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ANALYSIS.

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THE MARKET FOR PUBLIC SCHOOL TEACHERS IN IOWA:
AN ECONOMIC ANALYSIS

by

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I. INTRODUCTION

The participation of demanders and suppliers in the marketing process for teachers provides each with information. Market participation and market negotiations includes, among many things, the exchange of information and the formulation of expectations by the market participants. While "in the market" individual teachers (school administrators) try to match their interests (needs) to the available job opportunities (applicants) and try to maximize their respective objectives. Although the teacher market includes many dimensions of choice, search, qualifications, etc., the efficient "operation [performance] of the labor [teacher] market is intimately affected by the amount and kinds of information" (79, p. 146).

The market for teachers would be extremely inefficient if the demanders and suppliers of teaching services could obtain no information about each other. The allocation of teachers among the schools and school districts of Iowa might have to be a purely random process. And if it were random, one might find a teacher qualified only in mathematics teaching music because in the random process too few music teachers and too many mathematics teachers had been hired.

The exchange of information never eliminates ignorance. Whatever information is available is used to formulate expectations that are the basis of decision-making by the market participants. The individual errors of judgment can be reduced by better information which precludes or alters expectations that would be greatly in error in its absence.

Whenever there are signs of market failure (e.g., excess turnover, or excess supply, or excess demand in any one skill or location) there is reasonable justification for assuming that the exchange of information is inadequate and expectations are not being realized. At the present time there is reasonable justification for assuming that information in the teacher market is inadequate in the state of Iowa. In many school districts of Iowa and in some teaching areas there is a high turnover rate and/or a lack of qualified teachers. There is a teacher shortage:

"The overall shortage of qualified teachers N.E.A. [National Education Association] found, is down some 30,000 over a year ago--294,800 in August, 1967, compared with 264,750 this August [1968].

"Among the 42 states providing data, five--Iowa, Kansas, Minnesota, Connecticut and South Dakota--reported 'substantial shortages.'

"In 17 other states there were 'some' shortages reported. And 19 states disclosed shortages in 'some' subject areas and an oversupply in other fields." (32b)

1. Need for teachers and a study of the teacher market

One of the curious and remarkable realities of today is the overwhelming rate at which change has been occurring. This is the age of dynamic change from muscle-extending mechanisms to mechanism-creators, from varying levels of general training to highly technical and scientific training. The public school system has emerged as a highly functional industry charged with the responsibility of creating a skilled labor force.

The elementary and secondary education industry in Iowa has been granted the monumental task of preparing hundreds of thousands of children for a life of constant change. It is the responsibility of this in-

dustry to ensure the intellectual and social development of their charges through the intragenerational and intergenerational transfer of learning. A teacher shortage most certainly hampers many school districts in the fulfillment of their mandate from society.

Many recent high school graduates do not have the skills and character for employability and will be unemployed. They may be unemployed because they are unemployable. It may appear that they won't work when no one will hire them because the public school system (i.e., society) did not develop their potential sufficiently for employability. The education industry may produce a large percentage of inadequately prepared graduates because of teacher shortages. Such shortages become a social and economic problem in a period of rapid and dynamic change. Such a social and economic cancer can become a crisis in a short period of time.

The importance of any teacher shortage should neither be ignored nor discounted. It must be studied and evaluated. Its causes identified and corrected. In this analysis the teacher market is studied with respect to the knowledge, perception and information of the participants in the market. Time and resources have not been allocated to the relationship of general teacher salary levels to general teacher shortages since Kershaw and McKean (53) have covered this area thoroughly. This study stresses the selection criteria and search methods of teachers and administrators participating in the market for public school teachers in Iowa.

2. The objectives

Among the specific objectives considered with respect to the teacher market in Iowa are: (i) description of the market participants; (ii) reasons for teacher resignations; (iii) the importance of teacher choice or decision variables; (iv) search channels and search costs; (v) mis-employment of teachers; (vi) employment opportunities that are competitive with teaching; (vii) teacher turnover; and, (viii) the importance of salary as a market variable. Each of the above objectives can be articulated within the context of the teacher market and specific teacher shortages.

