaktovik)	21	E	9 ^a	141	150 ^a	145	125		
Elim	23	E	4	142	146	175	145	154	
Ambler	22	E	6	128	134	114	70		
Wales	23	E	10	115	125	128	128	191	193
White Mountain	23	E	4	115	119	144	151	129	199

FIGURE 6-2 (Continued)

VILLAGE	DISTRICT	CULTURE	1967 POPULATION BIA-FFC ESTIMATES			1966 GAZAWAY TOTAL	U. S. CENSUS POPULATION		
			NON-NATIVE	NATIVE	TOTAL		1960	1950	1939
Brevig Mission	23	E	3	115	122	107	77	109	
Anaktuvuk Pass	21	E	2	115	117	110	35	66	
Golovin	23	E	3	91	94	91	59	94	116
Buckland	22	E	2	90	92	88	87	108	115
Deering	22	E	2	87	89	60	95	174	230
Diomedes	23	E	1	69	70	69	88	103	
Kobuk	22	E	5	61	64	70	54	38	31
Northeast Cape	23	E	a	55	56	56			
Bornite	22	W	18	17	35	90			
Candle	22	E	6	15	21	21	103	105	119
King Island	23	A				16	66		208
Umiat	21	W				75			
Point Lay (Kali)	22	M-E	a		a	12	50	75	117
Tikililik (Meade River)	21	A					30	49	78
Mary's Igloo	23	A					5	64	114
Bessie No. 5	23	A						54	
Tin City	23	M	a		a				
Cape Lisburne	22	M	a		a				
Other Military Installations	22	M	a		a				
ENUMERATED ABOVE OTHER PLACES			1,534 700 ^b	10,972 250 ^b	12,506 950 ^b	12,460 865	10,559 1,225	8,477 938	7,205 428
TOTAL			2,234 ^b	11,222 ^b	13,456 ^b	13,325	11,784	9,415	7,633

Note: Region is Barrow, Kobuk, and Nome districts plus Barter Island except for censuses prior to 1960, in which region is Cape Nome, Fairhaven, and Noatak-Kobuk districts (1950 boundaries) less Nunivak Island.

^aMilitary and non-Native Department of Defense and contractor employees living on military installations are included in "OTHER PLACES."

^bOur estimate.

E = Inupiat-speaking Eskimo. Y = Yupik-speaking Eskimo. W = Non-Native. A = Abandoned. M = Military.

FIGURE 6-3
BIRTHS AND DEATHS, REGION V

	1960	1961	1962	1963	1964	1965	1966
<u>Births</u>							
All	485	473	474	444	449	464	409
White	34	40	30	33	36	30	34
Nonwhite	451	433	441	401	413	434	375
<u>Deaths</u>							
All	99	104	112	111	106	71	106
White	15	15	14	16	11	8	11
Nonwhite	84	89	98	95	95	63	95
<u>Native Birth and Death Rates per 1,000 Population*</u>							
Birth Rate	48	45	45	40	40	41	35
Death Rate	9	9	10	9	9	6	9
Natural Increase	39	34	34	31	31	35	26

Source: Numbers of births and deaths--Alaska Department of Health and Welfare.

*Nonwhite births and deaths against Native population estimated by exponential interpolation between 1960 Census figure and 1967 Bureau of Indian Affairs-Federal Field Committee estimate. Non-Native (white) rates were not estimated because of unreliability of population data. Non-Native rates for 1960, based on Census figures were births 19, and deaths 4, per thousand.

between 1960 and 1966. The Native birth rate, however, has dropped spectacularly during this period, from 48 to 35 per thousand (Figure 6-4), and can be expected to fall further because of the rapid and effective distribution of contraceptive devices and the selective outmigration of young women. The high birth rate joined with a total death rate lower than the overall U. S. national average⁵ to produce an annual rate of natural increase of 22.7 per thousand, approximately twice the national average.

