POST WORLD WAR II POPULATION MIGRATION TO MO I RANA, NORWAY: A STUDY OF THE SPATIAL IMPACT ON THE MIGRATION PROCESS OF VARYING LABOR DEMANDS

Thesis for the Degree of Ph. D.
MICHIGAN STATE UNIVERSITY
ELDOR C. QUANDT
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presented by

Eldor C. Quandt

has been accepted towards fulfillment
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Lawrence A. Sommers
Major professor

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ABSTRACT

POST WORLD WAR II POPULATION MIGRATION TO MO I RANA, NORWAY:
A STUDY OF THE SPATIAL IMPACT ON THE MIGRATION
PROCESS OF VARYING LABOR DEMANDS

by Eldor C. Quandt

After World War II the Norwegian government implemented an economic development program which was to raise the standard of living of North Norway by increasing employment opportunities. Several locations were chosen as growth centers, and industry was encouraged to develop. Due to available hydroelectric power and nearby iron ore, Mo i Rana, was selected as the site for an iron and steel industry.

As a result of the introduction of industry the population of Mo i Rana increased from 1,279 in 1946 to nearly 10,000 in 1963, and the city and surrounding hinterland had a population of over 26,000 in 1970. A former fishing village was transformed to a thriving urban community which provides professional services, varied retail establishments, a secondary school, and various recreation and entertainment facilities.

Since 1946 a significant number of people have migrated to Mo i Rana. The "pull" forces have been guaranteed employment a higher standard of living and amenties of urban living; whereas, the "push" factors were a low standard of living and lack of employment opportunities.

This study analyzed the changing spatial patterns of selected characteristics of population migration resulting from varying labor

demands in an industrial growth situation. A regional growth center based on the Norwegian Ironworks, Mo i Rana, Norway, was selected as an example of an urban area whose population was significantly affected by migration tendencies during three periods of development.

A large part of the information for this study was collected at the Population Register in Mo i Rana. Personal file cards were examined for 7,283 migrants who arrived in Mo i Rana between July 1, 1946 and June 30, 1968. In addition, published and unpublished census data were obtained at the Central Bureau of Statistics in Oslo.

Three stages of industrial development were delineated to facilitate the analysis of the varying patterns of origin, volume, distance, occupation, age and marital status of population migration to Mo i Rana. The first stage, construction, included the excavation and initial phase of construction at the Norwegian Ironworks. The growth stage was evidenced by a full scale operation of the plant, plus additional construction. The third stage, stabilization, was characterized by a substantial increase in finished steel production at the Ironworks, and the inhabitants of Mo i Rana demanded numerous services.

The analysis of population migration data compiled according to frequency distributions (in tables and cartographic presentations, an analysis and a description were made of population migration to Mo i Rana during the three stages of industrial development), showed that during the construction stage a large share of the movement came from fishing and agricultural areas near Mo i Rana. The principal reasons for this type of migration were: (1) the short distance involved;

(2) labor surpluses in the predominantly fishing and agriculture regions; and (3) a demand for unskilled construction labor at the Ironworks.

In the growth stage areas near Mo i Rana maintained their importance as major suppliers of migrant labor, but due to increased demands for workers by the Ironworks, greater numbers of people came from longer distances than in the previous period. As in the construction period, a large proportion of the migrants, during the growth stage, were married. This was due to the short distance of travel for a family with household furnishings, guaranteed employment at the Ironworks and the many benefits offered by an urban center. During the construction and early part of the growth period the largest number of migrants were in the 25-29 age group, but as the supply of labor from this group decreased during the latter part of the growth period, the 20-24 age group became an important source of migrants.

During the stabilization period much of the labor demanded by the Ironworks was met with a local labor supply, and a large number of migrants came to serve the needs of a rapidly growing population in Mo i Rana. In this industrial stage a larger proportion of the migration came from longer distances than in the previous two periods.

In summary, then, this study analyzed and described the similarities and differences of origin, volume and selected demographic characteristics in population migration for three periods of industrial development. The results from this study may be applicable to the investigation of other underdeveloped regions experiencing industrial growth and population migration.

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This study was made possible with the help of a number of individuals. Several people in Norway aided in the collection of data. Mr. Helge Skaug, a consultant at the Central Bureau of Statistics in Oslo, made unpublished census data accessible. He was also instrumental in obtaining permission to use personal file cards at the Population Register in Mo i Rana. Mr. Jorgensen, Director, Population Register, provided unlimited use of his office as well as additional office hour time for data collection. Mr. Per Storvik and Mr. Aksel Saevik, Computer Center Consultants, Mr. S. Strand, Public Relations Director and Mr. Hans Ro, Payroll Division, gave their time for several conferences and provided important data on the Norwegian Ironworks.

I especially appreciated advice given by my colleagues at Western Michigan University while writing my dissertation. I am grateful to Dr. Albert Jackman, Chairman, Department of Geography, Western Michigan University for granting me part-time teaching duties in order to complete this dissertation and Mr. Hans Stolle, Staff Cartographer for his professional cartographic assistance.

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made this study possible. I deeply appreciated his continual concern for my research and the learning experience obtained from our numerous conferences.

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CHAPTER I

INTRODUCTION AND CONCEPTUAL FRAMEWORK

Introduction

During World War II, parts of North Norway[1] suffered substantial destruction from the German attack and occupation. The county of Finnmark and a large section of Troms were heavily destroyed during the German retreat in the autumn of 1944. The cities of Narvik and Bodø earlier were laid in ruins during the 1940 German campaign.

Since World War II, rehabilitation and a special development program[2] have enhanced the economic development of North Norway. A comprehensive plan to rebuild in a eight year period the ports, houses, schools, hospitals and public utilities led to a high level of employment. By 1950 there was a growing concern that when the period of reconstruction came to an end, the area would again be confronted with the prewar problems of unemployment and low income per capita.

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[1]North Norway includes the counties of Finnmark, Troms, Nordland, Nord-Trøndelag and Sør-Trøndelag.

[2]This special program is now commonly referred to as the North Norway Plan (North Norway Development Fund).

The primary goal of the North Norway plan was to increase employment opportunities through the development of manufacturing industries.[3] In general, the objective was to raise the level of income in order to give North Norway a standard of living comparable with that of the rest of the country.

A fundamental aim of the postwar economic policy in North Norway was to provide an alternative employment in regions where modernization reduced the demand for labor in such traditional occupations as fishing, agriculture and forestry. Since 1952 the government has developed fish storage and processing plants and manufacturing industries in areas where technological change has brought about unemployment and low income levels. Along the coast of North Norway, a chain of refrigerator and freezing plants have been built for the fishing industry. "Findus" in Hammerfest is the largest individual unit. At Mosjøen an artificial silk mill employs 200 people. Another large new firm is Mosjøen Aluminum which has a labor force of 250 and an annual output of 21,000 tons of aluminum. Norsk Hydro produces artificial fertilizer in Glomfjord. It employs 600 people, and a large scale expansion is underway to increase the output of fertilizer as well as ammonia. The most significant development to take place in recent years is the Norwegian Ironworks (Norsk Jernverk) at Mo i Rana. This factory began production

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[3]Manufacturing includes all activities whereby man: "(a) assembles raw materials in an establishment (whether cottage, workshop, or factory), (b) upgrades their usefulness by changing their form, and (c) ships out these more valuable commodities to other places."

John Alexander, Economic Geography, Prentice-Hall Inc., Englewood Cliffs, New Jersey, 1963, p. 288.

in 1955, and now employs more than 3,000 workers producing 587,000 tons of ingot steel per year.

The Norwegian Ironworks has been a major focus of industrial development in North Norway. It was chosen by the Norwegian government to support Mo i Rana as a "growth center."[4]

The continued government support of the iron and steel industry has produced one of the most economically progressive cities of North Norway. This industry has attracted people to the city from many points of origin. As the industry developed, the areas of origin and personal characteristics of the migrants have varied spatially.

This research is an attempt to determine the spatial relationships between selected characteristics of population migration and developing areas, as illustrated by Mo i Rana, according to stages of industrial development.[5] To accomplish this, both published and unpublished data were collected.[6] A large portion of the published data was obtained at the Central Bureau of Statistics in Oslo. The primary source of the raw data was the Population Register in Mo i Rana. These data are used to examine the spatial distribution of the origin, volume and selected demographic characteristics[7] of population migration.

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[4]According to objectives outlined by the Norwegian government, Mo i Rana is to be both an industrial and service center with a population between 30,000 and 40,000 people.

[5]The stages of industrial development are: construction, growth and stabilization.

[6]Field research for this study was completed between May 20 and August 20, 1968.

[7]Selected demographic characteristics include: age, marital status and occupation.

Two techniques are used for analysis and presentation in this dissertation. First, all migration data are evaluated according to frequency distributions of origin, volume and demographic characteristics. Relevant data are selected from the frequency distributions, placed in tables and subjected to a comparative analysis. Second, tabular compilation of frequency distributions and map analysis are used to test the validity of the hypothesis. The results obtained through these techniques provide an explanation of the spatial significance of selected population migration characteristics.[8] A geographic interpretation of population migration is based on the following conceptual framework.

The Migration Process

The relationship of industrial development to migration is shown in Process 1. The principal components of the diagram are: (1) the planned industrial site; (2) the surplus of labor created by lack of employment opportunities represents a "push" factor of migration; (3) the guaranteed employment and benefits of living in an urban center, which act as attracting forces to produce migration; and (4) the construction and operation of industry.

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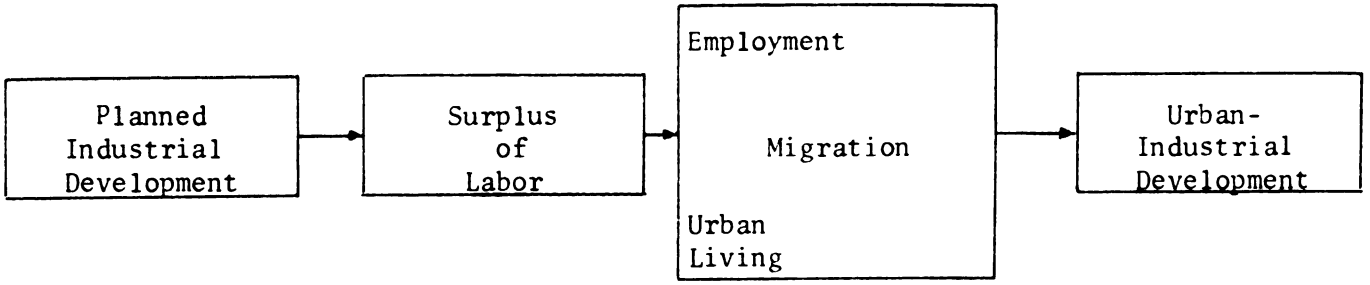
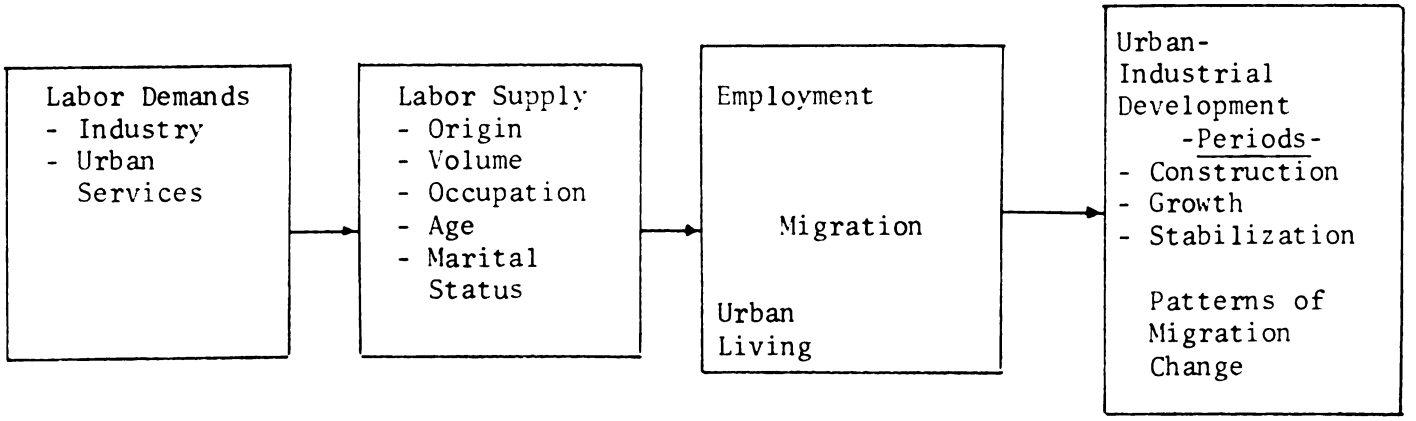
[8]Selected population migration characteristics include: (1) employment of migrant at place of origin; (2) volume and distance of movement; and (3) occupation, marital status and age of migrant at place of destination.

THE MIGRATION PROCESS I



THE MIGRATION PROCESS II: LABOR SUPPLY AND DEMAND



This diagram presents the general aspects of a migration process. It is more applicable where a national democratic government undertakes plans for regional development, rather than private industry. This study will use the example of regional development in North Norway, where the government's objectives were to raise the standard of living. Although some of the results of a private development may be the same, the purpose is different. In many cases, private industry is interested in only capital gains, while a government operation will pass these gains on to its people in order to raise income levels. In this diagram it is further assumed that there is voluntary migration and the simultaneous development of an urban center and industry.

The migration process which emphasizes the supply and demands of migrant labor is shown in Process 2 (Page 5). This diagram is similar to Process 1 in that the choice of guaranteed employment and urban living remain as significant attracting forces. Other elements of this diagram include: (1) the labor demand, which is created by an industry and urban center; (2) the labor supply, which is a result of the reorganization of the traditional industries of agriculture, fishing, and forestry and is described by origin, volume and demographic characteristics; and (3) migration according to three periods of industrial development.

According to this diagram, the labor demands for three stages of industrial and urban development will be met through migration. The patterns of change which occur for each stage can be described according to the characteristics of labor supply.

Population Migration

Migration is the spatial process which results in the redistribution of population.[9] Population movement "is at the heart of the forces which influence changes in the earth-space content."[10]

The population geographer emphasizes the spatial process[11] as it gives rise to observed patterns of population distribution. In migration study the spatial process is important to the analysis of international[12] and internal movement.[13] Geographic study of internal movement has yielded significant results and concepts which may aid in the development of theories.

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[9]Richard L. Morrill, Migration and the Spread and Growth of Urban Settlement, Lund Studies in Geography, Ser. B., Human Geography, No. 26, The Royal University of Lund, Sweden, Dept. of Geography, GWK Cleerup, Publishers/Lund, 1965, p. 5.

[10]Edward A. Ackerman, Geography as a Fundamental Research Discipline, Dept. of Geography, Research Paper No. 53, The University of Chicago, Chicago, Illinois, 1958, p. 24.

[11]The spatial process concerns population transfer, which results in the growth of certain towns and cities at the expense of other towns or rural areas.

[12]National states and their ability to regulate immigration and emigration makes international movement a distinct area of study. Political and cultural factors are far more important than with internal migration.

[13]Internal migration is "the change of residence from one community or other clearly defined geographical unit, to another within the national boundaries."

Dorothy Swaine Thomas, Research Memorandum on Migration Differentials, Social Science Research Council, New York, 1938, p. 4.

Geographic Points of View

Migration models are classified into two categories. The variety of models which have been developed are either deterministic or probabilistic, and both of these may be either static or stochastic (that is, descriptive of the present state or a process of growth). Deterministic formulations express precise relationships. This method of analysis is best suited to describing aggregate population characteristics, while the probabilistic model is used in predicting the behavior of an individual.

The deterministic model has proven to be highly useful in migration analysis. Studies of migration to and from small areas reveal the importance of this research approach. Examples include the studies of Hart[14] on internal migration in Indiana, a similar study of Morrill for Washington,[15] settlement change in a Kansas county by Kollmorgen and Jenks,[16] and Hart and Luebke's study of migration from a small depopulating town.[17] The latter indicates the importance of the migrants previous contacts with relatives or friends in maintaining migration flow between specific locations.

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[14]John F. Hart, "Migration and Population Change in Indiana," Proceedings Indiana Academy of Science, Indianapolis, 1957, pp. 195-203.

[15]Richard L. Morrill, "Regional Growth and Net Migration," University of Washington Business Review, 21, 1962, pp. 5-13.

[16]Walter M. Kollmorgen and George Jenks, "A Geographic Study of Population and Settlement Change in Sherman County Kansas," Transactions of the Kansas Academy of Science, 1951, pp. 449-494.

[17]John F. Hart and Benjamin Luebke, "Migration from a Southern Appalachian Community," Land Economics, 34, 1958, pp. 44-53.

A number of systematic studies of population distribution have provided detailed compilations of movement, elaborate surveys of migrant characteristics, accounts of migrant areas of population gain or loss, and some statistical tests of observed or suggested relationships. In the United States one such large scale study is Population Redistribution and Economic Growth,[18] a detailed investigation of population change, including migration, and the relationship of this change to economic factors. It covers the period from 1790-1950. Thornthwaite[19] and Bogue[20] are examples of studies of internal movements in the United States. Their research includes a statistical test of relationships between migration volume and distance of movement.

Several articles concerning both small and large scale migrations are found in the Symposium: Migration in Sweden.[21] In a review of this

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[18]American Philosophical Society, Population Redistribution and Economic Growth in the United States: 1790-1950, contributions by Lee, Brainerd, Miller, Eastertin, Kuznets and Thomas, 1957.

[19]C. Warren Thornthwaite, Internal Migration in the United States, Bulletin 1, Study of Population Redistribution, University of Pennsylvania Press, Philadelphia, 1934. Migration and Economic Opportunity, The Report of the Study of Population Redistribution, University of Pennsylvania Press, Philadelphia, 1936.

[20]Donald J. Bogue, Henry S. Shryock and Seigfried Hoerman, Streams of Migration Between Subregions, Scripps Foundation Studies in Population Redistribution, No. 5, 1957, Miami University, Oxford, Ohio. Milbank Memorial Fund, Selected Studies of Migration Since World War II, contributions by Taeuber, Hamilton, Folger, Spengler and Kuznets, 1956.

[21]Migration in Sweden, A Symposium, Lund Studies in Geography, Series B, No. 13, Lund, Sweden, 1946-1950:" Torsten Hagerstrand, "Migration and Area;" Esse Lovgren, "Mutual Relations between Migration Fields;" Reino Ajo, "New Aspects of Geographic and Social Patterns of Net Migration Rate;" Sven Dahl, "The Contacts of Vasteras with the Rest of Sweden."

publication, special mention should be made of Wendel's survey of Swedish mobility and Hagerstrand's thorough empirical and theoretical study of patterns of migration around several Swedish towns.

Two other contributions have provided valuable information for migration analysis. Sjaastad[22] studies the relationship of migration and income through the simultaneous interrelation of eight variables. Lovgren[23] analyzed the mobility of labor and showed a close relationship of a decline of migration with increased distance of movement. The most significant element evidenced in these studies was the movement from rural areas to urban centers, and resulting change in population distribution. Relevant to the discussion of such movement is the growth of manufacturing and commercial activities concentrated in towns and cities.

Population Migration and Economic Aspects of an Industrial Center

The development of an industrial center is a growth process involving the location of commercial activities, which serve a local hinterland; transportation and manufacturing, which have a non-local market; and migration, which provides many of the people necessary for a growing industry.

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[22]Larry A. Sjaastad, "The Relationship between Migration and Income in the United States," Papers and Proceedings, Regional Science Association, 6, 1960, p. 37-64.

[23]Esse Lovgren, "The Geographic Mobility of Labor." Geografiska Annaler, 38, 1956, Stockholm, pp. 344-494.

The economic aspects of industrialization have been investigated by several geographers. Significant research has been done on the economic factors determining industrial location,[24] the agglomerations of economic activity within an industrial city,[25] and the importance of technological change on the utilization of resources, both natural and human. These economic characteristics of industrialization are useful in explaining the type and growth of an industrial center, in addition, they play a significant role in creating spatial variations in population migration.

The growth of manufacturing and commercial activities in an urban center increases the demand for labor, a need met in a newly developed site through migration. The flow of migration, then, is produced by a surplus of population at the place of origin, and greater employment opportunities and usually a higher standard of living at the place of destination.

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[24]Richard L. Morrill, The Spatial Organization of Society, Wadsworth Publishing Company, Belmont, California, 1970, pp. 79-108.