3. Data sources

A substantial amount of the analysis in this study is based on primary data. Two surveys were conducted during 1968. An interview survey of a random sample of 59 local school district administrators (LSDAs) was begun and completed during the summer. A mail-type survey of the new teachers (NETs) in the same local school districts (LSDs) took place during the autumn of 1968. Most of the administrators were superintendents (83 percent). The 631 new teachers completing questionnaires consisted of both experienced and inexperienced teachers who were under contract in the sample school districts for the 1968-1969 school year and who had not been under contract in their respective school districts during the previous school year.

Of the total information possible, 99.5 percent was obtained from the administrators and 89.3 percent from the new teachers (e.g., 90.5 percent of maximum possible NETs completed the questionnaires, and those completing questionnaires provided 98.7 percent of the information requested

of them). This representative sample of Iowa's 455 school districts coupled with the high response rate indicate that the results of this study merit serious consideration, even if the results are not always consistent with expectations or preconceptions of individual teachers and school administrators.

4. Some findings

The findings below may be evaluated as probable causes of the malfunctions of the teacher market in Iowa.

1. Most new teachers, in the aggregate, perceived that formal search channels were most useful but reported that they found their employment through informal search channels.

2. The search channels considered most effective by administrators were different from the channels through which most new teachers learned of the positions they obtained for the 1968-1969 school year.

3. Small school districts do not seem to encounter greater difficulty filling vacancies than do larger school districts. The net movement of experienced new teachers in Iowa was towards "smaller" school districts.

4. The cost of operating the teacher market in Iowa for the survey year was over \$1.5 million. About 45 percent (\$0.7 million) was spent by the school districts (the remainder by the new teachers). For the school districts, this expenditure is less than one-quarter of one percent of total school district expenditures (\$413.7 million) in the 1967-1968 school year.

However, the school administrators' estimate must be used with extreme caution since it is probably too small. School administrators

seemed to have no accounting base for determining the cost of recruiting new teachers for their vacancies. Most administrators made what they called "guesstimates" or "wild guesses" about the costs of recruitment.

5. The new teachers and school administrators generally perceive a similar list of six teacher choice or decision variables as being important. The relative importance ascribed by teachers to these six most important variables is not the same as the relative importance imputed by school administrators.

6. The two variables that explain most of the variability in turnover or average teacher tenure are salary and age. This result supports Kershaw and McKean's thesis (53) that salary is an important variable with respect to the teacher shortage.

7. The alternative employment most competitive with teaching is homemaking.

8. The principal teaching assignments for 79.7 percent of the new teachers is in their academic major. Misemployment, even of 20 percent of new teachers, does not seem to be a major problem.

5. Plan of this report

A formal review of the literature was never attempted in a single chapter. Rather, the literature has been included on those occasions when the literature seemed pertinent. Available literature on the organization of economic activity and labor markets is included in Chapter II. In this chapter the text describes markets in general, the labor market in particular, and attempts a general theoretical formulation of

the maximizing behavior of the participants in the teacher market. The latter is sufficiently general to be applied with ease to any labor market.

In Chapter III numerous objectives of this report are delineated under three headings: (i) demand; (ii) supply; and, (iii) the market. And in Chapter IV attention passes to the methods and procedures, the timing and strategies of this study.

The next three chapters have been used to communicate the findings. The findings on demand and supply are in Chapters V and VI, respectively. Chapter VII covers the market phenomena or the interactions of demand and supply. A summary can be found in Chapter VIII.

II. ECONOMIC ACTIVITY AND LABOR MARKETS

Preindustrial societies are not concerned with labor markets (41). Typically these societies are traditional in structure (42), and the production emphasis is placed on the provision of food and fibres with trades, training and education being passed along through the family structure. When nonagricultural activities become more important, the unemployed and/or underemployed migrate to the industrial and other employment opportunities (86, pp. 1-5).