More than one-third of the natural increase in Native population was offset by outmigration. There has also been a movement from the smaller villages to Barrow, Nome, and Kotzebue; together these three places accounted for 30 percent of the region's population in 1939, 36 percent in 1950, 42 percent in 1960, and 45 percent in 1967. Migration, both within and from the region, has been a highly selective one of young adults so that many villages are now composed overwhelmingly of old people and children.⁶ In 1960, persons 15 to 39 years of age made up 30.7 percent of the nonwhite census population (compared to 42.5 percent of the total Alaska population); the proportion has probably declined since that time. The absence of young women is particularly conspicuous in the small villages. Bureau of Indian Affairs 1967 figures for its Nome district (Nome and Kobuk election districts) as a whole showed Native males over 16 years of age outnumbering females by nine percent (Figure 6-9).

The distribution profile for various indicators of welfare, social development, and acculturation are typically bimodal, reflecting a large gulf between the conditions of the Native and non-Native population. For instance, in the 1960 census the median number of school years completed by whites was 11.7 and for nonwhites 4.2 (Figure 6-5). The median individual income for whites over 14 was almost eight times that of nonwhites (Figures 6-6 and 6-7). The low educational and economic positions of the region's Natives are understated by these figures because of the low quality of the few years of schooling completed and the low purchasing power (perhaps half the national average) of the few dollars of money income.

The bipolarity of the social statistics for the northwest region reflects its dual economy, the existence (side by side) of the largely non-market hunting and fishing economy of the Eskimos with a few enclaves or extensions of North American urban society.

B. The Subsistence Economy

Contact with Western civilization over the past hundred years has changed the pattern of Eskimo life considerably, but most of the people are still economically and culturally oriented to the same subsistence resources on which they depended prior to contact. With the exception of Nome and two or three other mining camps, every settlement in the region was located

FIGURE 6-4

ESTIMATED COMPONENTS OF POPULATION CHANGE
NATIVE POPULATION, REGION V, 1960-1966

		AVERAGE ANNUAL RATE PER THOUSAND	
		REGION V NATIVES	U. S. AVERAGE 1966
1960 Population (Census Count)	9,373		
1966 Population (exponential interpolation between 1960 Census and 1967 Bureau of Indian Affairs-Federal Field Committee estimate)	10,725		
Total Increase	1,352	22.7	10.3
Births (1/2 of 1960; 1961- 1965; 1/2 of 1966, Table V-3, nonwhite)	2,536	42.6	18.6
Deaths (1/2 of 1960; 1961- 1965; 1/2 of 1966, Table V-3, nonwhite)	530	8.9	9.5
Natural Increase	2,036	33.7	9.1
Net Migration (residual)	-684	-11.0	+1.8

FIGURE 6-5
EDUCATIONAL ATTAINMENT OF THE POPULATION, REGION V, 1960

	TOTAL	WHITE	NONWHITE
Number of Persons Over 25 Years of Age	4,667	1,354	3,313
No Schooling	524	10	514
Elementary School			
1-4 years	1,027	14	1,013
5-6 years	849	22	827
7 years	328	40	288
8 years	533	116	417
High School			
1-3 years	364	235	129
4 years	461	364	97
College			
1-3 years	299	294	5
4 years or more	282	259	23
Median School Years Completed			
<u>Region V</u>	<u>5.9</u>	<u>11.7</u>	<u>4.2</u>
Alaska	12.1	12.4	6.6
United States	10.6	10.9	8.2

Source: U. S. Census of Population.

FIGURE 6-6
FAMILY INCOME DISTRIBUTION, REGION V, 1959

	TOTAL	WHITE	NONWHITE
Number of Families	1,831	377	1,454
Income			
Under \$1,000	299	7	292
\$1,000 to \$1,999	376	15	361
\$2,000 to \$2,999	252	62	190
\$3,000 to \$3,999	189	14	175
\$4,000 to \$4,999	136	39	97
\$5,000 to \$5,999	130	35	95
\$6,000 to \$6,999	121	44	77
\$7,000 to \$7,999	62	19	43
\$8,000 to \$8,999	80	22	58
\$9,000 to \$9,999	42	26	16
\$10,000 and over	180	145	35
Median Income of Families			
<u>Region V*</u>	\$2,940	\$6,370	\$2,390
Alaska	\$7,305	\$8,060	\$3,339
U. S.	\$5,660	\$5,893	\$3,711

Source: U. S. Census of Population.