[25]The word agglomeration as used by Alfred Weber has direct relevance to the stages of industrial development as proposed in this study. According to Weber the work covers three distinct situations. "There is, first the case of simple enlargements of plant, bringing into existence the advantages of large scale production. There is, second, the local association of several plants, presumably the same industry, which encourages the sale of a finished product. And there is, third, the case in which the mere aggregation of manufacturing activities, of unrelated as well as related types, leads to conditions which are on the whole more favorable than any single plant or group of related plants could develop for itself."

Stuart Dagget, "The System of Alfred Weber," Readings in Economic Geography: The Location of Economic Activity, Rand McNally and Company, Chicago, 1968, p. 63.

Labor Supply and Demand

The growth of industrial cities, as a result of rural to urban migration,[26] is readily comprehended as a population response to demands for labor. Dorothy Thomas describes such movements according to "push" and "pull" factors.[27] The "pull" factors, which fluctuate in accordance with business cycles, are higher wages and better working conditions in the towns. On the other hand, where economic accruement has fallen below economic margin,[28] "push" factors are created. "Push" factors are commonly associated with nonwage earners and independent land owners and include the creation of a supply of labor while the "pull" factors include demands or the lure of labor. The "push" and "pull" factors become important to geographic research and must be placed within the context of both space and time.

Space and Time

The process of population migration has spatial as well as temporal attributes. The movement occurs from and to a specific place

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[26]The first important empirical investigation of migration from rural to urban areas is found in the following study: E. G. Ravenstein, "The Laws of Migration" Journal of the Royal Statistical Society, 48, 1885, pp. 167-221.

[27]Ibid., p. 272.

[28]Economic margin refers to a balance between the standard of living and wages or costs of production and profits. Where production costs are more than profits and standard of living higher than wages the economic activity is submarginal.

and at a particular time. In order to determine the areal extent of labor migration, the knowledge of two locations is important. The first involves the place of origin, and the second the place of destination. The time at which movement takes place depends upon the economic conditions creating a supply and a demand for labor. The hypothesis for this study incorporates both time and space factors.

Data Collection

The location of Mo i Rana was chosen because of the availability of detailed population records. It is also the site of the Norwegian Ironworks where it was felt supplementary data could be obtained. The primary source of data was personal file cards made available by the Rana Population Register. The data was copied manually from the file cards during July, 1968.

Each personal file card registered from July 1, 1946, through June, 1968, was reviewed at the Register. These cards represented all people who had moved to Mo i Rana during a twenty-two year period.[29] The information selected from each card was: (1) date of arrival; (2) place of birth; (3) age: (4) origin, if different from place of birth; (5) marital status; and (6) occupation. There were approximately

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[29]According to Norwegian law each change of residence must be reported to a township office. Residence changes within Mo i Rana were eliminated from this study.

300 cards which did not supply complete information, usually that concerning occupations. After the elimination from this study of incomplete information the number of observations totaled 7,283.[30]

Areal Significance of Data

The data collected for this study provided an account of population migration to Mo i Rana from all regions of Norway, and from a number of foreign countries. Three areal units, the township, county and city were used to identify the internal origin of migrants. All migrants were classified according to the township from which they originated.[31] The township proved to be the most useful for describing the spatial distribution of migrants for the three counties surrounding Mo i Rana, while the use of counties expanded the regional description of migration to the whole country. Finally, the city served as a basis for the regional comparison of migrant origin.

Migration data was also collected for foreign nationals. Although foreign nationals were relatively few in number, their professional advice contributed much to the development of industry in Mo i Rana.

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[30]This is migration to Mo i Rana between July 1, 1946 and June 30, 1968. Of this number, 4,385 migrants were married. The family size could not be determined from available data.

[31]A special classification of townships was designed to alleviate problems caused by consolidation between 1958 and 1964. Through consolidation parts of townships, as well as entire townships were united with other townships. A code number was given each township to account for its type of consolidation, and to insure proper identification.

Periods of Industrial Development

After the Norwegian Parliament approved state support to develop industries in North Norway, Mo i Rana was designated as the site of the Norwegian Ironworks. The intial development of the Ironworks was the construction of plant facilities. Immediately after the first phase of construction was completed, a production and growth period began. There were several additional construction projects during this period. During the construction and growth stages, the Norwegian government required external professional advice, and extended employment opportunities to both skilled and unskilled people. The local labor supply was not adequate; hence, the need for an outside source of labor. A third stage of industrial development, namely the stabilization period, was included for three reasons. First, the Ironworks changed its emphasis of production from crude iron and steel to finished steel. Second, due to its rapidly expanding population, Mo i Rana required more retail and professional services. Third, an empirical analysis of labor force data showed a decline in migrant labor demand.

The time span of this study is approximately twenty-two years or from July 1, 1946, through June 30, 1968. The construction period runs from July 1, 1946, through March 30, 1955. The period begins with the excavation of the industrial site, and ends with the completion of the first phase of plant construction. The growth period begins April 1, 1955, and ends December 31, 1965. This period commences with iron and steel production, and terminates when the plant construction is complete and there is a declining demand for migrant labor. The time span from

January 1, 1966, through June 30, 1968 defines the stabilization period which involves a greater use of a local labor supply and a decline in migration.[32]

The Hypothesis

The hypothesis for this dissertation is based on the assumption that a newly established industry in an underdeveloped region proceeds through three periods of industrial development; namely construction, growth and stabilization. The labor demand is greater than the labor supply in the immediate area of the plant in all three periods. Thus, it is assumed that people migrate from varying places, distance and occupations to supply the demand. Data concerning employees of the Norwegian Ironworks at Mo i Rana will be used to illustrate the varying population migration characteristics during these three developmental periods.

In this study, it is hypothesized that the varying labor demands of the industrial periods and the resulting spatial impact are determined by the origin and volume of migrants to Mo i Rana and their occupation, age and marital status. The data obtained through field and library research are applied to the following hypothesized statements:

The spatial variations in selected characteristics of population migration to Mo i Rana for the construction, growth and stabilization periods are a primary function of:

(a) the number of laborers demanded for the construction and operation of the Norwegian Ironworks;

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[32]The periods of industrial development described above will also be referred to as migration periods.

(b) regions which have a surplus of labor;

(c) the origin of advisory personnel for the Ironworks;

(d) the distance of travel for migrants from place of origin to Mo i Rana;

(e) the type of labor required at the Ironworks and city of Mo i Rana; and

(f) the age and marital status of migrants.

An examination of the hypothesized statements will be developed in the following chapters. Chapter II analyzes the physical and human resources of the study area. Chapter's III, IV and V describe, respectively, the construction, growth and stabilization periods of industrial development and related spatial varations of population migration to Mo i Rana. The last chapter summarizes the results and presents conclusions.

CHAPTER II

EVOLUTION OF MO I RANA AS A GROWTH POINT CENTER

Introduction

Since World War II there have been significant changes in the population distribution of North Norway. As a result of the development of wood processing and mining industries, a more efficient agricultural production, and the more highly organized and centralized fishing industry, the demand for labor declined in the primary industries. With little room for expanded employment in the traditional industries, it was necessary to provide for employment in other segments of the economy.

A comprehensive postwar economic policy was developed by the Norwegian government to alleviate the economic disparities of the North. Some of the government's objectives included: full employment, fast economic growth and a redistribution of income. In general, the government wanted to create "an optimal use of labor and productive resources for the provision of goods and services with a high welfare effect."[1]

In an attempt to increase the standard of living of the North Norway population, the government encouraged the development of manufacturing industries. Low cost loans and certain tax exemptions were

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[1]Erik Brofoss, "Regional Problems in Norway," Sosialokonomen, Oslo, May, 1968, p. 13.

some of the measures used to provide incentives for the construction and operation of new enterprises. The government emphasized the need for the development of manufacturing oriented growth centers. Aware of the vulnerability of a small community, which is dependent upon a single manufacturing activity and subject to the adverse effects of economic change, the government advocated the development of the larger manufacturing center which would also act as a service center for a town and neighboring rural district.

In Norway the political decisions made to establish state-owned enterprises were instrumental in creating growth points of regional economic development. Mo i Rana was chosen as one of the growth centers, and in order to make the city an economically viable growth point for the surrounding region, the government developed an iron and steel industry.

Progress in Urban and Industrial Development in North Norway

One of the important concerns in the government planning of growth centers was optimal population size. It was felt that no "hard and fast quantitative terms should be applied."[2] However, it was found that in Norway regions of 30,000 to 40,000 people with a service center have been most progressive. Rana township with Mo i Rana as a service center will soon approach 30,000 in population. It should be noted no conclusions can be drawn at this time that such a center represents the threshold of growth capable of absorbing economic change.

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[2]Ibid., p. 14.

Although a high financial risk has been involved in industrial development in North Norway all programs have shown progress. As a result of government programs financial assistance has been given to over 3,000 industrial investors and over 50,000 jobs have been created. Due to these expansionary policies, unemployment has in general been at low levels throughout the postwar period, and the differences in income levels between North and South Norway have narrowed.

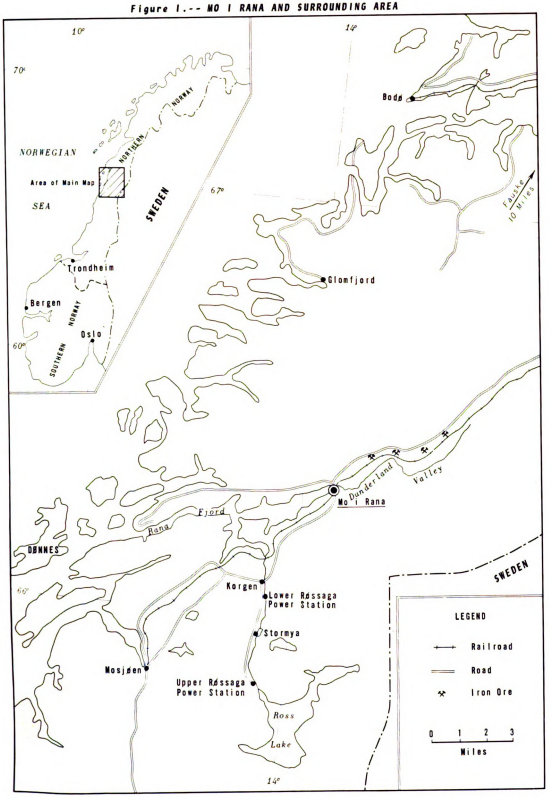
One of the more successful urban and industrial developments in North Norway is at Mo i Rana. It has been a major focal point of regional economic development, and with industry has become a major growth center.

Site and Situation of Mo i Rana

The city of Mo i Rana, 30 miles south of the Arctic Circle, is located at the interior end of the glacially eroded Rana Fjord (Figure 1). The fjord extends 48 miles inland from the Norwegian Sea. After glaciation the interior end of the fjord emerged. Since emergence, erosion from the slopes has filled in portions of the fjord, and the result is a seaward sloping plateau.

The higher elevations of the two fjord slopes, which bound Mo i Rana on the north and south, are snow covered throughout the year. At a lower elevation, the city has no appreciable snowfall. The Marine West Coast climate provides for mild winters and cool, moist summers, while the warm North Atlantic Drift, which flows northward and parallel to the Norwegian coast, is responsible for the year-around ice-free conditions of the Rana Fjord.

Figure 1.-- MO I RANA AND SURROUNDING AREA



Mo i Rana is the administrative center for Rana Township (Kommune), and the major trade center north of Mosjøen and south of Fauske (Figure 1). The city also attracts the trade of Sweden which is located 35 miles to the east. The hinterland[3] served by the city is sparsely populated by agricultural and fishing inhabitants.

Transportation

There are three types of transportation serving Mo i Rana. A single track railroad line passes through the city which begins at Oslo in the south and terminates at Bodø in the north. Roads extend north to Fauske and Bodø, east to Sweden and south to Nesna and Korgen (Figure 1). Although minimally used, the roads carry both busses and cars.[4]

Many material goods for consumer consumption arrive via the sea. Passenger ship service is also available.

Seaplanes are chartered for special freight as well as for private civilian use. In May, 1958, an airport was completed about 10 miles east of Mo i Rana. The nearest important airport is located at Bodø.

History of Population Settlement

Initial settlements within the greater Mo i Rana area were located on offshore islands. The island of Dønnes was the primary area of

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[3]The hinterland is the area which is commercially tributary to the city.

[4]The roads to the terminal locations mentioned here are unpaved, but yet well constructed. Beyond these points the roads are of a lesser quality of construction.

origin for settlers in Mo i Rana. Immigrants from the island first developed coastal farm settlements during the mid-17th Century. Settlers continued to move inland in search of agricultural land for food production and wood for boat building so that by the latter part of the 17th Century both agriculture and forestry were established within the Rana Fjord. In 1680 there were about twelve farms concentrated at the head of the fjord. Towards the end of the 17th Century Mo i Rana also gained importance as an outlet for products traded by the Lapps.

After the passing of almost two centuries, the number of farms at Mo i Rana increased to thirty-eight,[5] and the origin of settlers became more diverse. Some came "from South Norway, and others from Sweden."[6] A small proportion of the nomadic Lapp population also became sedentary farmers. Settlements began to spread outwards from Mo i Rana to the interior.

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[5]The organization of the Norwegian farm in this area consisted of the multiple tun or family farm. The original farm settlement was divided in order to provide for the sons of the family. The family generations which succeeded the initial farm family occupied different sized farms (bruks), which surrounded the original settlement (gård). The number of bruks which each gård developed depended on the availability of land. The severe fragmentation which occurred in the past is obvious today, as many bruks have only a few acres of land.

[6]Peter Worsley (ed. by) Svartisen Expedition 1966: Interim Report, Reading University, Reading, England, 1966, p. 20.

In 1855 the Parish of Mo had a population of 3,459.[7] (Table 1). The economic livelihood of the inhabitants was based on fishing, agriculture and forestry. In most cases, an individual was involved in all three forms of employment. The number of boats, slightly over 2,500 were recorded in 1855, reflects the importance of fishing. Agriculture was based on rye, barley and potatoes as staple food crops, and the grazing of sheep and reindeer for meat and hides.

By 1900 the population of the Parish had risen to 4,369, but the nature of the economic activities had changed little from the previous fifty years. Fishing and agriculture still predominated.

The population of Mo Parish increased 38 percent between 1900-1910 to a total of 6,002. Such a significant population rise was primarily a result of in-migration. In 1905 the British began developing the Dunderland Valley iron deposit. The labor demand for the development produced a migration from outlying areas, and a consequent abnormal rise in total population. The iron ore mining operation continued under the British until World War II.

During the interwar years the population of Mo i Rana and its surrounding area increased slowly. The region's economy also declined substantially during the depression years of 1928-1932. In-migration was minimal as indicated by the 224 people added to the city's population between 1910-1930. From 1930-1946, on the other hand, the population of Mo i Rana increased 1,389 or over 100 percent. Thus, between 1910-1946 the population of Mo i Rana increased 1,613 inhabitants, or approximately 450 per decade.

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[7]The year 1855 marks the first date at which valid population figures could be obtained.

TABLE 1

POPULATION GROWTH OF MO I RANA AND HINTERLAND

Date	Mo Parish	Mo i Rana	Nord-Rana	Sør Rana	Total
1680	-	12 Farms	-	-	-
1855	3,459	38 Farms	-	-	3,459
1900	4,369	-	-	-	4,369
1910	6,002	1,116	-	-	6,002
1930	-	1,340	4,504	-	5,844
1946	-	1,279	6,122	2,102	10,593
1950	-	4,211	7,190	1,927	13,328
1960	-	8,368	9,357	1,628	19,353
1963	-	9,207[1]	10,636	1,607	21,450
1967	-	-	-	-	25,390
1970	-	-	-	-	26,109

[1]The last official census figure for Mo i Rana was given in December, 1963. The consolidation of Nord-Rana, a part of Sør Rana, and Mo i Rana occurred on January 1, 1964. The consolidation unit is called Rana Township (Kommune).

Source: Based on statistics compiled from census and other publications.

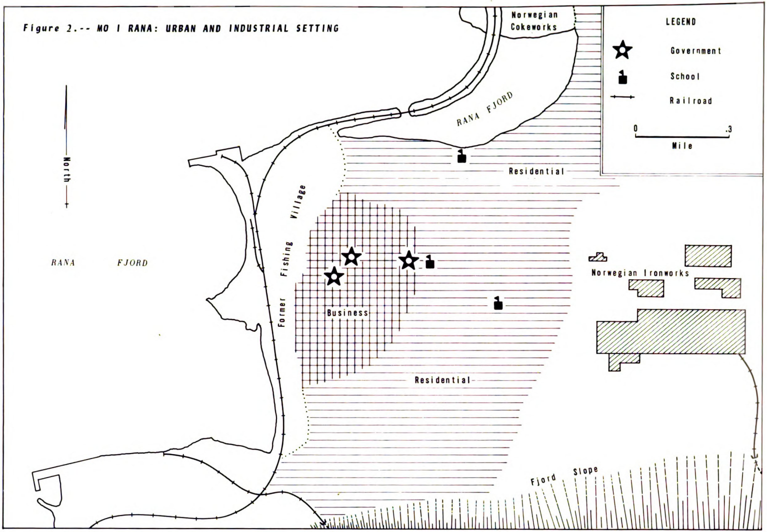
Since World War II Mo i Rana has experienced the most significant population increase in North Norway. Between 1950-1963 the city's population increased 118 percent. For the same period the Township of Nord-Rana increased 48 percent. This increase was primarily a result of the population expansion of Mo i Rana into the surrounding township During the same period, Sør Rana showed a population decrease of 17 percent. Out-migration to Mo i Rana is the reason for this decrease.

The "Pull" Factors of Mo i Rana

The physical setting and amenities of urban living were important to settlement in Mo i Rana. The beauty of snow covered highlands, tree studded river valleys and the many lakes made Mo i Rana in its regional setting aesthetically attractive. The ease of accessibility to the highlands, valleys and lakes for outdoor recreation, such as skiing, fishing and camping encouraged living in this city. The moderate annual temperature was also an inducement for settlement here.

The settlement of Mo i Rana began on the coast of the Rana Fjord and has steadily developed to the interior. Evidenced on the coast are remnants of the past when Mo i Rana was a fishing village (Figure 2). At present this section of the city is dominated by a rail transportation system and several large warehouses. Near the warehouses are located businesses and several government offices, while houses are concentrated farther inland and along the north and south sides of the fjord (Figure 2). The residential area surrounds the Ironworks on both the west and north sides.

Figure 2.-- MO I RANA: URBAN AND INDUSTRIAL SETTING



Since World War II Mo i Rana has provided employment opportunities as well as the advantages of urban living. The Norwegian Ironworks has been the basic source of employment, and with the growth of this industry the population of the city increased and demanded services. As a result, more personal services (doctors, lawyers), additional retail businesses, which offered a wide range of consumer goods, schools and government offices began to locate here and served as a further stimulus for population settlement. Thus, the city provided a better standard of living than could be gained in the more remote rural areas and islands, and a migration process was set in motion.

Physical Resources for Industrial Development

One of the primary reasons for choosing Mo i Rana as the location for an iron and steel industry was the supply of iron ore located a few miles east of the city. The deposits are located within the Dunderland River Valley (Figure 1). One of the deposits, Ørtvann, was developed as indicated previously by the British. The British began operations in 1905, and shortly before World War II the Dunderland Company were bought in 1946 by the Norwegian government, and added to the extensive reserve deposits of the Dunderland Valley. The reserves of iron ore within the Dunderland Valley are estimated to be 400 million tons. Most of the ore is low grade with an iron content of approximately 33 percent. The iron consists of equal quantities of hematite and magnitite, and a high percentage of phosphorus and sulphur impurities.

It is necessary to concentrate the iron ore before sending it to the blast furnace. Due to the inherent difficulties of separating the low grade ore from the gangue, it takes about three tons of raw ore to make one ton of concentrated ore. Despite the large reserves, the Norwegian Ironworks imports concentrated ore from the Sydvaranger mines in Kirkenes and from Malm on Trondheim Fjord.

A second reason for locating the iron and steel plant at Mo i Rana was the availability of hydroelectric power. The power is transmitted from two Røssaga River power sites which are located approximately 25 miles to the south of Mo i Rana (Figure 1). Water for the power sites is provided by the Røssaga River which originates at Ross Lake. The river flows to Stormya, and from this point a tunnel channels the water to the lower power station which is built underground near Korgen. The fall of the water is 800 feet, and the annual output of power at the station is 1,400 million Kwh. A second power site, located on the upper Røssaga River near the outlet of Ross Lake, has an annual output of 660 million Kwh.