As the percentage of national income attributable to nonagricultural sources becomes more important, the specialization and marketing of labor becomes an important factor in growth and development. Denison (24, pp. 124-129) estimated that in the 1929-1957 period, the increase in the product of labor accounted for 1.57 (i.e., 53.5 percent) of the annual growth rate of 2.93 percent. In addition, he estimated that 0.58 percentage points could be attributed to the "advance of knowledge." The latter is a specialized product of labor as well; hence, 2.15 percentage points are directly related to labor. Finally Denison estimated that 0.28 percentage points were due to "other structures and equipment." If it is assumed that "to explain capital productivity one would have to explain the growth of knowledge itself" (26, p. 8), then 2.43 percentage points of the 2.93 percent growth rate can directly or indirectly be associated with labor. Denison's analysis clearly indicates that labor is an important factor of production.

Of course, labor is not a homogeneous input; hence, all inputs do not contribute to economic growth equally. Labor inputs are widely differentiated by education, skill level, industry, worker and employer

preferences, geographical location, and so on. Thus, there is not a labor market but many labor markets. Given this complex system, there would appear a need to address one's attention to markets in general and the labor market in particular.

1. The organization of economic activity

The fundamental nexus of all economic activity, however organized, is to achieve the efficient allocation (both production and distribution) of scarce resources among unlimited wants. Perhaps Heilbroner (42, pp. 9-17) has provided the best outline of the several ways to organize economic activity, although Solo too has a fine descriptive approach (105, pp. 3-16). The former will be used below to illustrate three ways of describing the organization of economic activity.

The oldest form of market organization that Heilbroner identifies is that of the "traditional" (subsistence?) economy. In this system the knowledge and skills of the society are passed from generation to generation within the family unit; hence, the activity of production is given stability and the essential tasks are performed through the intergenerational transfer of knowledge, skills, etc. Similarly, on the distribution side, there is an observable pattern with the strong and young (hunters and children) receiving the greatest share of the produce while the old and disabled are the last to receive a share (the Eskimo society of today well illustrates the distribution problem in a traditional society).

The command (planned?) economy is a second way of organizing economic activity and is also founded on a rather ancient base. For example, the pyramids were built by the Pharoahs this way. In this method,

"imposed authority" or "economic command" are the instruments for achieving the production decisions essential to economic activity. The command economy has several unique facets lacking in the traditional economy. First, the command economy (e.g., the Pharoahs, the Russian Communists, etc.) can be centralized in political channels, or decentralized in the productive sector of the economy (35). And secondly, the command economy possesses, in addition to its ability to solve the problems of production and distribution, the inherent power within itself to enforce "economic change." This second point clearly sets the command economy apart from the traditional economy since the latter is well suited to timeless constancy perpetuating itself for endless generations, albeit efficiently or inefficiently (96, pp. 41-44).

The final method of solving the economic problem is that of the "market system." Perhaps this is the method requiring the least discussion. It is the one with which most westerners are the most familiar. Unfortunately, the reverse is probably the case since it is the most complex method of organizing the twin problems of production and distribution. It has proven to be a dynamic way of organizing an economy. Its most unique feature is "decentralized decision-making." It is the market economy that contains Adam Smith's "invisible hand" and allows each individual in pursuing his own interests to promote "an end which was no part of his intention" (103, p. 43). Engineers, teachers, doctors, lawyers, etc. are trained and located without resort to tradition or command. Similarly with automobiles, eggs, fish. The market is "an organization which, in truly remarkable fashion, allows society to in-

sure its own provisioning with a minimum of recourse either to tradition or command" (42, p. 13).

2. The economic function of markets

A market is a difficult concept to define since it can exist under various institutional trappings. Markets can exist under conditions of barter, or conditions of exchange through a medium (e.g., money). Markets may be international, national, regional or local. They may handle one commodity or many. They may be easy to identify or hard to identify in time and space. Nevertheless, all markets facilitate the allocation of scarce inputs among unlimited wants through a system of prices.