*Medians calculated on assumption of proportional distribution within median income class.

FIGURE 6-7
INDIVIDUAL INCOME DISTRIBUTION, REGION V, 1959

	TOTAL	WHITE	NONWHITE
Number of Persons	6,851	1,870	4,981
Without Income	1,912	143	1,779
With Income	4,939	1,737	3,202
Income			
\$1 to \$499 or less	981	65	916
\$500 to \$999	792	88	704
\$1,000 to \$1,499	639	217	422
\$1,500 to \$1,999	312	101	211
\$2,000 to \$2,499	291	107	184
\$2,500 to \$2,999	334	202	132
\$3,000 to \$3,499	224	101	123
\$3,500 to \$3,999	138	70	68
\$4,000 to \$4,499	175	86	89
\$4,500 to \$4,999	125	80	45
\$5,000 to \$5,999	212	99	113
\$6,000 and over	816	621	195
Median Income All Persons*			
<u>Region V</u>	<u>\$ 840</u>	<u>\$3,060</u>	<u>\$ 390</u>
Alaska	\$1,980	\$2,670	\$ 690
U. S.	\$1,280	\$1,390	\$ 770

Source: U. S. Census of Population.

*Medians calculated on assumption of proportional distribution within median income class.

by reference to the availability of game, fish, or fuel. Again with the exception of Nome, in each settlement within the region the primary occupation of most families is subsistence hunting and fishing. The *Alaska Dietary Survey* found that locally harvested foods in four northwest Alaska villages accounted for 30 to 46 percent of the caloric intake and 67 to 81 percent of the protein. These ranges are probably typical of most smaller settlements and also of Barrow. The dependence on local subsistence food resources is much less at Nome and may be somewhat less in Kotzebue and Unalakleet. Locally gathered materials are the main source of fuel outside of Nome, Kotzebue, and Unalakleet, where oil heat prevails; and Barrow, where natural gas is available. Some local materials are used for clothing, building materials, and for making utensils and craft items for sale.

The proportion of subsistence production in the total quantity or value of goods and services consumed by the Eskimos of Region V understates their importance in terms of total economic activity and cultural significance. Cash incomes, which are highly irregular, are typically obtained in temporary employment at relatively high wage rates or, in some cases, from welfare payments. The vast bulk of labor input in terms of man-hours is devoted to hunting, fishing, fuel gathering, and other traditional activities. A substantial part of the cash flow is used for inputs of durable goods such as outboard motors, snow machines, and guns, and of supplies used in the subsistence sector. Seasonal life patterns are still dominated by the movements of fish, caribou, and marine mammals. Hunting skill remains the single most important determinant of social status and influence.

The composition of subsistence production and consumption varies widely among villages, depending mainly on the resources available. For the region as a whole, the most important wildlife resources are probably, in rough order of physical quantity utilized: caribou, seal and ugruk, fish (primarily salmon and arctic char), and fowl. Walrus, whales, moose, sheep, bear, and rabbits are also consumed.

The viability of the Eskimo subsistence economy in the region is apparently not now endangered by population pressures on the wildlife resources nor by the influx of nonresident hunters. The take of the most important species is in no case clearly approaching the maximum sustainable yield; stocks of caribou, seal and ugruk, walrus, beluga whales, etc., can probably yield a substantially greater kill.⁷ Technical progress in the subsistence sector can result in much greater yields per unit of human effort, but will in most cases require material inputs obtainable only with money. The snow machine is working a revolution in hunting (and in other ancient pursuits, such as hauling of firewood and water) comparable only to the introduction of the rifle. But snow machines cost from \$700 to \$2,000 and require purchased fuel and parts. On the other hand, to the extent