As a result of the abundant and cheap hydroelectric power, the Norwegian Ironworks uses electric pig iron furnaces. The electric furnace achieves higher temperatures, and heat can be more closely controlled than in other processes. The furnace also produces a higher quality steel.

Due to the high silica content of the iron ore concentrates from Sydvaranger and Dunderland Valley, limestone is required in the smelting

furnaces. Approximately 700 pounds is needed for each ton of pig iron. A limestone quarry at Oyjord, about six miles from the iron and steel site, provides the limestone. After a short haul from the quarry by truck, crushed limestone is brought to receiving bins at the Ironworks site by a four and one-half mile mono-cable ropeway. Between 50,000 and 60,000 tons of limestone are used each year in the furnaces.

Although the smelting of iron ore is done by means of electric power, coke is still essential for building the carbon content of pig iron. Coal from the Norwegian possession of Spitzbergen is manufactured into coke and additional supplies are imported from Great Britain.

Imported raw materials and exported finished goods are handled at a specially constructed quay on the Rana Fjord. Located three miles from the iron and steel plant, the dock is 300 yards long, and is linked to the industrial site by electric railway and road.

Employment at the Norwegian Ironworks (1955-1967)

The rapid post World War II population increase for Mo i Rana can be attributed to the development of the Norwegian Ironworks. The construction of the Ironworks began in 1946, and the plant started operations in 1955. Although the population of Mo i Rana increased substantially during the period of construction (1946-1954), the most significant increases occurred between 1955-1966. When the Ironworks began operation in 1955 there were over 1,300 people employed in the industry (Table 2). Employment at the plant increased to slightly over 3,100 in 1966, but in the following year showed a slight decline.

The large increase in employment after 1963 had an impact on the growth of population in Mo i Rana and the surrounding area.

TABLE 2

EMPLOYMENT AT THE NORWEGIAN IRONWORKS (1955-1967)

Year	General Labor	Administrative	Total
1955	1131	225	1356
1956	1577	277	1854
1957	1663	311	1974
1958	1655	334	1989
1959	1682	312	1994
1960	1852	307	2159
1961	2052	324	2376
1962	2089	381	2470
1963	2014	394	2408
1964	2136	447	2583
1965	2322	474	2796
1966	2600	511	3111
1967	2538	539	3077

Source: Based on unpublished data obtained at the Norwegian Ironworks, Mo i Rana, Norway.

A detailed account of industrial development in Mo i Rana and its impact upon selected characteristics of population migration is discussed in the following three chapters.

CHAPTER III

POPULATION MIGRATION TO MO I RANA: THE CONSTRUCTION PERIOD

Introduction

On July 10, 1946, the Norwegian Parliament decided to build the iron and steel plant at Mo i Rana. As indicated previously, the availability of iron ore a few miles east of the city and of hydroelectric power at Røssaga 30 miles to the south were the two main reasons for choosing this site.

The first phase of the construction at the Ironworks, which included the majority of the buildings, was started in 1946 and completed in 1955. Among the structures were: (1) a pig iron plant with three electric furnaces; (2) a rolling mill, which contained facilities for making slab steel, beams and wire rods; (3) an administrative office building; (4) a testing laboratory; and (5) an underground power generating station.

The labor required for the construction of the Ironworks was not readily available in Mo i Rana. However, the general economic conditions of North Norway favored labor in-migration. As a result of the consolidation and greater mechanization in the primary industries of fishing, agriculture and forestry, and the drawing power of an urban center, a labor surplus was available.

Through migration, all parts of Norway contributed to the population Mo i Rana. In addition, a number of people came from foreign countries. Although there was a widespread origin of migrants, certain regions were more important as suppliers than others. Especially important were the unskilled that came from agricultural and fishing areas near Mo i Rana. They could be easily trained as construction employees and the relatively short distance to Mo i Rana was an advantage.

Population Migration to Mo i Rana from Selected Counties

During the construction period of industrial development (1946-1955), the largest volume of migration to Mo i Rana came from the nearest North Norway counties. These counties include: Nordland, in which the city of Mo i Rana is located, Troms and Finnmark to the north of Nordland County, and Nord Trøndelag and Sør-Trøndelag to the south. North Norway accounted for over three-fourths of the migration for the construction period.[1] Nearly 30 percent of the migration[2] to Mo i Rana (1946-1968) came from the five counties. Slightly over one-fourth of the migration from these counties arrived during this time.

The two most significant years of migration were 1952 and 1953 when over 200 migrants came each year. Full scale construction of plant

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[1]The following are relevant migration statistics for the five North Norway counties: (1) Migration to Mo i Rana (1946-1968) 7,283: (2) Migration from Five Counties (1946-1968) 5,771; (3) Construction Period Migra- to Mo i Rana (1946-1955) 2,010; and (4) Construction Period Migration for the Five Counties (1946-1955) 1,528.

[2]For the remainder of the dissertation "migration to Mo i Rana" is for the period from July 1, 1946 to June 30, 1968.

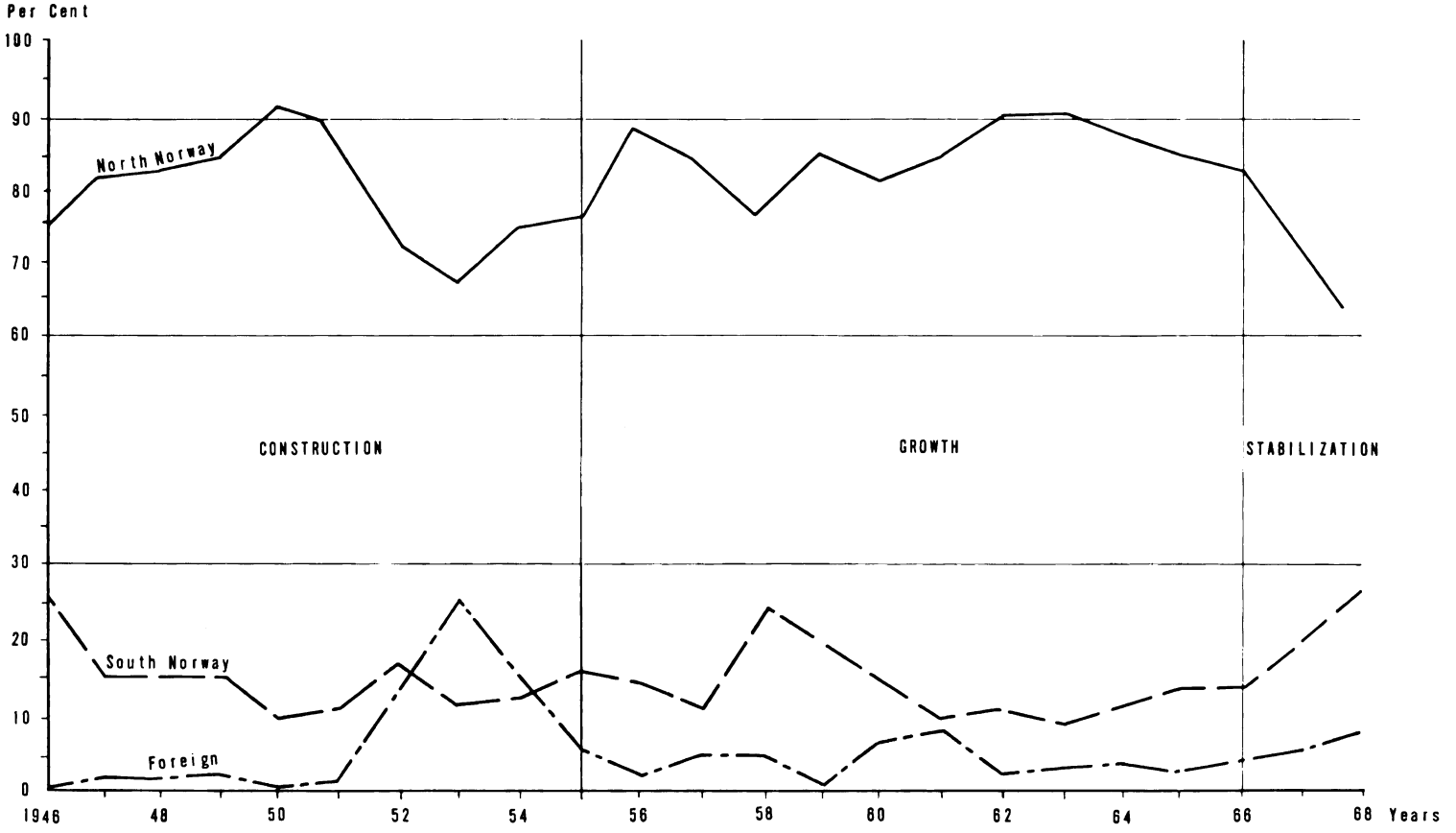
buildings was underway during these two years. While the five northern counties dominated as major source areas of migrants during the construction period beginning in 1946, their significance relative to the larger fifteen southern county area and foreign additions declined after 1951 (Figure 3). With an increase in demand for labor, and a decline of the labor supply in the immediate Mo i Rana area, larger numbers of migrants began coming from outside North Norway. The migration of foreign nationals also increased after 1951.

Between 1952 and 1954 a significant number of foreign migrants arrived in Mo i Rana. It was during this period that technical advice was required for the installation of mechanical equipment as well as for the construction and operation of electrolytic furnaces. As Norway had few trained personnel, help from outside the country was essential. Most of the foreign skilled and professional aid came from West Germany and Sweden.

Volume of Migration and Type of Labor Supplied by Nordland County

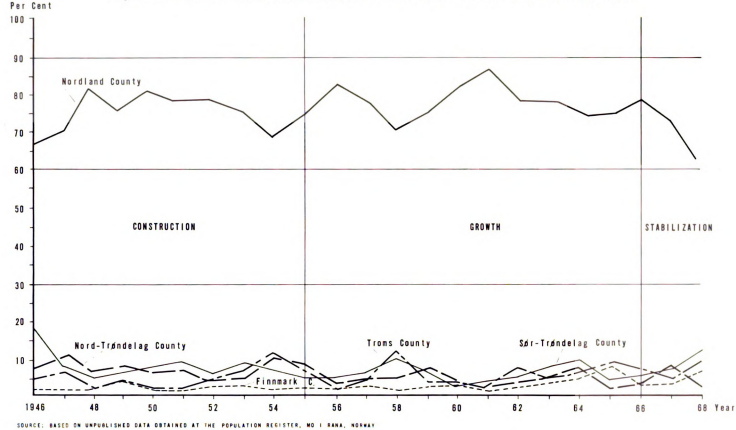
Nordland County was the most important contributor of migrants during the Ironworks construction period. When examining the movement to Mo i Rana from five northern Norway counties for each of the ten years in this period, it is noted that Nordland County accounted for at least 65 percent of the in-migration (Figure 4). The county provided 4,382 people or over 70 percent of the migration (1946-1968). Of these

Figure 3.-- ANNUAL MIGRATION TO MO I RANA BY SELECTED ORIGINS (1946-1968)



SOURCE: BASED ON UNPUBLISHED DATA OBTAINED AT THE POPULATION REGISTER, MO I RANA, NORWAY.

Figure 4.-- ANNUAL POPULATION MIGRATION TO MO I RANA FROM NORTH NORWAY (1946-1968)



SOURCE: BASED ON UNPUBLISHED DATA OBTAINED AT THE POPULATION REGISTER, MO I RANA, NORWAY

1,140 or 26 percent came between 1946 and 1955.[3] Nordland County was the origin for over half of the in-migration for the construction period.

There were two principal reasons for the predominance of Nordland County as a supplier of migrants. First, it is the county in which the city of Mo i Rana is located, and, as a result, it involves the shortest distance of movement for all counties in Norway. Second, the labor demands for building construction were met with unskilled, semi-skilled, or vocationally trained (skilled) persons, and most of the labor of Nordland County fell into these three classifications. The three groups accounted for almost three-fourths of the employment during the construction period. The annual migration statistics reflect the significance of the unskilled laborer at the beginning of the period, and of the skilled person during the latter part (Figure 5). Unskilled laborers were used for the excavation of the building site and the construction of the building framework, whereas skilled artisans such as carpenters, plumbers and others were employed to complete the building structures.

Origin of Migration to Mo i Rana from Nordland County by Townships

During the construction period migrants who came to Mo i Rana from Nordland County originated in three principal areas, First, a

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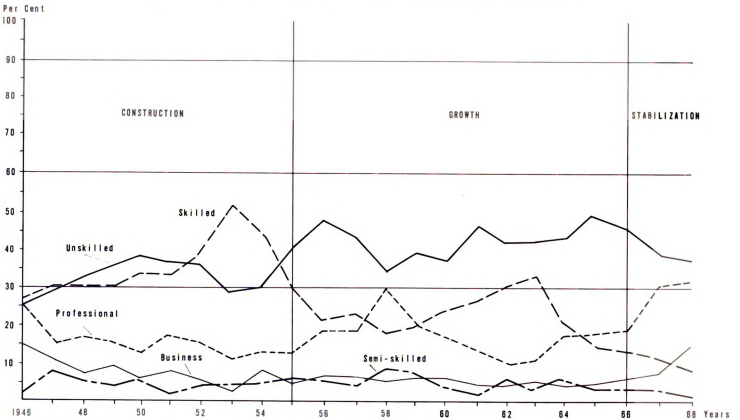
[3]The following are relevant migration statistics for Nordland County: (1) Migration to Mo i Rana (1946-1968) 7,283; (2) Migration from Nordland County (1946-1968) 4,832; (3) Construction Period Migration to Mo i Rana (1946-1955) 2,010; and (4) Construction period Migration from Nordland County (1946-1955) 1,140.

Figure 5.--- ANNUAL MIGRATION TO MO I RANA BY OCCUPATION (1946-1968)



SOURCE: BASED ON UNPUBLISHED DATA OBTAINED AT THE POPULATION REGISTER, MO I RANA, NORWAY.

significant number of laborers came from the south where fishing and agricultural occupations predominated (Figure 6). Vega, Brønnøy, Dønna, Alstahaug, Vefsn and Lierfjord were all important contributors (Figure 7 and Table 3). Second, migration was significant from agricultural and fishing townships in the extreme northern part of Nordland County. Vestvågøy, Vågan and Tysfjord predominated as source areas of migrants in this second group (Table 3). The areas dominated by employment in agriculture and fishing were important sources of unskilled labor. Third, regions with urban populations and with high mixed[4] and manufacturing employment were also supply areas of migrants. Rana, Bodø, Fauske and Narvik are representative of this group. These townships supplied skilled and professional people.

The centers in which fishing and agricultural occupations prevail were more significant suppliers of migrants than townships with high manufacturing and mixed employment. These locations accounted for 659 migrants, while the mixed-manufacturing employment townships provided 481 migrants. Approximately one-third of the 481 migrants came from Rana, only a short distance from Mo i Rana. During the construction period, a large number of unskilled laborers were required at the Ironworks for the excavation and building of the plant. Most of the labor was supplied by agricultural and fishing regions. Due to the short distance of movement labor surplus areas nearest Mo i Rana were large suppliers of migrants.

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[4]Mixed occupations include: Wholesale and retail trade, business, communications and transportation, and personal services.

Figure 6.--- NORDLAND COUNTY: CLASSIFICATION OF TOWNSHIPS BY EMPLOYMENT CATEGORIES(1946-1968)

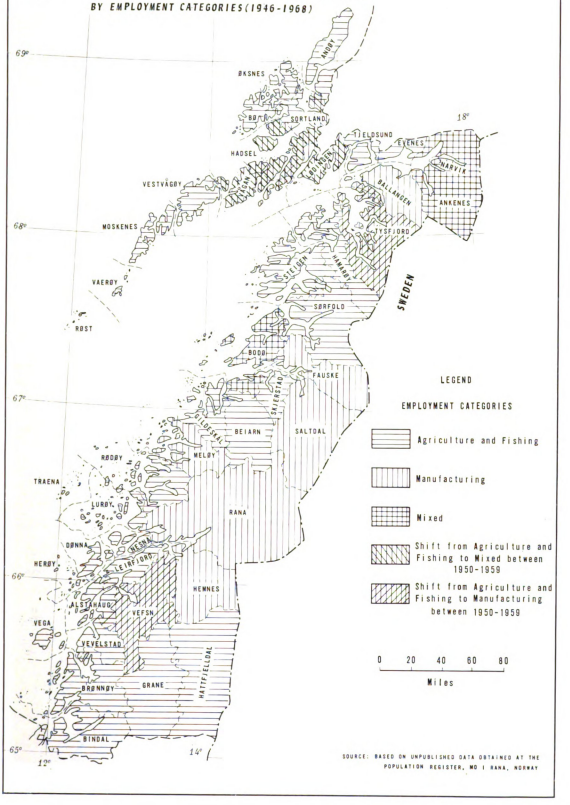
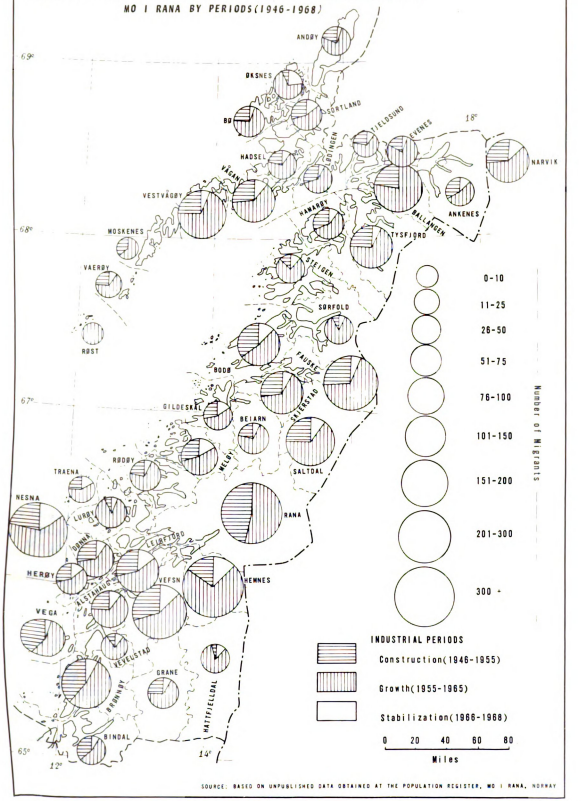


Figure 7.-- NORDLAND COUNTY: VOLUME OF POPULATION MIGRATION TO MO I RANA BY PERIODS(1946-1968)



SOURCE: BASED ON UNPUBLISHED DATA OBTAINED AT THE POPULATION REGISTER, MO I RANA, NORWAY

TABLE 3

POPULATION MIGRATION TO MO I RANA FROM NORDLAND COUNTY
DURING THE CONSTRUCTION PERIOD (1946-1955)

Township	Total Migration (1946-1968) Number	Construction Period Number	Construction Period Percent of Total (1946-1968)	Employment Classification[1]
Bodø	137	53	38	Mi
Narvik	114	31	27	Mi
Bindal	29	11	40	A&F
Brønnoy	167	64	38	A&F
Vega	85	32	38	A&F
Vevelstad	23	1	4	A&F
Herøy	53	16	30	A&F
Alstahaug	85	20	24	A&F
Lierfjord	129	39	30	A&F
Vefsn	286	89	31	A&F-Ma
Grane	53	12	23	A&F
Hattfjelldal	43	1	2	A&F
Lødingen	33	10	30	A&F
Dønna	97	27	27	A&F
Nesna	246	49	20	A&F
Hemnes	472	65	14	Ma
Rana	315	151	48	Ma
Lurøy	66	5	8	A&F
Traena	13	3	23	A&F
Rødøy	69	14	20	A&F
Meløy	112	37	33	Ma
Gildeskol	50	14	28	A&F
Beiarn	65	12	19	A&F
Saltdal	160	36	23	Ma
Fauske	239	62	26	Ma
Skjerstad	117	33	28	A&F
Sørfold	43	3	7	A&F
Steigen	40	5	13	A&F
Hamarøy	56	18	32	A&F
Tysfjord	130	31	24	A&F-Ma
Tjeldsund	14	3	21	A&F-Mi
Evenes	55	10	18	A&F
Ballangen	170	28	16	Ma

TABLE 3--CONTINUED

Township	Total Migration (1946-1968) Number	Construction Period Number	Construction Period Percent of Total (1946-1968)	Employment Classification[1]
Ankenes	50	18	36	Mi
Røst	3	-	-	A&F
Vaerøy	13	3	23	A&F
Moskenes	10	4	40	A&F
Vestvågøy	197	47	24	A&F
Hadsel	35	7	20	A&F-Mi
Vågan	139	41	30	A&F-Mi
Bø	52	12	23	A&F
Øksnes	29	3	10	A&F
Sortland	57	15	26	A&F
Andoy	31	5	16	A&F
TOTAL	4382	1140		

[1]Township classification: Mi - Mixed - Mixed includes employment in wholesale and retail business, communications, and personal services

A&F -Agriculture and Fishing

A&F-Mi - Transition from agriculture and fishing to mixed

A&F-Ma - Transition from agriculture and fishing to manufacturing

Source: Based on unpublished data obtained at the Rana Population Register, Mo i Rana, Norway.