The price system varies widely as an operational and allocative mechanism. With the stock market, buyers and sellers engage in price negotiations. This market is a good example of Adam Smith's "higgling and bargaining" (103, p. 31). Retail markets, on the other hand, are quite different. It is true that buyers and sellers meet; however, instances of price negotiations are not as prevalent. In fact, it is customary in the United States for retailers to set their prices. The consumer merely decides whether to buy or not buy at the set prices.

Both the stock exchange and retail markets are reasonably well-defined markets with respect to space, range of goods and services sold, and the price system. There is also a wide range of markets that is neither well-defined nor easy to identify. The teacher market is a good example of a diffuse and intangible market. The buyers and sellers rarely meet in identifiable market locations to exchange bids and offers. They meet through acquaintances, correspondence, chance meetings, newspaper want ads, and so on. Yet it is clear that a teacher market exists

and that buyers and sellers engage in price and non-price negotiations to maximize their respective objective functions, however defined.

Well-functioning input and output markets provide one method of solving the economic problem: The allocation of scarce resources among unlimited wants. Moreover, with a competitive market system, price plays a major role in achieving market equilibrium (a state of balance) by falling when excess demand is negative (i.e., quantity supplied exceeds quantity demanded) and rising when excess demand is positive.

In summary, a market is a point in time and space where exchange occurs. Marketing is an act, an operation, a service, a process that is not free of costs and serves to coordinate economic activity. A market transaction may involve one or more steps and frequently, although not always, involves price and/or non-price negotiations. Both buyer and seller seek to satisfy some objective function and presumably wish to do so at the expense of the other. Finally, each market transaction has a time dimension. The purchase of an ice cream cone represents a very short time horizon while the signing of a contract to teach in an LSD (local school district) represents a much longer time horizon.

3. The decentralized labor market

The decentralized labor market (e.g., the teacher market) is one in which both traditional and command forces are largely absent. In this market the worker is free to change employers (44, p. 317). Allocation and pricing occur through the interaction of suppliers and demanders.

Each employer can, in a rather broad sense, be considered part of a "separate market" (61, p. 34) while each unit of supply is unique and

"controlled by a different owner" (1, p. 324). Clark Kerr has addressed himself to the "balkanization of labor markets" and has observed that:

"Labor markets are more talked about than seen, for their dimensions most frequently are set by the unknown and, perhaps, mystic ideas in people's minds. A worker wishes to be employed in a certain area and at a certain type of job, and an employer wants employees drawn from certain groups and possessing certain characteristics." (51, p. 92).

Although this citation is brief, it does, nevertheless, suggest that labor markets are complex and that neither perfect nor institutional markets are excluded. For this reason it is apropos to devote several pages to the decentralized labor markets outlined by Kerr (52). But first it would seem necessary to cite a few words from Kerr's article:

"... two processes ... are going on all the time in our economy: wage rates are changing and individuals are moving among jobs. The two processes may or may not be closely connected. It is out of their changing degree of association that the confusion develops." (52, p. 278).

a. The perfect market This market structure is the most frequently used by economists for constructing theoretical models of markets and includes the following assumptions:

- i. many buyers and sellers;
- ii. homogeneous products;
- iii. perfect resource mobility; and,
- iv. perfect information.

Many authors, for example, Douglas (28) and Gallaway (37), have used the perfect market model, either explicitly or implicitly, to describe and analyze economic acts. The notion of perfect competition is the basis of one theory of wages: the marginal productivity theory of wages (43; 44).

The usual conclusion from this model is that a single price prevails and that the market is cleared. To ensure that a single wage prevails in labor markets and that no wage differentials can exist, Gallaway added three more assumptions: No differences in worker's preferences; no non-wage elements in the work preference functions of workers; and, workers maximize the utility function of their income-leisure preferences (37, p. 695). Interestingly enough, Gallaway's model eliminates the possibility of some jobs possessing disutility. Moreover, it also assumes away the likelihood of some jobs having a "social" or non-economic payoff (44, pp. 316-319; 70, p. 73 and pp. 556-557).