Population Migration from Nord-Trøndelag, Sør-Trøndelag, Troms and Finnmark Counties to Mo i Rana

A group of four counties, two of which are to the north of Nordland County and the other two to the south, were also important source areas of migration during the construction period. Troms, which is adjacent to Nordland on the north, supplied almost 100 people during this period (Table 4). This was approximately one-fourth of the migration from Troms County to Mo i Rana. Coastal locations in both the north and south were primary source areas. The townships of Harstad and Malselv predominated in the south, and Tromsø in the north (Figure 8). Harstad and Tromsø have significant urban populations and a high proportion of their total employment in mixed occupations (Table 4). Although Malselv has a high employment in mixed occupations, it recently achieved this classification. Thus, the townships of Tromsø and Harstad were suppliers of skilled and professional labor to Mo i Rana.

With the exception of Tromsø and Harstad, all other townships in Troms County still have a large part of their labor force in agriculture and fishing occupations (Figure 9). These townships accounted for over half of the total migration to Mo i Rana during the construction period. The two most significant years were 1952 and 1953. These were the same two years which were earlier noted as having a high demand for construction labor.

During the construction period, the migration to Mo i Rana from Nord-Trøndelag County was dominated by regions with a high employment in fishing and agriculture. Of the 386 migrants coming from this county, 124 or 32 percent came during this time (Table 5). With the exception

TABLE 4

POPULATION MIGRATION TO MO I RANA FROM TROMS COUNTY DURING THE CONSTRUCTION PERIOD (1946-1955)

Township	Total Migration (1946-1968) Number	Construction Period Number	Construction Period Percent of Total (1946-1968)	Employment Classification[1]
Harstad	64	24	39	Mi
Tromsø	40	7	17	Mi
Kvaefjord	14	4	28	A&F
Skonland	22	5	23	A&F
Bjarkøy	7	4	57	A&F
Ibestad	6	1	17	A&F
Gratangen	13	-	-	A&F
Salangen	50	6	12	A&F
Bardu	18	2	11	A&F-Mi
Malselv	40	11	28	A&F-Mi
Sørreisa	13	1	8	A&F
Dyrøy	14	3	21	A&F
Tranøy	5	-	-	A&F
Torsken	6	2	33	A&F
Berg	9	4	44	A&F
Lenvik	18	4	22	A&F
Balsfjord	15	5	33	A&F
Karlsøy	8	4	50	A&F
Lyngen	3	-	-	A&F
Storfjord	1	-	-	A&F
Kofjord	7	2	28	A&F
Skjervøy	14	2	14	A&F
Nordreisa	4	2	50	A&F
Kvaenangen	6	3	50	A&F
TOTAL	397	97		

[1]Township classification: Mi - Mixed - Mixed includes employment in wholesale and retail business, communications, and personal services

A&F - Agriculture and Fishing

A&F-Mi - Transition from agriculture and fishing to mixed

Source: Based on unpublished data obtained at the Rana Population Register Mo i Rana, Norway

Figure 8.-- TROMS COUNTY: VOLUME OF POPULATION MIGRATION TO MO I RANA BY PERIODS(1946-1968)

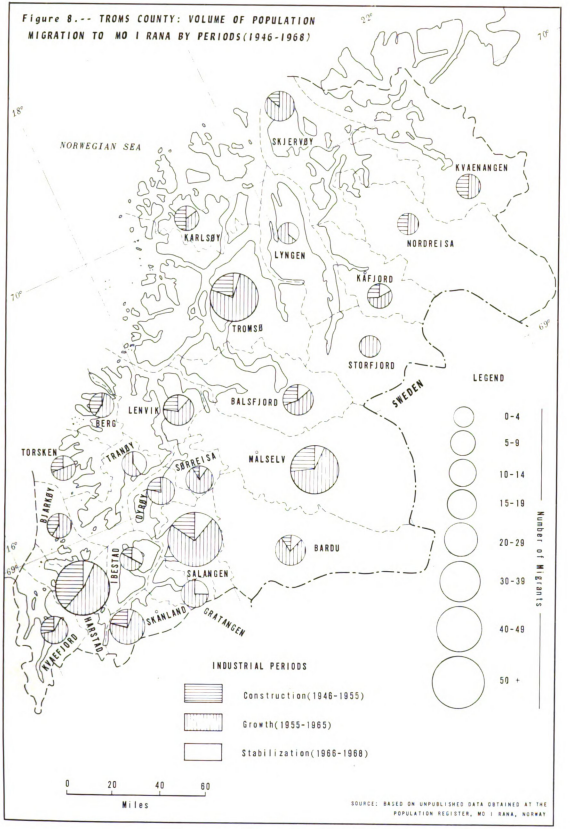


Figure 9.-- TROMS COUNTY: CLASSIFICATION OF TOWNSHIPS BY EMPLOYMENT CATEGORIES(1946-1968)

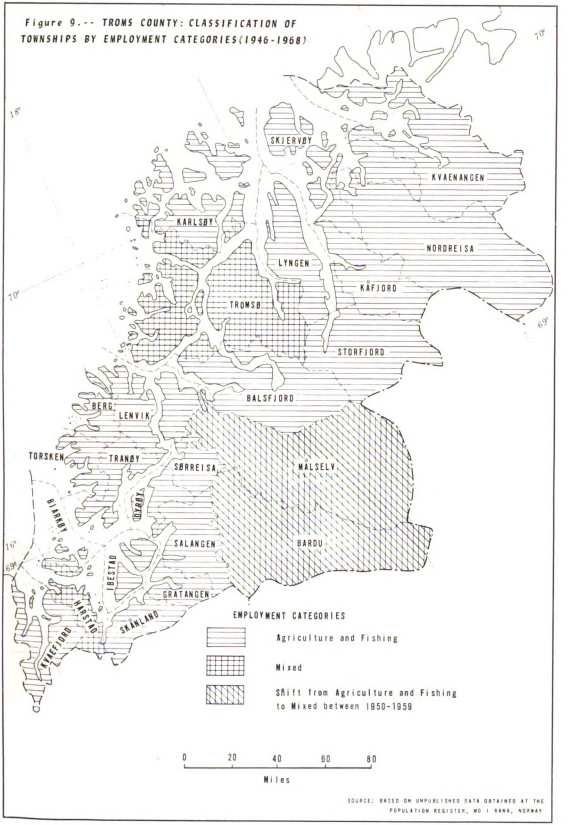


TABLE 5

POPULATION MIGRATION TO MO I RANA FROM NORD-TRØNDELAG COUNTRY DURING THE CONSTRUCTION PERIOD (1946-1955)

Township	Total Migration (1946-1968) Number	Construction Period Number	Construction Period Percent of Total (1946-1968)	Employment Classification[1]
Steinkjer	50	15	30	Mi
Namsos	40	13	33	Mi
Meroker	9	4	44	Ma
Stjørdal	13	2	15	Mi
Frosta	5	1	20	A&F
Leksvik	3		-	A&F
Levanger	19	7	37	Mi
Verdal	18	5	28	A&F
Mosvik	-	-	-	A&F
Verran	13	3	23	A&F-Ma
Namdalseid	2	1	50	A&F
Inderøy	13	5	38	A&F
Snasa	31	14	45	A&F
Lierne	3	-	-	A&F
Royrvik	3	-	-	A&F
Namsskogan	42	13	31	A&F-Ma
Grong	32	6	19	A&F
Høylandet	13	1	8	A&F
Overhalla	12	4	33	A&F
Flatanger	3	-	-	A&F
Vikna	11	3	27	A&F
Naerøy	44	21	49	A&F
Leka	7	6	86	A&F
TOTAL	386	124		

[1]Employment Classification: Mi - Mixed - Mixed includes employment in wholesale and retail business, communications, and personal services
Ma - Manufacturing
A&F - Agriculture and Fishing
A&F-Ma - Transition from agriculture and fishing to manufacturing

Source: Based on unpublished data obtained at the Rana Population Register, Mo i Rana, Norway.

of the townships of Namsos and Steinkjer, which together supplied 28 migrants and have a mixed employment structure, the majority of the migrants came from fishing and agricultural areas (Figures 10 and 11). The largest number migrated from Naerøy which has a great percentage of its total labor force in agriculture and fishing. The fishing and agricultural townships were surplus areas of unskilled labor, whereas Namsos and Steinkjer supplied business and professional personnel. Unlike Troms County, Nord-Trøndelag has a fairly even distribution of migrants. The large surplus of unskilled labor in Nord-Trøndelag County and the continual demand in Mo i Rana produced a steady flow of migration from this county. In Troms County, on the other hand, fluctuations in the annual movement were caused by the varying demands for skilled and professional labor, which in large part came from urban areas.

Located the farthest south in the tier of five northern counties, Sør-Trøndelag can be generalized according to two source regions of migration. One prime source was the city of Trondheim; the second was the fishing and agricultural townships which accounted for practically all other migrants. Trondheim supplied almost 60 percent of the 125 people (Table 6). The most significant migration from Trondheim was between the years of 1950 and 1953. As is true for the other urban areas, Trondheim had a large out-movement towards the end of the construction period. This correlates with the demand for more skilled labor as the construction projects were being completed in Mo i Rana. Trondheim, next to Oslo, was the most important urban center contributing laborers south of Mo i Rana.

Figure 10.-- NORD TRØNDELAG COUNTY: CLASSIFICATION OF TOWNSHIPS BY EMPLOYMENT CATEGORIES(1946-1968)

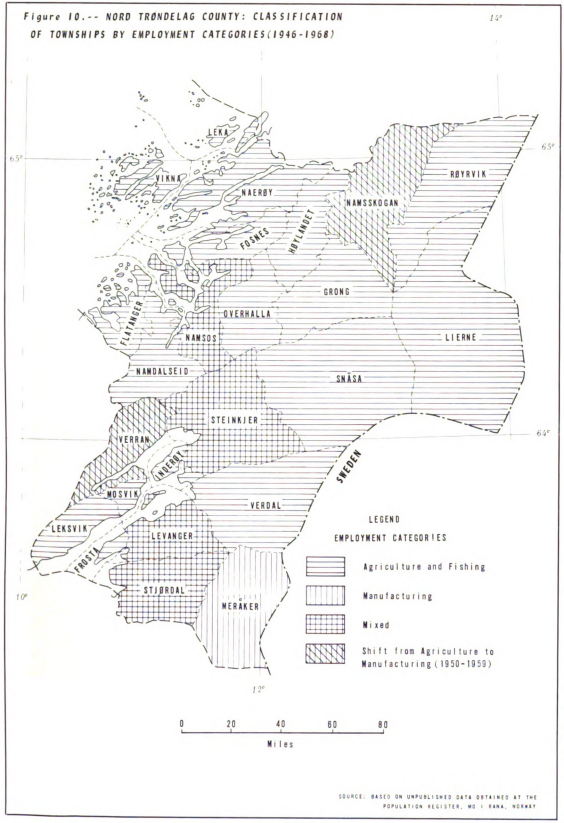


Figure 11.-- NORD TRØNDELAG COUNTY: VOLUME OF POPULATION MIGRATION TO MO I RANA BY PERIODS(1946-1968)

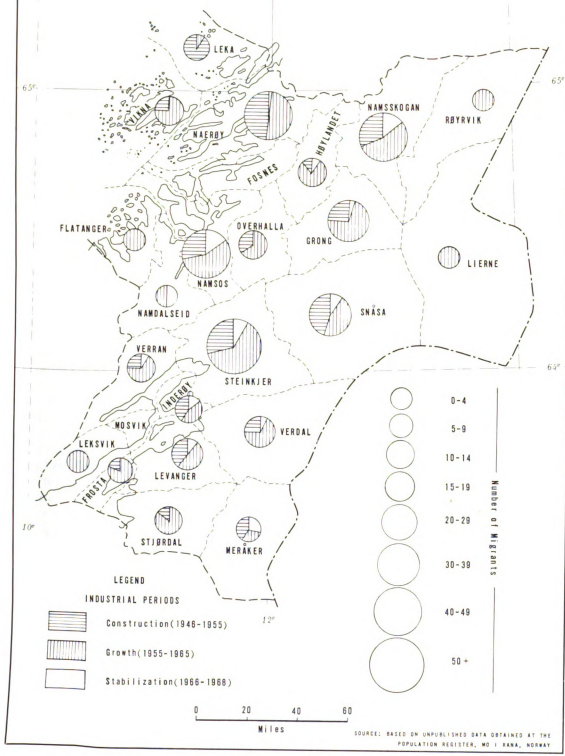


TABLE 6

POPULATION MIGRATION TO MO I RANA FROM SØR-TRØNDELAG COUNTY DURING THE CONSTRUCTION PERIOD

Township	Total Migration (1946-1968) Number	Construction Period Number	Construction Period Percent of Total (1946-1968)
Trondheim	241	69	29
Hemne	6	1	17
Snillfjord	-	-	-
Hitra	1	-	-
Frøya	2	-	-
Ørland	7	-	-
Agdenes	-	-	-
Rissa	5	2	40
Bjugn	13	5	39
Afjord	3	-	-
Roan	1	-	-
Osen	1	-	-
Oppdal	13	6	47
Rennebu	5	2	40
Meldal	32	6	19
Orkdal	24	10	42
Børos	4	2	50
Olen	1	1	100
Haltdalen	3	1	33
Midtre Gaudal	10	5	50
Melhus	9	3	33
Skaun	7	-	-
Klaebu	1	-	-
Malvik	12	6	50
Selbu	12	6	50
Tydal	-	-	-
TOTAL	413	125	

Source: Based on unpublished data obtained at the Rana Population Register, Mo i Rana, Norway.

Among the five counties of North Norway, Finnmark, the northernmost county, supplied the fewest number of migrants. Nearly half of the migrants came from Sør-Varanger in which the city of Kirkenes is located; and of the twenty townships in the county, only half supplied migrants. The three principal reasons for the lack of significant migration from Finnmark were: (1) the longer distance required to move to Mo i Rana, plus the lack of a good transportation system; (2) the recently developed fish processing industry at Hammerfest which is attracting migrants; and (3) the reconstruction of the iron mines near Kirkenes also absorbed migrants.

Population Migration to Mo i Rana from South Norway

The counties[5] of South Norway were not major source areas of migration to Mo i Rana. These counties supplied 1,036 migrants or 14 percent of the migration to Mo i Rana (1946-1968).[6] 280 came from the southern counties during the construction period. By far the most important source of people was the city of Oslo (Figure 12), the largest city in Norway and a major source of the administrative personnel to the Ironworks in Mo i Rana. The majority of the migrants from South Norway came from areas with a mixed employment structure,

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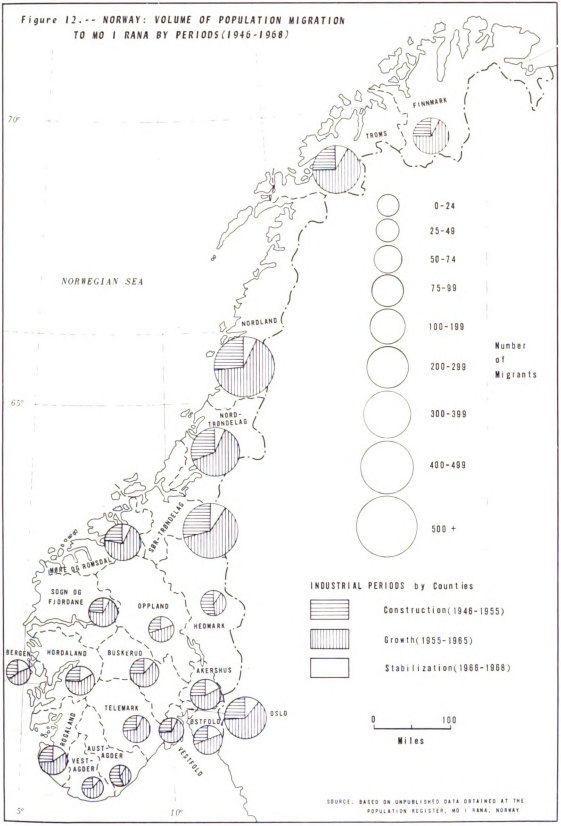
[5]The counties are noted in Figure 12.

[6]The following are relevant migration statistics for the fifteen South Norway counties: (1) Migration to Mo i Rana (1946-1968) 7,283; (2) Migration from South Norway (1946-1968) 1,036; (3) Construction Period Migration to Mo i Rana (1946-1955) 2,010; and (4) Construction Period Migration from South Norway (1946-1955) 280.

Figure 12.-- NORWAY: VOLUME OF POPULATION MIGRATION TO MO I RANA BY PERIODS(1946-1968)



and most counties were suppliers of only a small number of individuals (Figure 13). There were three principal reasons for the small migration from the south: (1) as distance of migration from Mo i Rana increased fewer people chose to move; (2) South Norway also had less surplus labor than areas farther north, and thus fewer migrants; and (3) most of the people in the south chose to move to the large urban centers of Oslo and Bergen.

Age of Migrants Arriving in Mo i Rana

The younger person was dominant among those who moved to Mo i Rana during the construction period. Almost three-fourths of the migrants were between the ages of 20-39 (Figure 14), the largest number being in the 25-29 year age group. This age category accounted for nearly one-fourth of the migration to Mo i Rana in each year from 1946-1953 the group of 25-29 year old migrants predominated. The importance of the older age groups, on the other hand, was noticeable towards the very end of the period (1953-1955) when the foreign and domestic advisors moved to Mo i Rana.

There were several reasons for the migration of a large number of young people to Mo i Rana during the construction period. The consolidation, greater efficiency and more mechanization in such industries as fishing, agriculture and forestry brought about a decrease in labor requirements. As a result, the young family member's entrance into the father's business or vocation was severely limited. Given employment opportunities in Mo i Rana there was a high probability of movement.

Figure 13.-- NORWAY: CLASSIFICATION OF COUNTIES BY EMPLOYMENT CATEGORIES(1946-1968)

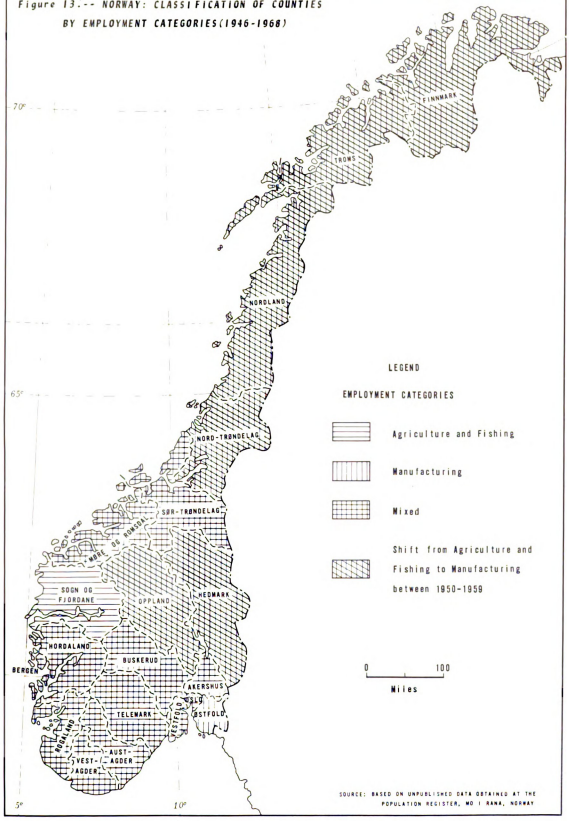
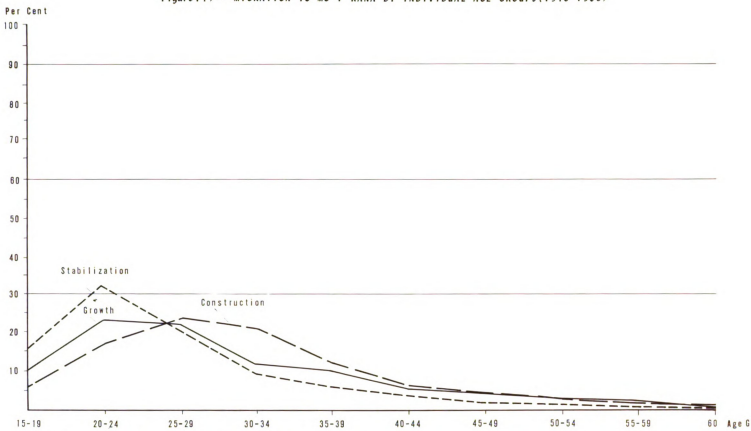


Figure 14.-- MIGRATION TO MO I RANA BY INDIVIDUAL AGE GROUPS (1946-1968)



SOURCE: BASED ON UNPUBLISHED DATA OBTAINED AT THE POPULATION REGISTER, MO I RANA, NORWAY.