b. The neoclassical market With the neoclassical market, deviations from the perfect market are allowed. Workers no longer have perfect knowledge. Non-economic variables are admitted into the analysis. Nevertheless, this market is still price-oriented with workers moving in favor of "net economic advantage" so that over time the wage level will approach equality for all, holding quality of the labor force constant (11, p. 83; 44, p. 73; 70, p. 76; 88, p. 210; 103, p. 99).

c. The natural market From the vast amount of data that has been generated on worker profiles, wages, working conditions, non-wage motivations, etc. (29, p. 11), it seems reasonable to conclude that the labor market is quite imperfect (8, p. 245; 16, pp. 229-230; 51, pp. 92-93; 58; 88, pp. 108-109; 91, pp. 115-116). Kerr suggests (52, p. 281) that "the worker operates within the market as he sees it, and his view is limited by a lack of knowledge and a restricted concept of himself." (The teacher market approximates the natural market.)

d. The institutional market This market is characterized by groups (e.g., unions, managements, governments) that interact in the labor market. Institutional rules emerge in such areas as seniority, wage-setting, promotion, etc. (8; 83). Further, the rules tend to reduce worker mobility as seniority, pension benefits, etc. accrue to the worker (118). The interrelatedness of labor markets is now achieved through the bargaining power of the institutions that are involved. The theory of wage determination now shifts from a unique and determinate equilibrium price to indeterminacy. Bilateral monopoly and bilateral oligopoly models have been used to illustrate the phenomenon of wage indeterminacy.

e. The managed market This market differs considerably from the first four with the addition of a third party, government. A managed market would be more appropriate for a command economy than a market economy. Nevertheless, Kerr notes that a number of economists "have deemed it [the labor market] unsupportably imperfect ... [and] ... some sort of managed market is offered as the solution to the shortcomings" (52, p. 283). Government would manage the economy with respect to wages by enforcing competition or fixing the wage level so that competition and efficient allocation would occur (52, pp. 283-284). Kerr suggests that the managed market would limit producer control and restore the supremacy of the consumer. In this vein, Galbraith presents his readers with a sharply critical view of the productive sector of the economy (35, pp. 396-399) while Salkever (91, pp. 115-116 and p. 135) and Solo (105, pp. 12-15) present relatively objective, academic views of the managed market.

4. Demand and supply of labor

In labor markets a considerable amount of obscurity, uncertainty, and imprecision results from imperfect information, poorly identified skill differentials, and improperly perceived utility-income functions of workers and output-wage functions of employers. Differing hiring practices and standards of employers, workers' preferences for geographical location cause further problems of analysis (8, p. 245; 51, p. 92). These difficulties have been succinctly summarized by Caplow and McGee: "... there is a great conglomeration of myth and legend and singular lack of straightforward analysis with regard to the workings of the marketplace" for labor (16, p. 230).

A further complicating feature of labor market analysis is, as Dunlop has noted (29, p. 15), that "wage theory has tended historically to disintegrate on the supply side" (see also section 4(b) below). And to this difficulty can be added the emphasis of economic theorists upon the role that wage theory has held in distribution theory: "Wage theory, per se, is a subordinate part of distribution theory, and deals with the determination of labor's share of social income" (91, p. 1).

Not only has labor market analysis and theory suffered from the above problems, but economic theorists have not penetrated its shroud of mystique very well. Dunlop (29, pp. 12-13) has observed that part of the difficulty in analyzing the labor market in the United States can be attributed to over-specialization in the economics profession:

"... in which general economic model builders are not familiar with labor market developments and in which labor market specialists are inadequately familiar with central theoretical developments. It should also be reported as a fact that labor market or wage specialists have all been most uncomfortable

with 'received' theory. This dissatisfaction arises in part from expecting too much from any theoretical analysis, in part from a lack of application of the most advanced theoretical analysis, particularly dealing with the total system, and partly from the inadequacy of the theoretical analysis itself."