Another reason for the migration of the young Norwegian was that since World War II a better education enabled him to become more prepared for varied employment opportunities. This is especially true for the more remote rural areas of Norway as well as the islands. Still another reason was that the young person was less firmly established than the older groups, and was thus more susceptible to residence change.

Marital Status of Migrants in Mo i Rana

During the construction period the majority of the migrants arriving in Mo i Rana were married. Almost three-fourths were of this type, while two out of three were married for the twenty-two years (1946-1968) of migration to Mo i Rana. The marital status of the Norwegian migrant during the construction stage in Mo i Rana was unlike that of most past voluntary national or international world migrations. The unusually large number of married migrants departed from the usual preponderance of the unmarried male as found in other voluntary migrations. The primary reasons for the large number of married migrants were: (1) the majority of the people were moving only short distances, thus providing easy transportation of family and household furnishings; (2) migrants were moving to an area which had a similar culture, and thus, the decision to move a family was not inhibited by a consideration of cultural adjustment; and (3) families were assured of adequate living accomodations in Mo i Rana.

Summary

The previously hypothesized spatial relationships between population movement and industrial development are valid for the construction period. The analysis of migration during this time indicated that the largest number of migrants came when there was full scale construction, and that a large part of the migration originated in nearby labor surplus areas. A significant movement occurred between 1952 and 1954 when the buildings were being erected and a majority of these people came from Nordland county. Within the county the primary areas of origin were townships with a labor surplus. Most of these areas had felt the effects of government programs to increase mechanization in agriculture, fishing and forestry. As a consequence of these programs, a more efficient production was achieved, and less labor was required. A low standard of living and lack of employment represent "push" factors of migration.

It was also hypothesized that the distance of travel for migrants and the type of labor demanded at the Ironworks would vary according to the changing labor demands. During the early part of the construction period migration was largest from short distances, but towards the end when labor demands increased, more distant labor surplus regions became important. In Nordland County nearby townships with high employment in fishing and agriculture as well as the far northern and southern parts contributed a large number of migrants. These labor surplus areas were the primary sources of unskilled labor for the excavation and construction of the Ironworks. Immediate employment and the opportunity of living in an urban area were important pull factors for migration.

Townships with a significant urban population in Nordland County; namely, Bodø, Narvik, Fauske and Vefsn had high employment in mixed and manufacturing occupations, and these areas supplied skilled and professional labor to the Ironworks. Although it is important to consider migrants coming from urban centers with a large number of people employed in mixed and manufacturing employment, it is even more important to note that approximately 60 percent of the migrants from Nordland County originated from regions in which agricultural and fishing occupations predominated.

Migration from the remaining four North Norway counties of Sør-Trøndelag, Nord-Trøndelag, Troms and Finnmark was principally from areas with high employment in agriculture and fishing. A large part of the movement from these counties was unskilled labor. The other major suppliers were the urban centers of Trondheim, Harstad and Tromsø, and these cities supplied skilled and professional people.

The fifteen counties of South Norway did not contribute a significant number of migrants to Mo i Rana. In the case of South Norway, as distance increased the volume of migration decreased. Less surplus labor, the lack of good transportation to the north and the attracting power of large cities in the south were some of the reasons for the small scale migration from South Norway. The largest number of migrants from South Norway originated in Oslo, Norway's largest city. It was the principal supplier of domestic technical advisors and administrative personnel to the Ironworks.

Skilled and unskilled occupations dominated among those who came to Mo i Rana during the construction period. Unskilled labor was most evident during the early part of the period, when the excavation and the construction of the Ironworks took place. The skilled person predominated towards the end of the period when construction projects were being completed. Foreign advisory personnel were also a major part of the migrations towards the end of the period. Most of the foreign nationals came to the Ironworks to supervise construction, install equipment and train employees to operate the machinery.

In this study it was also expected that the age and marital status of migrants would vary according to labor requirements of industry. The yound married migrants (25-29 years old) predominated during the construction period. A significant number of these were unskilled, and came from areas with high employment in fishing and agriculture. These migrants found few employment opportunities in these regions, and were willing to risk a change of location for better employment opportunities and the amenties of urban living. A large number of individuals between 30-59 years of age came towards the end of the period. They were primarily skilled and professional people who originated from cities or townships with high mixed and manufacturing employment. Some established businesses and provided professional services in Mo i Rana, while others found employment in management or in skilled positions at the Ironworks.

In the succeeding chapter an analysis will be made of migration during the growth stage. It will compare the differences in selected migration characteristics with the construction period.

CHAPTER IV

POPULATION MIGRATION TO MO I RANA: THE GROWTH PERIOD

Introduction

The growth period of industrial development at Mo i Rana began with the production of iron and steel at the Norwegian Ironworks in April, 1955. The three principal parts of the Ironworks which began operation were: (1) the pig iron plant; (2) the steel plant; and (3) the rolling mill. Initially, the pig iron plant consisted of three electric smelting furnaces. Single electric furnaces were installed in August, 1958, October, 1964 and December 1965. The conversion of pig iron to crude steel, which is performed in the steel plant, was first done with two electric arc furances. Expansion in the steel plant took place with the addition of the third arc furnace in April, 1961. Other significant additions to the Ironworks during the growth period were: (1) an iron ore separating plant in October, 1964; and (2) a pelletizing plant in September, 1964. These latter two additions permitted a more efficient use of the Dunderlandsdal iron ore located a few miles east of Mo i Rana.

During the growth period, employment at the Ironworks increased nearly 100 percent. The most substantial gain was during the first years of operation when almost 500 people were added to the labor force. Only a slight growth in employment was noted toward the end of the period. The production of iron and steel products rose gradually up to 1960 and from 1960-1963 no increment was noted. With the addition of the pelletizing and ore concentration plants there was a notable increase in population.

The growth period initiated a large scale migration to Mo i Rana. The expansion of industrial facilities through the addition of furnaces, and the construction of two new plants created a large labor demand. The labor needs changed from the construction period and thus the patterns of volume, origin and selected demographic characteristics were different.

Population Migration to Mo i Rana from North Norway

The North Norway counties of Sør-Trøndelag, Nord-Trøndelag, Nordland, Troms and Finnmark were important sources of migration to Mo i Rana during the growth period. The 3,714 migrants from these counties represented over half the movement to Mo i Rana (1946-1968).[1] Almost two thirds of the migration from the five counties came during the growth stage, in addition, eight out of ten migrants came from these counties at that time.

Annual population migration to Mo i Rana from five counties decreased between 1955-1958, although a substantial increase did take place between 1959-1963 (Figure 3).[2] The primary reason for the continual decline of migration for the 1955-1958 time span was that construction labor was no longer required. Despite this decrease, employment at the Ironworks increased between 1955-1958. The principal

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[1]The following are relevant migration statistics for the five North Norway counties: (1) Migration to Mo i Rana (1946-1968) 7,283; (2) Migration from the Five Counties (1946-1968) 5,771; (3) Growth Period Migration to Mo i Rana (1955-1965) 4,577; and (4) Growth Period Migration from Five Counties (1955-1965) 3,714.

[2]Figures 3-14 are found in Chapter III.

reason was that the industrial equipment became fully operational in 1956. A large number of the migrants who came between 1955-1958 were employed at the Ironworks. As employment at the Ironworks rose between 1955-1958, so did iron and steel production. The combined production of these two items rose from 120,000 tons in 1955 to 440,000 tons in 1958.

Migration to Mo i Rana from North Norway increased from 1959-1963 (Figure 4). Although Nordland County maintained its importance as a major supplier of people, migration from the four other counties also increased between 1959-1963. The pair of counties both to the north and to the south of Nordland County started to supply larger numbers of laborers because of a decrease in the labor surplus in Nordland County. The substantial numbers of those who arrived in Mo i Rana between 1959-1963 were attracted by the Ironworks, which instituted several expansion projects. As a result of the growth of industrial operations between 1959-1963 employment at the Ironworks increased nearly 500 people, and steel production rose from 240,000 tons at the beginning of 1959 to 350,000 tons at the end of 1963.

In the period 1964-1965, population migration to Mo i Rana declined. There were no significant construction projects during these two years, and only the addition of two more electrolytic furnaces required extra employment.

Due to the labor needs of full scale operation and expansion projects undertaken at the Ironworks, North Norway contributed a larger number of migrants during the growth period than in the previous

stage. During the second ten years the decrease of surplus labor in areas near Mo i Rana also produced a more even distribution of migrant origin than was found in the construction period.

Population Migration to Mo i Rana from Nordland County by Townships

Nordland County was the source area for a large proportion of the migration to Mo i Rana during the second period of industrial development, as almost two-thirds moved at this time.[3] The 2,846 migrants supplied by the county was almost 40 percent of the total migration to Mo i Rana (1946-1968).

The origin of the people who moved to Mo i Rana from 1955-1965 was generalized according to the following three groups First, significant migration to Mo i Rana occurred from townships which involved a short distance of movement to the city. Hemnes, Nesna, Vefsn, Rana, Meløy and Saltdal each contributed at least 100 individuals during the growth period (Table 7). Of these six townships only Nesna was a predominantly fishing and agricultural township. The remaining five centers had a predominance of either manufacturing or mixed occupations (Figure 6).

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[3]The following are relevant migration statistics for Nordland County: (1) Migration to Mo i Rana (1946-1968) 7,283; (2) Migration from Nordland County (1946-1968) 4,382; (3) Growth Period Migration to Mo i Rana (1955-1965) 4,577; and (4) Growth Period Migration from Nordland County (1955-1965) 2,846.

TABLE 7

POPULATION MIGRATION TO MO I RANA FROM NORDLAND COUNTY
DURING THE GROWTH PERIOD (1955-1965)

Township	Total Migration (1946-1968) Number	Growth Period Number	Growth Period Percent of Total (1946-1968)	Employment Classification[1]
Bodø	137	71	52	Mi
Narvik	114	71	62	Mi
Bindel	29	15	52	A&F
Brønnoy	167	92	55	A&F
Vega	85	51	60	A&F
Vevelstad	23	19	83	A&F
Herøy	53	30	56	A&F
Alstahaug	85	56	66	A&F
Lierfjord	129	75	58	A&F
Vefsn	286	167	58	A&F-Ma
Grane	53	38	71	A&F
Hattfjelldal	43	38	88	A&F
Lødingen	33	21	64	A&F-Mi
Dønna	97	66	67	A&F
Nesna	246	159	65	A&F
Hemnes	472	340	72	Ma
Rana	315	164	52	Ma
Lurøy	66	55	83	A&F
Traena	13	8	61	A&F
Rødøy	69	50	73	A&F
Meløy	112	61	54	Ma
Gildeskal	50	29	58	A&F
Beiarn	65	48	74	A&F
Galtdal	160	106	66	Ma
Fauske	239	161	67	Ma
Skjerstad	117	74	63	A&F
Sørfold	43	37	86	A&F
Steigen	40	29	73	A&F
Hamarøy	56	34	60	A&F
Tysfjord	130	88	68	A&F-Ma
Tjeldsund	14	10	71	A&F-Mi
Evenes	55	41	75	A&F
Ballangen	170	135	79	Ma

TABLE 7--CONTINUED

Township	Total Migration (1946-1968) Number	Growth Period Number	Growth Period Percent of Total (1946-1968)	Employment Classification[1]
Ankenes	50	28	56	Mi
Røst	3	3	100	A&F
Vaerøy	13	9	69	A&F
Moskenes	10	6	60	A&F
Vestvågøy	197	137	69	A&F
Hadsel	35	24	69	A&F-Mi
Vågan	139	84	60	A&F-Mi
Bø	52	38	73	A&F
Oksnes	29	20	69	A&F
Sortland	57	34	59	A&F-Mi
Andoy	31	24	77	A&F
TOTAL	4382	2846		

[1]Employment Classification: Mi - Mixed - Mixed - Mixed includes employment in wholesale and retail business, communications, and personal services

A&F - Agriculture and Fishing

A&F-Mi - Transition from agriculture and fishing to mixed

A&F-Ma - Transition from agriculture and fishing to manufacturing

Source: Based on unpublished data obtained at the Rana Population Register, Mo i Rana, Norway.

A second group of townships, which supplied a large number of people during the growth period, was classified as having a significant manufacturing or mixed labor force. This group includes Fauske, Ballangen, Bodø, Narvik, Vågan and Tysfjord which provided people who entered into business in the city, as well as administrative personnel and skilled laborers to the Ironworks. All of these centers are located north of Mo i Rana. Finally, a third generalized area of origin consisted of townships classified as agriculture and fishing centers, and the labor was primarily unskilled. Vestvågøy was the most important supplier in this group.

The patterns of origin for Nordland County during the growth period were different from those found at an earlier time. First, there was a more even distribution of migrants in the growth stage than in the previous years. Second, the townships with high agricultural and fishing employment were less important as suppliers of migrants during the second ten years than the first. During the growth period centers with significant agricultural and fishing employment supplied 47 percent of the migration to Mo i Rana, while 58 percent came from these areas during the first stage.

There were two reasons for the decrease in percentage of migration, which originated in fishing and agricultural townships, from the construction to the growth stage. First, during the construction years there were seven townships which were classified as agriculture and fishing areas, but by 1955 either manufacturing or mixed occupations predominated, and they thus received a new

employment classification. Of the seven former agricultural and fishing areas, five were reclassified as mixed and two as manufacturing townships. The change of employment classification at the beginning of the growth period resulted in the shift of a large number of migrants previously classified as agricultural and fishing during the construction time.

Second, the surplus of labor from fishing and agricultural regions declined through continued migration, while nonagricultural townships as well as other counties started to supply large numbers of people. Although agricultural and fishing townships accounted for less than half of the movement to Mo i Rana during the growth period, the 1,300 migrants from these centers represented almost a 100 percent increase from the initial stage.

At least half of the movement from each of the 44 townships of Nordland County came to Mo i Rana during the growth period (Figure 7). The second phase of construction, plus full scale operation of the Ironworks accounted for substantial migration. Some of the townships which provided at least 100 individuals, such as Saltdal, Fauske, Tysfjord, Vestvågøy and Ballangen, showed a heavy migration during this stage. Over two-thirds of the migrants from each of these townships came to Mo i Rana between 1955-1965.

There is a strong relationship between the annual migration to Mo i Rana from Nordland County and the labor demands of the Norwegian Ironworks. For the first four years (1955-1958) of the growth period, migration to Mo i Rana decreased. During these four years, construction

labor was no longer required, the Ironworks operation was on a small scale, and labor demand was significant in only 1956 when the industry was expanded. The addition of three furnaces and two iron ore processing plants produced a demand for labor which was required for the construction and operation of the new facilities. Although there were a large number of people who came after 1959, employment at the Ironworks increased at a slow rate. The two major reasons were: (1) construction labor left after projects were completed, and only labor for the operation of the plant was necessary; and (2) migrants found other employment in the city of Mo i Rana.

Origin and Volume of Population Migration to Mo i Rana from Troms, Nord-Trøndelag, Sør-Trøndelag and Finnmark Counties

During the growth period, the origins of population movement to Mo i Rana from Troms County could be generalized according to two sets of townships. First, Harstad, Tromsø, Bardu and Malselv, had a dominance of mixed employment and accounted for 101 laborers or 26 percent of the migration (Table 8). A second group of townships dominated by fishing and agricultural employment contributed nearly two-thirds of the migration from this county (Figure 8). These townships were labor surplus areas and accounted for a significant number of unskilled laborers. Found in this second group is Salangen, and it supplied the largest number of migrants from Troms County (Figure 7). The southern part of the county was the most important contributor of migrants during the growth period. This area was more accessible to good transportation to Mo i Rana than townships farther north.

TABLE 8

POPULATION MIGRATION TO MO I RANA FROM TROMS COUNTY DURING THE GROWTH PERIOD (1955-1965)

Township	Total Migration (1946-1968) Number	Growth Period Number	Growth Period Percent of Total (1946-1968)	Employment Classification[1]
Harstad	64	34	53	Mi
Tromsø	40	30	75	Mi
Kvaefjord	14	9	64	A&F
Skånland	22	16	73	A&F
Bjarkøy	7	3	43	A&F
Ibestad	6	3	50	A&F
Gratangen	13	10	76	A&F
Salangen	50	36	72	A&F
Bardu	18	13	72	A&F-Mi
Malselv	40	26	65	A&F-Mi
Sørreisa	13	11	84	A&F
Dyrøy	14	11	69	A&F
Tranøy	5	3	60	A&F
Torsken	6	3	50	A&F
Berg	9	5	55	A&F
Lenvik	18	12	66	A&F
Balsfjord	15	8	53	A&F
Karlsøy	8	3	37	A&F
Lyngen	3	2	66	A&F
Storfjord	1	1	100	A&F
Kofjord	7	4	57	A&F
Skjervøy	14	12	86	A&F
Nordreisa	4	2	50	A&F
Kvaenangen	6	3	50	A&F
TOTAL	397	260		

Employment Classification: Mi - Mixed - Mixed includes employment in wholesale and retail business, communications, and personal services

A&F - Agriculture and Fishing

A&F-Mi - Transition from agriculture and fishing to mixed.

Source: Based on unpublished data at the Rana Population Register, Mo i Rana, Norway.

The migration from Troms County to Mo i Rana according to individual years during the growth period was similar to the annual movement from Nordland County. There was less migration during the early part of this stage than the latter. The large number of people towards the end of the stage was in response to the labor demands of the Norwegian Ironworks, which was expanding industrial facilities during the time span.

A significant proportion of those who came to Mo i Rana from Nord-Trøndelag County arrived during the growth years. The 236 migrants from this county, represented 60 percent of the migration to the city (Table 9). The largest number of people-75 percent of the 236 migrants-originated in centers with a predominance of fishing and agricultural occupations (Figure 10). There was a significant demand for unskilled laborers during this period for expansion and operation of the Ironworks, and labor surplus fishing and agricultural areas supplied this employment. A second group of townships which contributed migrants to Mo i Rana had either a manufacturing or mixed labor classification. Of these Steinkjer, Namsos and Namsskogan predominated and each supplied at least half of their migration to Mo i Rana during the growth period (Figure 11). A large number of the migrants from these townships found employment in skilled and administrative positions in the Ironworks. The largest movement from Nord-Trøndelag County occurred between 1962-1964, the same time when plant expansion took place at the Ironworks.

TABLE 9

POPULATION MIGRATION TO MO I RANA FROM NORD-TRØNDELAG COUNTY DURING THE GROWTH PERIOD (1955-1965)

Township	Total Migration (1946-1968) Number	Growth Period Number	Growth Period Percent of Total (1946-1968)	Employment Classification[1]
Steinkjer	50	31	62	Mi
Namsos	40	22	55	Mi
Meråker	9	3	33	Ma
Stjørdal	13	10	77	Mi
Frosta	5	4	80	A&F
Leksvik	3	3	100	A&F
Levanger	19	10	53	Mi
Verdal	18	12	67	A&F
Mosvik	-	-	-	A&F
Verran	13	9	69	A&F-Ma
Namdalseid	2	-	62	A&F
Inderøy	13	8	62	A&F
Snasa	31	15	46	A&F
Lierne	3	3	100	A&F
Royrvik	3	3	100	A&F
Namsskogan	42	23	55	A&F-Ma
Grong	32	23	72	A&F
Høylandet	13	11	84	A&F
Overhalla	12	8	67	A&F
Flatanger	3	3	100	A&F
Vikna	11	8	73	A&F
Naerøy	44	22	50	A&F
Leka	7	1	14	A&F
TOTAL	386	232		

[1]Employment Classification: Mi - Mixed - Mixed includes employment in wholesale and retail business, communications, and personal services
Ma - Manufacturing
A&F - Agriculture and Fishing
A&F-Ma - Transition from agriculture and fishing to manufacturing

Source: Based on unpublished data obtained at the Rana Population Register, No i Rana, Norway.

During the growth period, a significant part of the migration to Mo i Rana from Sør-Trøndelag County originated in townships with urban populations. Trondheim and Meldal, largely urban, accounted for almost 75 percent of the movement to Mo i Rana from Sør-Trøndelag County. Trondheim alone supplied nearly 60 percent of the migration. A significant number of the individuals came from the vocational training school and found immediate employment in the Ironworks. The largest migrations from Sør-Trøndelag County occurred between 1962-1964, with especially heavy movement during 1963 when the Norwegian Ironworks began plant expansion.

Among the five North Norway counties, Finnmark supplied the fewest number of migrants to Mo i Rana during the second stage of industrial development. A total of 131 people or 68 percent of the migration came from Finnmark. The townships of Sør Varanger and Alta contributed the largest number of laborers to Mo i Rana (1946-1968). In the case of Alta, almost all of its migrants arrived in Mo i Rana during the growth period. The two principal reasons for the significant migration from Finnmark County were: (1) the labor supply in the counties close to Mo i Rana were no longer meeting the labor demands of the Ironworks; and (2) the migrant found desirable the new and inexpensive housing accomodations at Mo i Rana in addition to the guaranteed annual employment at a well established and progressive iron and steel industry. Migration from Finnmark County to Mo i Rana was concentrated toward the end of the growth period when the Ironworks

expansion projects created a heavy demand for labor. As a company grows, it must obtain new employees at an ever increasing distance.

Population Migration to Mo i Rana from South Norway

Among the fifteen South Norway counties[4] two counties contributed a significant number of migrants to Mo i Rana during the growth years. As in the previous period, Oslo was the most important source of laborers from South Norway (Table 10, Figure 12). The second largest supplier of people among the fifteen counties was Møre og Romsdal which is adjacent to Sør-Trøndelag County. Migration from Møre og Romsdal involved the shortest distance of movement to Mo i Rana from South Norway. The most significant annual movements from South Norway were between 1960-1964. This was due to the labor demands at the Ironworks for the construction and operation of two new iron ore processing plants.

A significant proportion of those who moved to Mo i Rana from South Norway came during the growth stage. During this time 630 individuals or 60 percent of the migration from fifteen counties of South Norway arrived in Mo i Rana.[5] In this stage almost 9 percent of the migration from South Norway occurred (1946-1968). With the exception of Oslo, the southern fifteen counties of Norway were individually less

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[4]The fifteen counties are noted in Table 10

[5]The following are relevant migration statistics for the fifteen South Norway counties: (1) Migration to Mo i Rana (1946-1968) 7,283; (2) Migration from South Norway (1946-1968) 1,036; (3) Growth Period Migration to Mo i Rana (1955-1965) 4,577; and (4) Growth Period Migration from South Norway (1955-1965) 630.

TABLE 10

POPULATION MIGRATION TO MO I RANA FROM TWENTY NORWEGIAN COUNTIES DURING THE GROWTH PERIOD (1955-1965)

County	Total Migration to Mo i Rana (1946-1968) Number	Construction Period Migration Number	Construction Period Migration Percent of Total County	Employment Classification[1]
Østfold	50	28	56	Ma
Akershus	84	48	58	Mi
Oslo	255	161	63	Mi
Hedmark	41	18	44	A&F-Mi
Oppland	48	25	52	A&F-Mi
Buskerud	56	35	64	Mi
Vestfold	47	31	66	Mi
Telemark	68	43	63	Mi
Aust-Agder	17	7	41	Mi
Vest-Agder	22	14	63	Mi
Rogaland	50	29	58	Mi
Hordaland	61	36	59	Mi
Bergen	45	21	46	Mi
Sogn og Fjordane	68	47	69	A&F
Møre og Romsdal	124	87	72	Mi
Sør-Trøndelag	413	245	60	Mi
Nord-Trøndelag	386	232	60	A&F-Mi
Nordland	4382	2846	65	A&F-Mi
Troms	397	260	66	A&F-Mi
Finnmark	193	131	68	A&F-Mi
TOTAL	6807	4344	63	

[1]Employment Classification: Ma - Manufacturing, Mi - Mixed,
A&F-Mi-Transition from agricultural and fishing to mixed
A&F -Agriculture and fishing.

Source: Based on unpublished data obtained at the Rana Population Register, Mo i Rana, Norway.

important than the five northern counties as suppliers of migrants. A longer distance of movement and employment opportunities accounted for the relatively small number of people from South Norway.

Migration of Foreign Nationals and Type of Labor Utilized at the Norwegian Ironworks

The largest migrations of foreign nationals between 1955-1965 were closely related to the expansion of the industrial facilities at the Ironworks. The most significant movement of foreigners took place after 1960. Almost 200 foreign nationals arrived in Mo i Rana between 1960-1965. The most came in 1961 and 1964 when newly added furnaces were made operational, as well as in 1963 when the ore separation and pelletizing plants were built. Most of the foreigners came to the Ironworks as advisors, and Sweden and West Germany were the major sources.

A variety of occupations was characteristic of the migrants arriving in Mo i Rana during the decade of growth. The unskilled occupations accounted for 41.5 percent of the total migrant employment during this period. For each of the eleven years of migration during the growth stage, these occupations dominated the employment structure (Figure 5). Slightly over one-fourth of the occupations were skilled labor, with the largest number of such migrants coming during 1963 when significant Ironworks plant additions were constructed. The third largest set of occupations was comprised of professional personnel. Almost 17 percent of the migrants were classified as professional people. The two most significant years for the migration

of professional personnel were 1963 and 1964. Most of the professional migrants came as advisors for the construction and operation of the pelletizing and ore concentration plants at the Ironworks; other professionals were doctors, lawyers and educators who came to supply services to the rapidly growing population of Mo i Rana.

Age of Migrants in Mo i Rana

During the growth period the young migrant accounted for a significant part of the migration to Mo i Rana, as almost one-fourth of the migration was in the 20-24 year old age group. When compared to the construction stage, the growth period had nearly 10 percent more migrants in this age group (Figure 14). The second largest number of migrants were in the 25-29 year old age category. This group predominated in the construction years. During the growth period there was also a significant number of migrants in the age group of 15-19. The predominance of the younger age groups in both the construction and growth developments reveals the effects of the changing economic conditions associated with the traditional industries of agriculture, fishing and forestry. As a result of government aid to create a more efficient production in these industries, through better management, land consolidation and increased utilization of machinery, a large number of young people were released.

The number of individuals in the annual population migrations to Mo i Rana varied considerably for certain age categories during the growth stage. The 20-24 year olds were the largest groups between

1962-1965, while prior to this period the 25-29 year old group was most significant. It was this latter age which predominated during the construction period, and continued to be important in the early part of the growth of industry. The significance of the younger laborer towards the end of the growth period was a result of the diminished supplies of the 25-29 year old migrants. The older 25-29 year old was considered to be less mobile and at the same time a better risk as an employee at the Ironworks. However, when the demand for labor could no longer be met by the 25-29 year old group, the 20-24 category became important.

Quite significant in the annual migration is the high percentage of 40-44 year olds in 1955 and between 1960-1965 (Figure 14). The growth period began in 1955, and this group with prior experience in industry played an active role in training employees for various positions at the Ironworks. During the 1960-1965 period, the 40-44 group acted as advisory personnel in the expansion programs developed at the Ironworks.

Marital Status of Migrants in Mo i Rana

A large number of migrants who came to Mo i Rana during the growth period were married. These migrants accounted for nearly two-thirds of the movement to Mo i Rana during this period. There were several reasons for the large number of married migrants. First, an urban location such as Mo i Rana provided more benefits to the young family than could be found at most migrants place of origin. Some of these benefits included a better education for the children, a greater

availability of personal services and an opportunity to obtain a better standard of living. Second, due to a large immediate demand for labor, the Norwegian Ironworks made living and working in Mo i Rana more attractive. The Ironworks constructed low rent apartment buildings, and as a result of working in the industry, the migrant could obtain such additional benefits as health insurance, a paid vacation and retirement payments. Finally, many individuals recognized the Ironworks as a well established organization and were willing to risk a move.

During the growth period the proportion of those who were married was less than the construction stage. During the second decade of development two-thirds were married, whereas three-fourths were of this type during the previous period. Throughout both time spans this person was preferred because he was considered to be a better risk for permanent employment than the unmarried. However, as the demands for labor increased and the surplus of labor decreased during the growth period, there was less consideration of marital status and the unmarried migrant became an important source of labor. Thus as a result of the increased movement of single people the proportion of married migrants declined.

Summary

The labor demands during the growth period of industrial development at Mo i Rana produced spatial variations in certain selected characteristics of population migration. It was previously hypothesized

that variations in the volume of migration to Mo i Rana would be dependent on changing labor demands. During the growth stage, the volume of movement to Mo i Rana was largest when expansion took place at the Norwegian Ironworks. The most significant time for the construction and operation of new Ironworks facilities was between 1959-1964. There was also a significant increase in employment at the Ironworks during the first year of operation. This growth was closely related to a large migration for the same year. Most of the labor demands of the growth period were met with a supply of individuals from five North Norway counties. The counties of Nordland, Nord-Trøndelag, Sør-Trøndelag, Troms and Finnmark supplied 81 percent of the laborers to Mo i Rana during the growth period. These five counties accounted for 76 percent of the construction stage movement. Of the five counties, Nordland contributed 2,846 people or 62 percent of the growth period migration to Mo i Rana, whereas during the construction period 57 percent of the migrants came from this county.

The origin of migration to Mo i Rana expanded to greater distances from the construction to the growth period. This was a primary function of labor supply and demand. During the construction period the primary sources of migrants were areas near Mo i Rana (Figure 7). However as the labor supply decreased in the immediate vicinity of the city. people moved from more distant townships in Nordland County, as well as from the more distant four counties of North Norway. Improved transportation and continued industrial development at Mo i Rana produced a significant movement from longer distances.

Due to a more efficient production in the traditional industries, fewer people were required as labor, and fishing and agricultural areas continued to be the most significant suppliers of migrants during the growth years. Although less than half (47 percent) of the growth stage migration from Nordland County came from fishing and agricultural townships, well over half of the movement from the counties of Troms and Nord-Trøndelag came from fishing and agricultural townships. Thus as the labor supply decreased in fishing and agricultural areas in Nordland County unskilled labor continued to be supplied from more distant counties. While agricultural and fishing centers were significant during the time of industrial growth, their importance as source areas for migrants had declined since the construction phase. The decline was primarily due to the increase in the number of townships with predominant manufacturing and mixed occupations.

As the demand for labor increased in Mo i Rana and nearby surplus labor decreased, South Norway became an important supplier of people. Oslo, which was the most important contributor of migrants from South Norway during the construction period, once again supplied the largest number of individuals during the growth stage. During the construction period most of the administrative work for the Ironworks was done in Oslo; however, towards the end of the growth years practically all of the administration was centered in Mo i Rana. As a result, the migration from Oslo to Mo i Rana consisted primarily of professional and business people. The second most important county in the south to supply migrants was Møre og Romsdal. It is the northernmost of

the fifteen counties of South Norway and thus the distance of migration to Mo i Rana was the shortest. This county was not a significant supplier during the construction stage, and its importance in the growth period further illustrates that migration to Mo i Rana became important from more distant areas. Although more migrants came from South Norway during the growth period than in the previous stage the long distance of movement was a deterent to any large scale migration, the exception was Oslo which supplied a select group of professional and business people.

The selected demographic characteristics of population migration to Mo i Rana during the growth phase were related to both the development of the Ironworks and the city of Mo i Rana. Unskilled labor occupations dominated among the migrants who came to Mo i Rana during this time. The greatest need for these occupations was at the Ironworks. Due to the expansion projects at the Ironworks during the growth years, the percentage of unskilled workers increased nearly 10 percent from the construction years. The second largest group of migrants were skilled, and they, too, were quickly absorbed by a rapidly expanding iron and steel industry.

A significant number of professional people also came to Mo i Rana during the growth period. Some of these migrants acted as advisors to the Ironworks, while others were administrative people whose offices were moved from Oslo. As the population of Mo i Rana increased considerably since the construction period, so did the

demand for more doctors, lawyers and educators. Thus, during the growth stage more professional people came to the city than during the construction period. As hypothesized the type of migrant labor varied according to the demands of each industrial stage.

The typical migrant during the time of growth was young and married. As a result of increased mechanization and consolidation in the traditional industries, which in turn required less labor, the largest number of migrants were in the 20-24 year old age group. Although a significant number of migrants were in this group, the 25-29 year old predominated for the first six years of the growth period. The 25-29 year old group was the largest for the construction stage. As major expansion projects were undertaken at the Ironworks from 1962-1965, there was a significant demand for migrant labor. Due to the decrease in labor surplus of the preferred older migrant (25-29 years old), who was considered a better risk for permanent employment, the younger migrant (20-24 years old) became an important source of labor. Thus there is a significant change from an older to younger migrant from the construction to growth stages.

While there was a slight decrease in the percentage of married migrants from the construction to the growth period, the married individual predominated in the latter time. This migrant found that Mo i Rana provided various employment opportunities and more of the amenities of life which could not be supplied by his place of origin. The Ironworks encouraged the married person by providing housing accomodations and security in the form of guaranteed yearly employment.

When compared to the construction period, the growth period showed the following differences: (1) an increased volume of migration; (2) the origins of migrants become more widely distributed; (3) fishing and agricultural regions declined in significance as labor supply areas; (4) a larger number of business and professional people; and (5) the average age of the migrant had decreased.

The next chapter will describe a stabilization stage of industrial development in which there are notable variations in selected characteristics of population migration from the previous two periods.

CHAPTER V

POPULATION MIGRATION TO MO I RANA: THE STABILIZATION PERIOD

Introduction

The stabilization period at Mo i Rana began when the Norwegian Ironworks no longer attracted a large number of new migrants for either the construction or operation of industrial facilities, and when the people of Mo i Rana increased their demands for services. Much of the labor needed by the Ironworks for the expansion of operations was drawn from a local labor supply and as a result there was a decrease in migration to the plant. This decrease in migration was in part compensated for by migrants who came to Mo i Rana to provide much needed personal, business, educational and government services. The stabilization period commenced on January, 1966, and, for this study, ended in June, 1968.[1]

While many new construction projects were undertaken at the Ironworks during the growth stage, there were no such projects developed

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[1]The short time included in the stabilization period precludes an investigation similar to the previous two periods. For the construction and growth periods an examination of migration and industrial development was made according to 10 year periods. While data for the stabilization period was examined for only a two and one-half year period, the results of the analysis were considered valid for they represent current conditions in Mo i Rana. At the time this study was made Ironworks and city officials indicated that industrial development and population migration had stabilized. Since 1968, correspondence with an Ironworks official and Population Register employee has revealed that the stabilization period continues.

during the stabilization period. Since 1964 there had been no new buildings constructed at the Ironworks, and the last new addition to the industry was in April, 1965 when the sixth electric furnace was built in the pig iron plant. As a result, construction labor, which was so important to the previous two stages, was not needed during the third phase of development.

At the beginning of the stabilization period, instead of expanding facilities to create a larger pig iron and steel ingot production to be sold on the international market, the Ironworks began to increase the production of finished steel products (sheet steel, rods and beams), and pelletized iron ore. Despite the low cost of iron and steel production, due to the use of inexpensive hydroelectric power, Norway, with its only iron and steel industry at Mo i Rana was unable to compete against iron and steel prices of such large producers as the United States and West Germany. However, in the case of the finished steel product, where steel is judged according to quality, the Norwegians are able to compete more favorably with other world producers. Finished steel products accounted for over one-fourth of the total tonnage of products sold at the Ironworks in 1966 and 1967, and the sale of these products increased during these two years; whereas, ingot steel and pig iron represented less than one-fifth of the tonnage sales, and the quantity of products sold declined from 1966 to 1967. Although the sale of crude steel and iron decreased, the production of these rose because they were used to support the increased production of finished steel. The sale of pelletized iron ore increased from 37,000 tons in

1966 to 143,000 tons in 1967. Pelletized iron ore ranked second to finished steel in tonnage of steel products sold from the Norwegian Ironworks in 1967.

As a result of the increased production and sales of pelletized iron ore and finished steel, the operation of the Ironworks was expanded with the addition of more equipment and employment increased. Most of the growth took place during 1966, and some of the new employees were supplied by the city of Mo i Rana, which now had a population of nearly 25,000 and had created its own labor supply. Migrant labor constituted the remainder of the employment at the Ironworks for 1966.

Population movement to Mo i Rana during the stabilization stage occurred in response to the labor demands of the Ironwroks, as well as to the demands for services in the city of Mo i Rana. Population movement to Mo i Rana during this third industrial phase was substantially less than during the previous two periods; in fact, it declined for the two and one-half years. During the growth and construction stages, however, the Ironworks required a large number of employees for the construction and operation of the industry, but during the stabilization period there was no construction of industrial facilities at the Ironworks. The result was a significant decrease in the demand for labor at the Ironworks, however, the city of Mo i Rana required more retail businesses, personal services and expanded communications and transportation systems for its growing population. In response to the needs of the Mo i Rana inhabitants people came from all parts of the country.

The labor demands during the stabilization years were different from the previous two periods, and as a result there were spatial changes in origin, volume and demographic characteristics of population migration to Mo i Rana. This chapter will describe these spatial changes.

Population Migration to Mo i Rana from North Norway

A significant proportion of the migration to Mo i Rana during the stabilization period came from five North Norway counties.[2] Slightly over three-fourths of the migrants during this time originated in the five counties, but less than 10 percent of the total migration from these counties (1946-1968) arrived in Mo i Rana during this third stage.[3] Well over half of the movement from North Norway took place during the first year when 310 people migrated to Mo i Rana. For the remainder of the stage, those who came from the five northern counties declined, both in absolute and relative number to those from the southern fifteen counties and foreign countries (Figure 3).[4] Thus as the

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[2]The five counties are: Nordland, Nord-Trøndelag, Sor-Trøndelag, Troms and Finnmark.

[3]The following are relevant migration statistics for the five North Norway counties: (1) Migration to Mo i Rana (1946-1968) 7283; (2) Migration from North Norway (1946-1968) 5771; (3) Stabilization Period Migration to Mo i Rana (1966-1968) 696; and (4) Stabilization Period Migration from North Norway (1966-1968) 529.

[4]Figures 3-14 are found in Chapter III.

stabilization period developed, the source areas of migration to Mo i Rana became more dispersed, larger volumes of migration came from outside the five county area, and the numbers decreased.

Volume of Migration to Mo i Rana from Nordland County by Townships

A large proportion of the migration to Mo i Rana during the stabilization period came from Nordland County. Nearly 60 percent of the migration came from this northern county and almost 10 percent of the migration from Nordland County arrived in Mo i Rana during this industrial stage.[5] Among the five North Norway counties, Nordland County supplied the largest number of migrants for the two and one-half years. As in the previous two periods, the number of migrants decreased as the distance of movement to Mo i Rana increased. However, distance was not as important towards the end of the period as it was in the beginning, because during each year the migration from Nordland County declined relative to that from three of the counties (Figure 4). As a result, a more dispersed origin of migrants from North Norway was evident. This was due to the more selective demands for migrants with professional and business backgrounds to provide services for the city of Mo i Rana.

The migration to Mo i Rana was more equally distributed among the townships of Nordland County during the stabilization period than

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[5]The following are relevant migration statistics for Nordland County: (1) Migration to Mo i Rana (1946-1968) 7283; (2) Migration from Nordland County (1946-1968) 4382; (3) Migration to Mo i Rana (1966-1968) 696; and (4) Migration from Nordland County (1966-1968) 396.

during either the construction or growth stages. There were a large number of migrants who originated near Mo i Rana from Hemnes, Nesna and Vefsn (Figure 7), while the remaining townships of Nordland County contributed from 1 to 18 migrants. Some of the areas which provided large migrations in the previous two periods supplied less than 10 percent of their migration during the stabilization time (Table 11). These included Brønnøy, Vega, Tysfjord, Ballangen and Vestågøy. Brønnøy, Vega, Tysfjord and Vestågøy were classified as having a predominance of fishing and agricultural employment (Figure 6).