It is within this amorphous mixture that the demand and supply of labor will be developed (i) in general, and (ii) with specific reference to the subject of this report, teachers.

a. Demand In Dunlop's (29, pp. 4-11) brief analysis of the historical development of demand theory, he notes that the demand theories for labor have switched from pessimism to optimism in the last century. The Malthusian population theory, the labor market model of perfect competition, and the wages-fund theory of income distribution all led to the same pessimistic conclusion: a single, subsistence level of wages would prevail. Subsequently, the marginal productivity theory of labor demand (product exhaustion) emerged. This theory was still concerned with income distribution although it did permit a more optimistic conclusion about wages since workers, according to this theory, would be paid a wage determined by the value of their marginal product (assuming perfect competition in both input and product markets). This theory was not tied to the Malthusian population theory. Moreover, the productivity increases attributable to labor would permit higher real wages to be paid.

Contemporary demand theory "is characterized by great expansion in organized statistical and quantitative data" (29, p. 11). Current labor market theory has moved away from the neoclassical marginal productivity theory, integrating this theory with administrative arrangements, the

history of wages in different occupations, the wage levels of others with whom workers are in contact, the age of the industry, the growth rate of the industry, and so on.

In the education industry measures of individual resource productivity have not been successfully obtained although estimates (24) have been made of the contribution of education to growth in the economy. Due to the difficulty of evaluating the productivity of individual teachers, the use of a productivity index as a means of determining teacher compensation seems hopeless given the current state of the arts (5, pp. 426-434). Probably the prevailing wage level of teachers is most significantly influenced by the prevailing wage levels in occupations that compete for the kinds of services that teachers provide.

In recent years many teachers have ceased to "equate dedication with poverty" (19, p. 33) and have "become increasingly militant and dissatisfied by low pay, slum conditions, long hours, and unruly children" (80a, p. 11). They seem to be rejecting the image that has been associated with their profession for so many years:

"Before the invention of the art of printing, a scholar and a beggar seem to have been terms very nearly synonymous. The different governors of the universities before that time appear to have often granted licenses to their scholars to beg."
(103, p. 132)

It would appear that teachers are in the process of collectively seeking a higher level of real wages. This represents a break with the historical pattern of wages in education and will ultimately lead to the consideration of the question: "What is the value of a teacher's contribution to the economic system?" Although this question will probably

acquire increased attention in the future, and although it is an important area of interest, it is not a point of interest in this report.

b. Supply Since labor market theory tends to disintegrate on the supply side, this section will be developed completely within the context of the market for teachers.

The market for teachers is not homogeneous. Even when a teacher has fulfilled the certification requirements (117), he is still part of a noncompeting group (14, pp. 62-112; 51, pp. 93-94). Kindergarten teachers are not perfect substitutes for mathematics teachers, physics teachers, physical education teachers, and so on. In a free society, and assuming that the supply of teachers is divided and that there is at least some atomistic competition, then the notion of a simple supply schedule for teachers is not feasible. If it is further assumed that the individual suppliers of teaching services act to maximize "net advantages" (44; 60; 70; 88; 89), it becomes increasingly necessary to specify a supply relationship for each teacher that includes a great number of economic and noneconomic variables.

If the theory of supply in this section is examined from the point of view that "in many ways the job-seekers' motivations defy the assumptions of economic model-builders and conform to the stereotype of a man who stresses matters other than money" (13, p. 248), and that individual suppliers of teaching services seek to maximize the value of a subjective and ordinal utility function, then job choice can be related to the many examples in the literature pertaining to this maximization process. Among the literature that would seem to be relevant would be Blau, et al. (7, p. 533), Gallaway (37, p. 696), Hicks (44, p. 315, p. 319), Katona

(49), Lester (60, p. 3, pp. 95-96), Luce and Raiffa (65), Myers (72; 73), Reynolds (88, p. 83, pp. 208-212), Rottenberg (90), Salkever (91, p. 135), Sheppard and Belitsky (98), Simon (101, p. 33, p. 43), Suppes (108), and Wolpert (118) to cite but a few of the many references that are available.