The centers in Nordland County with a high employment in fishing and agriculture supplied 45 percent of the migration to Mo i Rana during the stabilization period, while the remainder of the migration came from townships with a predominance of manufacturing or mixed employment. Since the construction stage there had been a 13 percent decline in the number of migrants who came from regions in Nordland County where fishing and agriculture predominated. Thus, during the stabilization period migration from Nordland County was more equally distributed than during the previous two phases. In addition, in the stabilization stage the areas with a predominance of their labor force employed in mixed and manufacturing occupations supplied a higher percentage of the migration to Mo i Rana than in either of the two other stages. Due to the varied labor demands of both the Ironworks and the city of Mo i Rana, the migration from Nordland County was more selective during the stabilization period than during either the

TABLE 11

POPULATION MIGRATION TO MO I RANA FROM NORDLAND COUNTY DURING THE STABILIZATION PERIOD (1966-1968)

Township	Total Migration (1946-1968) Number	Stabilization Period Number	Stabilization Period Percent of Total (1946-1968)	Employment Classification[1]
Bodø	137	13	10	Mi
Narvik	114	12	11	Mi
Bindal	29	3	58	A&F
Brønnøy	167	11	57	A&F
Vega	85	2	2	A&F
Vevelstad	23	3	13	A&F
Herøy	53	7	14	A&F
Alstahaug	85	9	10	A&F
Lierfjord	129	15	12	A&F
Vefsn	286	30	11	A&F-Ma
Grane	53	3	6	A&F
Hattfjelldal	43	4	10	A&F
Lødingen	53	2	6	A&F-Mi
Dønna	97	4	6	A&F
Nesna	246	38	15	A&F
Hemnes	472	67	14	Ma
Rana	315	-	-	Ma
Lurøy	66	6	9	A&F
Traena	13	2	16	A&F
Rødøy	69	5	7	A&F
Meløy	112	14	13	Ma
Gildeskal	50	7	14	A&F
Beiarn	65	5	7	A&F
Saltdal	160	18	11	Ma
Fauske	239	16	7	Ma
Skjerstad	117	10	9	A&F
Sørfold	43	3	7	A&F
Steigen	40	6	14	A&F
Hamarøy	56	4	8	A&F
Tysfjord	130	11	8	A&F-Ma
Tjeldsund	14	1	8	A&F-Mi
Evenes	55	4	7	A&F

TABLE 11 (CONTINUED)

Township	Total Migration (1946-1968) Number	Stabilization Period Number	Stabilization Period Percent of Total (1946-1968)	Employment Classification[1]
Ballangen	170	7	5	Ma
Ankenes	50	4	8	Mi
Røst	3		-	A&F
Vaeroy	13	1	8	A&F
Moskenes	10	-	-	A&F
Vestågøy	197	13	7	A&F
Hadsel	35	4	11	A&F-Mi
Vogan	139	14	10	A&F-Mi
Bø	52	2	4	A&F
Øksnes	29	6	21	A&F
Sortland	57	8	15	A&F-Mi
Andoy	31	2	7	A&F
TOTAL	4382	396		

[1]Employment Classification - Mi - Mixed - Mixed includes employment in wholesale and retail business, communications, and personal services

A&F - Agricultural and Fishing

A&F-Mi - Transition from agriculture and fishing to mixed

A&F-Ma - Transition from agriculture and fishing to manufacturing

Source: Based on unpublished data obtained at the Rana Population Register, Mo i Rana, Norway.

construction or growth stages. Labor at the Ironworks was required for some additional jobs and the replacement of other employees, whereas Mo i Rana wanted business and professional services to serve the needs of its people.

Population Migration to Mo i Rana by Townships from Troms, Nord-Trøndelag, Sør-Trøndelag and Finnmark Counties

There were two principal regions in Troms County which supplied laborers to Mo i Rana during the stabilization period. Approximately one-third of the migrants came from Harstad and Salangen which are located in the far southern part of the county (Figure 6), while nearly two-thirds of the people originated where fishing and agricultural employment predominated (Figure 9). The majority of these migrants were unskilled. The largest migration from Troms County occurred in 1966, when new jobs were created at the Ironworks as a result of the expansion of operations to produce more finished steel products.

A large proportion of the migration from Nord-Trøndelag County to Mo i Rana originated in areas which had a predominance of their total labor force employed in either manufacturing or mixed occupations (Figures 10 and 11). Over half of the migrants came from Steinkjer, Namsos and Namsskogan. Unlike the counties of Nordland and Troms, where the largest movement occurred in 1966 to help meet some of the demands for labor at the Ironworks, the largest migration from Nord-Trøndelag County was in 1967 when there was a demand for services in the city.

A significant part of the migration to Mo i Rana from Sør-Trøndelag County came from the city of Trondheim, as over 60 percent of the migration originated in the city. Due to the demand for services in Mo i Rana, Trondheim became a major source for people with professional and business backgrounds. The largest movement from Sør-Trøndelag County occurred in 1967 when nearly half of the 43 individuals left for Mo i Rana, A significant proportion of these migrants also provided services to the city.

The primary source area of migrants from Finnmark County were townships with urban populations: namely Alta and Sør-Varanger. Only seven of the twenty townships in Finnmark County supplied laborers to Mo i Rana during the stabilization period. Most of the centers which did not provide migrants to Mo i Rana were dominated by agricultural and fishing occupations, and their unskilled labor was in less demand during the stabilization years than in the previous two periods.

A large part of the movement to Mo i Rana from the counties of Nord-Trøndelag, Sør-Trøndelag and Finnmark originated in areas with significant urban populations, and, hence, with a high employment in mixed or manufacturing occupations. Urban centers were the principal sources for business and professional personnel, whose services were important to the growing population of Mo i Rana. The migration from the fourth North Norway County, Troms, was principally from townships which had a predominance of their labor force in fishing and agricultural employment, and most of the unskilled labor from this county went

to the Ironworks. Thus, for three of the four counties it was primarily the migrant from urban areas who moved to Mo i Rana during the stabilization period.

Population Migration from South Norway

The fifteen counties[6] of South Norway contributed a sizable proportion of the migration[7] to Mo i Rana during the stabilization stage. These counties supplied nearly one-fifth of the migration, and contributed a larger proportion of the movement to Mo i Rana during this time than during either of the two previous periods (Figure 12).

Among the fifteen southern counties, the largest volume of migration came from those with or near a large city and those nearest Mo i Rana. The county of Oslo, which contains the city of Oslo, and Akershus County located adjacent to Oslo County, together supplied 43 migrants (Figure 12). Hordaland County, which borders on the municipal boundary of Bergen, was the origin for an additional 11 migrants, while the counties of Møre og Romsdal and Sogn og Fjordane, which are located nearest to Mo i Rana among the South Norway counties, supplied 18. The annual migration from South Norway was significant for 1966 and 1967.

Migration from the southern part of Norway came from counties with sizable urban populations, and with a predominance of mixed and

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[6]The fifteen counties are in Figure 12.

[7]The following are relevant migration statistics for the fifteen South Norway counties: (1) Migration to Mo i Rana (1946-1968) 7,283; (2) Migration from South Norway (1946-1968) 1,036; (3) Stabilization Period Migration to Mo i Rana (1966-1968) 696; and (4) Stabilization Period Migration from South Norway (1966-1968) 126.

manufacturing employment (Figure 13). Also significant was that they supplied a larger proportion of the migration to Mo i Rana in the stabilization than in either the construction or growth periods. In addition, a greater part of the migration to Mo i Rana came from longer distances during the third industrial stage than previously. As a result there was a more equal distribution of migrant origin for the whole country during the final industrial stage than during either of the first two.

The Volume and Origin of Foreign Migration to Mo i Rana

A significant number of foreigners migrated to Mo i Rana during the stabilization period. Migration from foreign countries was comparable to that from each of the four northern counties of Nord-Trøndelag, Troms, Sør-Trøndelag and Finnmark. More than half of the foreign migration came from the two Scandinavian countries of Sweden and Denmark. A large number of the Swedish migrants originated in areas near Mo i Rana, as the Swedish border is only a short distance east of the city, and most of them came to work in the Ironworks. Besides Sweden and Denmark, England also contributed migrants to Mo i Rana during the stabilization period. Most of the English people were students who came to the Ironworks on a work-study program. During the construction and growth periods many of the foreign migrants were advisory personnel for the Norwegian Ironworks, and for both time spans West Germany was the major supplier of migrants. But during the stabilization years, the Ironworks no longer demanded advisory personnel, and as a result, West Germany was absent as a supplier.

Occupations of Migrants in Mo i Rana

A large part of the migration to Mo i Rana during the stablization period was distributed among four occupations. Unskilled occupations predominated among the migrants during this period. Slightly over 40 percent of the 696 migrants entered unskilled positions in Mo i Rana at this time, with some of the unskilled entering employment at the Norwegian Ironworks. Some of these people found jobs in Mo i Rana in the service, storage and transportation industries as car mechanics, warehouse attendants or dock workers. Unskilled labor continued to decrease relative to other occupations throughout the stabilization eriod (Figure 5). But the percentage decrease of unskilled migrants was countered with a similar percentage increase of professional personnel during this period.

The second largest group of occupations in Mo i Rana during the stabilization years consisted of professional personnel. Almost one-fourth were professional people, a substantial increase over 14.6 percent during the construction period. During the construction and growth stages a large proportion of the professional personnel came to the Ironworks as advisors or administrators. During the stabilization period, however, only a few of the professional people entered the Ironworks. Instead a large number of these individuals supplied services to the city. Some of the professional occupations in the city were teachers, lawyers, pharmacists and doctors. The annual migration of professional people was significant for two and one-half

years (Figure 5), and in 1967 and 1968 this group accounted for nearly one-third of the occupations.

The third group of migrants represented were those with skilled occupations. Less than 20 percent of all labor was skilled during this stage, the lowest percentage of these migrants represented during the three periods. Some of the skilled entered the Ironworks to accept vacated and newly created positions while others were employed in Mo i Rana. Selected skilled occupations included carpenters, electricians, plumbers, telephone repairmen and operators of industrial, construction or transportation equipment.

Finally, the fourth group of occupations consisted of business personnel. Although only 9.1 percent of the migrants had business positions, this was the largest percentage of these occupations for any of the three periods. Some of the business personnel were secretaries, bookkeepers, sales clerks and managers of general mechandise (food, shoes, clothing) establishments. The annual migration of the people in this employment increased in relative significance to all other occupations throughout the stabilization year (Figure 5). At the time field research for this study was undertaken (June, 1968), there was a shortage of retail establishments; thus, it is expected that migrants with business occupations will continue to form a significant part of the migration to Mo i Rana.

A great portion of the migrants in Mo i Rana during the stabilization stage were people with business and professional occupations.

These two occupations accounted for nearly one-third of the positions. The needs of the inhabitants of Mo i Rana were only partially filled by these two occupations during the construction and growth developments. For the professional person, such as a doctor or lawyer, the location of Mo i Rana was in a rather remote area, and only the guarantee of a successful practice would attract such an individual. In 1967 there were over 25,000 people in the immediate Mo i Rana area, and at this time, this region was also considered to have great potential for future population growth. Thus, the professional people came to Mo i Rana after there was an established clientele-namely, during the stabilization period. The assurance of having a readily available consumer market was also important to the migrants who entered into business in Mo i Rana during this period. In addition, skilled and unskilled occupations were well represented among migrants who arrived in Mo i Rana during the third industrial stage. Migrants with these occupations were employed at both the Ironworks and in secondary and tertiary industries in Mo i Rana.

Ages of Migrants in Mo i Rana

The young migrant predominated in the population movement to Mo i Rana during the stablization period. As in the previous stage, the largest number of migrants were in the 20-24 year old group (Figure 19). This group prevailed in the annual migrations between 1962-1965, while before this time the 25-29 year old was significant. The 15-19 and 25-29 year old groups also provided a large number of migrants during

the stabilization period. In fact, almost two-thirds of this periods migration was found in the three youngest age categories. These ages consisted of a large number of unskilled and skilled migrants who found employment at the Norwegian Ironworks. As in the previous industrial state, the young person in North Norway had few employment opportunities in fishing and agricultural regions, due to the reorganization of these industries. The availability of employment in Mo i Rana and the additional amenities of an urban center, such as more entertainment and a greater choice of consumer goods, encouraged the young person to migrate.

The remaining one-third of the migrants who came to Mo i Rana were in the 30-54 year old age group, and were professional and business people who were attracted to the city to serve the needs of a rapidly expanding population.

Marital Status of Migrants in Mo i Rana

During the stabilization period the percentage of married migrants who came to Mo i Rana decreased substantially from the previous two phases, while the proportion of unmarried migrants increased significantly. There were nearly 25 percent less married migrants during this stage than in either the construction or growth periods. The principal reason for this decrease in the percentage of these migrants was that they were not willing to risk a move to Mo i Rana because of the lack of industrial employment. In the construction and growth periods a large share of the migration consisted of young married people who were

guaranteed employment at the Ironworks. However, during the stabilization stage the demand for migrant labor at the Ironworks had decreased substantially. Thus, the young unmarried person who had few family responsibilities was more likely to risk a move to seek employment than the married individual, and as a result the percentage of migrants who were married increasedsignificantly during the stabilization period.

Despite the substantial decrease in the percentage of married migrants during the stabilization period, more married than unmarried people moved to Mo i Rana during this time. A significant number of the married people provided business and professional services in Mo i Rana, and their move did not involve the same employment risk as the unskilled migrant. Professional and business services were highly desired in Mo i Rana, as the population had created more needs than could be served by the existing service personnel. Thus, the individuals with business and professional backgrounds were guaranteed employment in Mo i Rana.

Summary

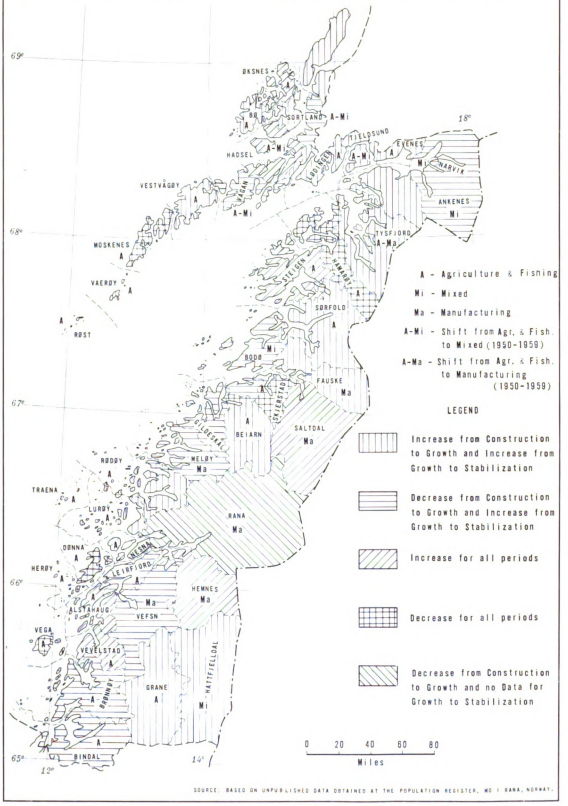
During the stabilization period there were some changes from the previous two decades of development in the patterns of volume, origin and demographic characteristics of migration to Mo i Rana. During this period a large volume of migration came from the counties of North Norway, and among these counties, Nordland supplied more than two-thirds of the migrants. Due to the decline of a labor surplus in

townships near Mo i Rana and the change in labor demands, the migrants from Nordland County were more equally distributed during the stabilization years than in the previous two stages. This is evidenced by the decrease in migration from townships near Mo i Rana with high fishing and agricultural employment from the growth to the stabilization periods, and an increase in movement from mixed and manufacturing areas for the same time span (Figure 15).

Less than half (45 percent) of the people from Nordland County originated in townships with a predominance of fishing and agricultural employment. This was two percent less than the previous stage, and a 13 percent decline from the construction period. There were two reasons for the decline in migration from agricultural and fishing regions from the first to the third phases. First, these areas were less important in the third period than in previous years as sources of unskilled labor for the Ironworks, for the industry was now using a local labor supply. Second, the demands for services in Mo i Rana produced an increase in migration from mixed and manufacturing areas.

Although the largest migration occurred from Nordland County, all of the remaining counties also supplied migrants during the third stage. During this period a large number of professional and business personnel came to Mo i Rana from counties with a predominance of mixed and manufacturing employment and large urban populations; namely, Sør-Trøndelag (Trondheim), Akershus, Hordaland and Oslo. In addition, during this period a large proportion of the movement came from the

Figure 15.--NORDLAND COUNTY: MIGRATION CHANGE AND PREDOMINANT EMPLOYMENT(1946-1968)



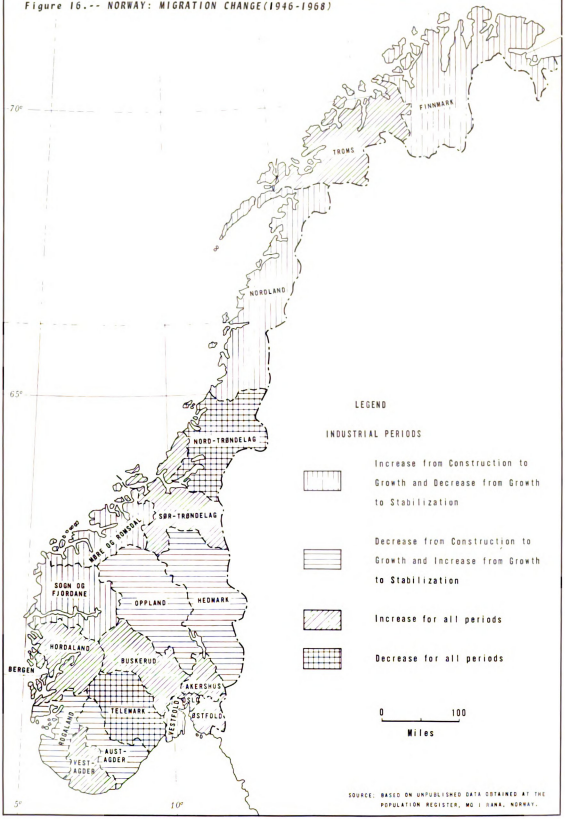
SOURCE: BASED ON UNPUBLISHED DATA OBTAINED AT THE POPULATION REGISTER, MO I RANA, NORWAY.

fifteen South Norway counties. As a result, main areas of migrant origin during this industrial stage were more equally distributed throughout the country than in the construction and growth periods. This is shown by the number of counties of South Norway in which migration increased as compared to the decrease in North Norway from the growth to the stabilization phases (Figure 16).

Thus in this study it was correctly hypothesized that the volume and origin of migration vary more significantly with the construction and growth of industry than when operations have stablized. In the case of the stabilization stage, no expansion of the physical facilities took place and as a result there is a definite decrease in migration. Besides, due to the demands for a different type of labor during the stabilization stage; namely professional and business personnel instead of unskilled and skilled labor, this period involved a more selective migration. Because the supply of professional people and those willing to invest in business was limited, migration of these took on a dispersed distribution.

A large number of migrants who arrived in Mo i Rana during the stabilization period were in the young age groups. The 20-24 year old age group provided the largest number of individuals. This was a continuation of the trend established towards the latter part of the growth stage. A decrease in the supply of the 25-29 year olds, who predominated in the construction and early part of the growth period, led to an increased use of a younger (20-24 years old) group as a source of labor. For the most part these migrants had either skilled

Figure 16.-- NORWAY: MIGRATION CHANGE(1946-1968)



or unskilled occupations. Approximately one-third of the migrants were in the age group of 30-54 years, and a large share of the migrants in this group had either professional or business backgrounds.

There were almost an equal number of married and unmarried migrants. Due to the minimal demand for migrant labor and lack of guaranteed employment at the Ironworks at this time, there was a smaller proportion of married migrants in this period than in the previous two stages. The unmarried migrant with few family responsibilities was more inclined to risk a move to seek employment than the married migrant. A large number of the married migrants were either business or professional people who were guaranteed immediate employment in Mo i Rana as the demand for services continued to increase with the growing population of the city.

The most significant differences between the stabilization stage and the previous two periods was: (1) a decrease in annual migration; (2) a dispersed distribution of migrant origin; and (3) a large proportion of business and professional people.

The analysis of the stabilization stage also indicated that when a "pull" factor such as employment was not present migration declined. If in the future, no expansion of industry takes place a local labor supply will satisfy employment demands and the stabilization period will continue to dominate in Mo i Rana.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Introduction

This study was based on the assumption that varying labor demands of industrial development and the resulting spatial impact are related to selected characteristics of population migration to Mo i Rana. It was also established that a newly developed industry would proceed through three periods of industrial development-namely, construction, growth and stabilization-and that each stage would have certain migration characteristics. The features examined in this study were those of origin and volume, and the selected demographic aspects studied were those of occupation, age and marital status. The following is a summary of the research findings.

The Construction Period (1946-1955)

This first period of industrial development included the construction of buildings, and a large part of the migration during this stage came from areas not too far distant from Mo i Rana. As fishing and agricultural districts were suffering from a labor surplus, early population movements consisted of people from these areas. In addition, a large number of foreign migrants arrived in Mo i Rana towards the end of the first phase.

There were noted certain demographic characteristics of the migrant during the construction period. First of all, the migrants who arrived during the early years were unskilled as their labor was used in the excavation of the industrial site and in the construction of buildings. The latter part of the period, on the otherhand, attracted skilled migrants as well as advisory personnel who aided in the completion of the buildings. Secondly, due to the short distance of movement to Mo i Rana, the typical migrant was married and in a young age group of 25-29 years.

The Growth Period (1955-1965)

The growth stage was distinguished by a certain set of migration characteristics. Although migrants continued to originate within the immediate Mo i Rana area during the early part of the growth stage, as this period progressed the surplus of labor decreased in the the immediate area of the industrial site, and migration occurred from longer distances. Moreover, demands for labor to expand and operate the Ironworks produced a heavy volume during the growth period. During this period an especially large number of foreign migrants came when expansion projects were undertaken at the Ironworks.

The migrants who arrived during the growth years can be described according to the following selected demographic characteristics. For the initial operation of the Norwegian Ironworks, both skilled and unskilled migrants were in demand. Since pig iron and steel ingot products were the main output of the Ironworks, a large part of the

labor force was composed of unskilled workers. The supply of unskilled migrants to Mo i Rana was provided for the most part by areas in which fishing and agricultural occupations predominated. On the otherhand, areas with a significance of employment in mixed (business, services) and manufacturing activities were important sources of skilled, advisory and administrative personnel.

With regards to age and marital status of migrants, there were slight changes from the construction to the growth period. The largest number of migrants in the growth stage was again found in the younger age groups, although there was a greater number of married migrants during this second stage. A slight change did occur in the growth phase, however, from the dominant group of 25-29 year old to the younger 20-24 category. The reason for this shift was economic in source. The younger group was born while government plans to aid distressed economic areas in North Norway were being implemented. These plans involved the consolidation and increased mechanization of some of the primary industries such as fishing, agriculture and forestry. As a result of these changes, which made production a more efficient process, the young 20-24 year old group was no longer required as labor. Thus, migration to Mo i Rana occurred.

The Stabilization Period (1966-1968)

The stabilization stage of industrial development at Mo i Rana was characterized by a decrease in the demands for migrant labor at the Ironworks, which was a result of the use of a local labor surplus,

and by an increase in labor demands for secondary and tertiary employment in the city. As a consequence of this decrease in demand for migrant labor at the Ironworks, population movement necessarily declined throughout this period. The origin of those people who did arrive during the stabilization period was more equally dispersed, and a larger proportion of the migration came from greater distances than in the previous two decades of development. While the unskilled laborer predominated during the stabilization period, there was a significant number of migrants with professional and business backgrounds. Due to the continual growth of the population in Mo i Rana during this third stage, the need for services increased; thus, the businessman, lawyer and doctor were important individuals. As in the previous period, the young 20-24 year old migrant formed a large part of the total migration to Mo i Rana. However, the unmarried migrant was more prevalent during the stabilization period than in the other two stages. Because immediate employment in Mo i Rana was no longer assured, the married migrant did not want to risk moving his family and household furnishings; the unmarried migrant, on the otherhand, with less personal responsibility, had a greater tendency to migrate regardless of the lack of guaranteed employment at the Ironworks.

Evaluation of Hypothesized Statements

In this dissertation the data obtained through field and library research were applied to certain hypothesized statements. An examination of the validity of these statements follows. The spatial

variations in selected characteristics of population migration to Mo i Rana for the construction, growth and stabilization periods is a primary function of:

(1) the number of laborers demanded for the construction and operation of the Ironworks

The volume of migration to Mo i Rana showed a strong relationship to the labor demands during the construction and growth periods, but the same relationship is less evident for the stabilization period. During the first two stages migrant labor was important for the construction of buildings, and in the second period for the operation of industrial equipment. For the stabilization years however, no construction took place, and employment for the expanded operations was drawn from the local population. Not only did migration decline during the third phase, but also a significant proportion of the migrants found employment in the city of Mo i Rana.

(2) outlying regions which have a surplus of labor in agriculture and fishing

During the construction and growth periods a large share of the movement to Mo i Rana came from areas which had a surplus of labor-namely, areas which had high fishing and agriculture employment. In the stabilization years, on the otherhand, a large number of people came from urban areas in which manufacturing and mixed occupations predominated. Also in this period much of the employment was provided from a local labor surplus.

(3) the origin of advisory and administrative personnel for the Ironworks

During the construction and growth stages the primary origin of advisory personnel was foreign countries. These personnel were especially important when expansion took place. On the other hand, few foreign advisors came to the Ironworks during the stabilization period. In addition, most of the administrative personnel were supplied by urban areas to the south of Mo i Rana.

(4) the distance of travel for migrants from place of origin to Mo i Rana

For each succeeding stage of industrial development, the distance from Mo i Rana of major source areas of migrants increased. This was primarily a function of a decrease in labor surplus in areas nearest Mo i Rana during the first two periods, and of the varied labor demands of the last period. During the first two periods labor surplus areas of North Norway were important; in the last stage, however, the fifteen counties in South Norway were the major suppliers of migrants.

(5) the type of labor required at the Ironworks and city of Mo i Rana

During the first two stages skilled and unskilled migrants accounted for a large part of the total migration to Mo i Rana, and most of this labor force found employment at the Ironworks. Foreign advisory personnel were also important during these periods. The type of labor in the stabilization period, however, was oriented to the needs of the population in Mo i Rana. This was evidenced by the large proportion of migrants who were professional and business people.

(6) the age and marital status of migrants

There were slight changes which occurred in the age and marital status of migrants during the three stages of industrial development. For the construction period the largest number of individuals was found in the 25-29 year old group; during the growth and stabilization periods, however, the 20-24 year old group predominated. Larger numbers of people were evident in the older age groups when expansion took place at the Ironworks during the growth period. And while both the construction and growth phases showed a predominance of married migrants, during the stabilization period almost half of the migrants were unmarried.

Analysis of the hypothesized statements has shown that all statements are relevant for describing spatial variations in characteristics of population migration for the construction and growth periods. However, for the stabilization period, when the demand for migrant labor declined, the statements with less importance concerned: (1) outlying regions which have a surplus of labor, and (2) the origin of advisory and administrative personnel.

Through the analysis of 7,283 migrants who came to Mo i Rana from July 1, 1946 to June 30, 1968 it was found that labor demands of industrial development and the resulting spatial impact on migration are related to selected population characteristics. Four conclusions were drawn from this study. First, construction projects demanded the largest number of migrants during the first two stages of industrial development, while during the third period the employment for expansion

was drawn from a local labor surplus. It is predicted that the third, or stabilization phase will continue well into the future since no significant expansion projects are planned at the Ironworks, and a labor surplus continues to grow within the city. In fact, for both 1966 and 1967 out-migration from Mo i Rana was greater than in-migration. Second, the origin of migrants, which was located for the most part in the immediate area of Mo i Rana during the construction and growth time spans, expanded considerably to other parts of the country during the stabilization period. Although the young unmarried migrant, who has no specific area of origin, will continue to seek the urban attractions of Mo i Rana, a large part of the future migration will consist of business and professional people from South Norway. Third, industrial development at Mo i Rana attracted a large number of migrants from areas in which government programs created a surplus of labor. These programs, which created a more efficient process of production in the primary industries of fishing, agriculture and forestry, released a number of people for employment in Mo i Rana. Many of these migrated to Mo i Rana during the growth period. Finally, the drawing power of Mo i Rana, with its advantages of more services, better educational opportunities, a higher standard of living and guaranteed employment, encouraged population movement during the growth and construction periods.

Since World War II Mo i Rana has become a viable growth center. It provides employment for over 3,000 people of the Ironworks and services are supplied to nearly 27,000 inhabitants. The introduction

of industry in order to provide jobs and a higher standard of living to an underdeveloped region has proven to be a successful government plan. The population of the city and the surrounding area has almost reached the governments intended size of 30,000 to 40,000 for growth centers. Many of the objectives of regional economic planning have been achieved at Mo i Rana, and it will prove to be a model for further North Norway development

The Future

The future population and economic growth of Mo i Rana and surrounding area will be dependent upon the expansion of the Norwegian Ironworks and the development of associated light industries. If pig iron and steel ingot production are to increase, additional physical facilities will be required, and this will initiate a labor demand and consequent growth in population.

Another possible stimulus for economic growth would be light industries producing a high quality product. Already the Ironworks is involved in the production of stainless steel products. The conversion of this product into sanitary equipment, cutlery, air fuse lages or canning equipment would provide a high quality item of which could withstand transportation costs. It is expected that pig iron and steel ingot production will increase moderately in the future, and that stainless steel production will get greater attention.

A truly progressive iron and steel industry will depend upon the buying power of the Norwegian population and the addition of diversified

industries. In order for a significant iron and steel production to take place it will be necessary to create industries such as automobile rolling stock and agricultural equipment. The prospects for this development is unlikely in the near future.

Thus the government has achieved its objective of creating a viable growth center at Mo i Rana based upon an iron and steel industry. Any future population increase and industrial growth will depend upon increased purchasing power of the Norwegian people and the decision to develop additional industries based on iron and steel production.

This study has shown that selected characteristics of population migration vary spatially according to three periods of industrial development. The results obtained in this study may be applicable in the investigation of other industrial centers which are the focus of regional development, whether in Norway or other countries of the world.

APPENDIX A

DEFINITIONS OF OCCUPATIONS

APPENDIX A

DEFINITIONS OF OCCUPATIONS

The occupations listed below are based on the United States Employment Service Classification. All Norwegian migrant occupations were classified according to definitions presented in the following book: U. S. Department of Labor, Dictionary of Occupational Titles, U. S. Government Printing Office, Washington, D. C. 1949.

The classifications are defined as follows:

Professional:	Professional, Semi-professional, Managerial, and Official Occupations
Business:	Clerical and Salespersons
Service:	Domestic, Personal, Protective, Building Service Workers, and Porters
Agriculture:	Agriculture, Fishing, and Forestry
Skilled:	This classification includes craft occupations. Such occupations require initiative, independent judgement, and trade knowledge. The abilities and this knowledge are generally acquired through a formal apprenticeship training. Representative occupations are carpenter and photoengraver.
Semi-skilled:	The semi-skilled division consists of process occupations. These occupations are found in manufacturing industries, or those industries engaged in fabricating articles.
Unskilled:	This division includes nonprocess occupations. Non-process occupations consist of jobs in manufacturing industries that are neither craft nor process, and of all jobs in manufacturing industries such as construction, amusement, recreation, and metal mining.
Mixed:	This includes employment in wholesale and retail business, communications, and personal services.
Manufacturing:	This includes all activities whereby man: "(a) assembles raw materials in an establishment (whether cottage, workshop, or factory), (b) upgrades their usefulness by changing their form, and (c) ships out these more valuable commodities to other places."

APPENDIX B

SUPPLEMENTARY DATA

APPENDIX B

SUPPLEMENTARY DATA

TABLE 12

OCCUPATIONS OF MIGRANTS AT MO I RANA FOR THE CONSTRUCTION PERIOD (1946-1955)

Occupations[1]	Total Migration (1946-1968)		Construction Period		
	Number	Percent	Number	Percent of Period	Percent of Total (1946-1968)
Professional	1231	16.9	294	14.6	23.8
Business	553	7.6	148	7.4	26.7
Service	176	2.4	49	2.4	27.7
Agriculture	61	.8	26	1.3	42.6
Skilled	1981	27.3	746	37.1	37.6
Semi-skilled	467	6.4	116	5.8	24.8
Unskilled	2814	38.6	631	31.4	22.4
Total	7283	100.0	2019	100.0	

Source: Based on unpublished data obtained at the Rana Population Register, Mo i Rana, Norway

[1]For definitions of occupations see Appendix A.

TABLE 13

FOREIGN MIGRATION TO MO I RANA: THE CONSTRUCTION PERIOD (1946-1968)

Year	Foreign Country					
	West Germany	Denmark	Sweden	England	Other	Total
1946[1]	-	-	-	-	-	-
1947	1	-	-	-	2	3
1948	-	-	-	-	2	3
1949	-	-	3	-	1	4
1950	-	-	-	-	-	-
1951	1	-	-	-	-	1
1952	33	1	4	-	2	40
1953	43	3	47	2	4	99
1954	19	6	4	5	3	37
1955	2	-	1	1	-	4
Total	99	10	59	8	14	190

Source: Based on unpublished data obtained at the Rana Population Register, Mo i Rana, Norway.

[1]This period began on July 1, 1946 and ended on March 31, 1955.

TABLE 14

POPULATION MIGRATION TO MO I RANA BY AGE GROUPS DURING THE CONSTRUCTION PERIOD BY NUMBER OF MIGRANTS (1946-1955)

Year	Total Migration Number	Age Groups														
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
1946[1]	74	3	16	18	15	11	6	1		4						
1947	145	11	20	39	27	19	11	7	9		2					
1948	139	4	18	35	24	31	9	9	5	3	1					
1949	223	23	33	62	41	32	13	11	3	4				1		
1950	243	19	36	54	56	28	17	8	11	4	5	2	1	2		
1951	182	13	26	47	36	25	12	9	5	4	4		1			
1952	307	14	64	69	62	33	22	22	13	5	2		1			
1953	406	22	70	97	73	50	38	23	15	8	5	3	1	1		
1954	237	15	47	40	44	32	23	15	7	8	3	1			2	
1955	54	4	10	14	6	6	7	2	2	2	1					
Total	2010	128	340	475	384	267	158	107	70	42	23	6	4	4	2	

Source: Based on unpublished data obtained at the Rana Population Register, Mo i Rana, Norway.

[1]This period began on July 1, 1946, and ended on March 31, 1955.

TABLE 15

MARITAL STATUS OF MIGRANTS AT MO I RANA DURING THE CONSTRUCTION PERIOD (1946-1955)

Marital Status	Total Migration (1946-1968)		Construction[1]	
	Number	Percent	Number	Percent
Married	4835	66.4	1492	74.0
Single	1964	27.0	455	22.7
Other	484	6.6	63	3.3
Total	7283	100.0	2010	100.0

Source: Based on unpublished data obtained at the Rana Publication Register, Mo i Rana, Norway.

[1]This category includes divorced, separated, and widowed.

TABLE 16

OCCUPATIONS OF MIGRANTS AT MO I RANA FOR THE GROWTH PERIOD (1955-1965)

Occupations[1]	Total Migration (1946-1968)		Construction Period		
	Number	Percent	Number	Percent of Period	Percent of Total (1946-1968)
Professional	1231	16.9	767	16.8	62.3
Business	553	7.6	342	7.4	61.8
Service	176	2.4	112	2.4	63.6
Agriculture	61	.8	32	.8	52.5
Skilled	1981	27.3	1114	24.3	56.2
Semi-skilled	467	6.4	312	6.8	66.8
Unskilled	2814	36.9	1898	41.5	68.2
Total	7283	100.0	4577	100.0	62.7

Source: Based on unpublished data obtained at the Rana Population Register, Mo i Rana, Norway.

[1] For definitions of occupations see Appendix A.

TABLE 17

ORIGIN OF FOREIGN MIGRATION TO MO I RANA DURING THE GROWTH PERIOD (1955-1965)

Year	Country							
	West Germany	United States	Sweden	Denmark	Finland	England	Other	Total
1955[1]	1	-	1	1	-	-	-	3
1956	-	-	1	1	-	-	-	2
1957	-	-	2	4	-	4	3	13
1958	2	1	1	-	-	-	3	7
1959	-	-	-	-	-	-	-	-
1960	3	3	26	2	2	-	3	39
1961	36	-	9	3	-	2	2	52
1962	12	-	1	1	2	-	1	17
1963	19	-	3	3	-	2	2	29
1964	20	4	2	3	9	1	-	39
1965	3	2	8	1	1	1	1	17
Total	96	10	54	19	14	10	15	218

Source: Based on unpublished data obtained at the Rana Population Register, Mo i Rana, Norway.

[1]This period began on April 1, 1955 and ended on December 31, 1965.

TABLE 18

POPULATION MIGRATION TO MO I RANA BY AGE GROUPS DURING THE GROWTH PERIOD (1955-1965)

Year	Total Migration Number	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
1955[1]	286	20	61	68	46	31	26	13	11	5		3		1	1	
1956	257	23	50	68	38	39	17	7	7	5	1	3	1		1	
1957	227	13	64	46	38	21	12	15	12	2	1	3				
1958	145	13	32	39	13	15	7	7	7	4	3	4	1			
1959	148	19	40	17	21	15	7	10	8	5	2	2	1	1		
1960	480	47	94	97	61	58	37	36	18	10	10	5	1	5	1	
1961	469	48	103	111	56	59	41	22	13	9	2	2	2	1		
1962	615	60	169	122	69	65	46	31	26	16	5	4		2		
1963	785	115	188	142	106	87	61	42	21	15	3	2		1	2	
1964	717	78	169	161	86	75	59	33	25	16	2	9		2	1	1
1965	448	47	115	103	52	37	37	17	15	15	3	3	1	2	1	
Total	4577	483	1085	974	586	502	350	233	160	102	32	40	7	15	7	1

Source: Based on unpublished data obtained at the Rana Population Register, Mo i Rana, Norway.

[1]This period began on April 1, 1955 and ended on December 31, 1965.

TABLE 19

MARITAL STATUS OF MIGRANTS AT MO I RANA DURING THE GROWTH PERIOD (1955-1965)

Marital Status	Total Migration (1946-1968)		Growth Period		
	Number	Percent	Number	Percent of Period	Percent of Total (1946-1968)
Married	4835	66.4	2989	65.3	61.8
Unmarried	1964	27.0	1190	26.0	40.2
Other[1]	484	6.6	398	8.7	82.2
Total	7283	100.0	4577	100.0	62.7

Source: Based on unpublished data obtained at the Rana Population Register, Mo i Rana, Norway.

[1]This category includes divorced, separated and widowed.

TABLE 20

OCCUPATIONS OF MIGRANTS AT MO I RANA FOR THE STABILIZATION PERIOD (1966-1968)

Occupations[1]	Total Migration (1946-1968)		Construction Period		
	Number	Percent	Number	Percent of Period	Percent of Total (1946-1968)
Professional	1231	16.9	170	24.4	13.8
Business	553	7.6	63	9.1	11.3
Service	176	2.4	15	2.2	8.6
Agriculture	61	.8	3	.4	4.9
Skilled	1981	27.3	121	17.4	6.1
Semi-skilled	467	6.4	39	5.6	8.3
Unskilled	2814	38.6	285	40.9	10.2
Total	7283	100.0	696	100.0	9.6

Source: Based on unpublished data obtained at the Rana Population Register, Mo i Rana, Norway.

[1]For definitions of occupations see Appendix A.

TABLE 21

MARITAL STATUS OF MIGRANTS AT MO I RANA DURING THE STABILIZATION PERIOD (1966-1968)

Marital Status	Total Migration		Stabilization Period	
	Number	Percent	Number	Percent
Married	4835	66.4	354	50.9
Single	1964	27.0	319	45.8
Other[1]	484	6.6	23	3.3
Total	7283	100.0	696	100.0

Source: Based on unpublishied data obtained at the Rana Population Register, Mo i Rana, Norway.

[1]This category includes divorced, separated, and widowed.

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