If a closed economy is assumed for the sake of simplicity in which there are:

- i. m individuals-- $i = 1, 2, \dots, m$;
- ii. n employment positions-- $j = 0, 1, \dots, n$ (0 is unemployment);
- iii. r "job conditions" -- $k = 1, 2, \dots, r$ (Salary would be one job condition. Others would be teaching assignments, friendly colleagues, location, etc. that influence the supply decisions of each supplier); and
- iv. T years-- $t = 0, 1, \dots, T$ (Each supplier makes his estimate of job satisfaction over T years).

Then, the following model can be written:

$$(1) \quad EU_{ij} = \sum_k \sum_t p_{ijkt} s_{ijkt}$$

s_{ijkt} = the satisfaction (utility) assigned by individual i to working at job j at time t for job condition k

p_{ijkt} = the probability value assigned by individual i to the possibility that job j at time t will have job conditions k . $\sum_k p_{ijkt} = 1$, for all i, j , and t

EU_{ij} = the expected utility of job j for individual i

The above model can be considered to be completely general. It would include money outlays, opportunity costs, psychic costs, and so on.

The above model requires a brief explanation. It is formulated so that at time 0, individual i looks at job j and estimates the utility that he attaches to each of the k job conditions that would influence his decision to continue in job j (if he is not employed, $j = 0$), resign from job j or accept j as the case may be. Moreover, individual i does not know with certainty that he will obtain the utility that he assigns to the k job conditions; hence, he assigns a probability value, p_{ijkt} , to each utility value, s_{ijkt} . Finally, since individual i is not only concerned with maximizing the value of his expected utility at time 0, the model is written so that he will estimate his expected utility for j over the time horizon T years.

In summary, individual i assigns a utility value to the job conditions variable k in job j over the relevant time horizon, T . A probability value, p_{ijkt} , is assigned to each utility value, s_{ijkt} , and the expected utility for each t is summed over T . Furthermore, it would be theoretically possible for each i to compute an EU_{ij} for n different jobs, although it is likely that i would only consider a subset of n . His decision criteria is very simple: Individual i would choose the largest EU_{ij} over all j positions considered.

The decision criteria and maximizing criteria of individual i can be illustrated by the following example in which it is assumed that i is currently employed ($j = 1$) and his expected utility is EU_{i1} from this position and EU_{ij} is his expected utility from one or more other positions

($j \neq 1$). Then,

- a. if $EU_{i1} > EU_{ij}$ for all j , $j \neq 1$, then i will not be in the job market;
- b. if $EU_{i1} \approx EU_{ij}$ for all j , $j \neq 1$, then i may or may not be looking at alternative employment opportunities; and,
- c. if $EU_{i1} < EU_{ij}$ for at least one j , $j \neq 1$, then i will be in the job market since his present position ($j = 1$) has a lower expected utility than at least one other alternative.

Behrend (4, p. 74) in his study of the normative factors influencing the supply of labor in English grammar schools stated a view that corresponds very closely to the above model:

"The teachers planned their moves carefully while the workers did not. ... The teachers weighed the advantages and disadvantages of the prospective job against those of their present job and moved when, in their view, the balance was in favor of the new job, and when no restraining factors were operating. ... These advantages do not contradict the economist's assumptions that individuals move in order to maximize their net advantages."

The above model is perfectly general. The n jobs could be defined to include all teaching positions in the closed economy, all employment positions in the closed economy, or if the assumption about the closed economy is relaxed, it could apply equally well to all employment positions irrespective of national boundaries.

While it is theoretically possible for i to consider all j employment opportunities, this is not very realistic. Because of geographical immobility, non-competing groups, the lack of job information, and an expected increase in the marginal cost of each additional job search, it would seem reasonable to anticipate that the expected utilities would be computed for only a small subset of the available positions (perhaps, in

the case of teachers, 15 or 20 would be about the maximum) (106, p. 94, pp. 101-103).

The above model defines a very large matrix with n jobs (columns) and m individuals (rows) where each ij cell would have an EU_{ij} value (EU_{ij} could be positive, negative or zero. The j jobs not known to i would have a zero value).

c. Demand revisited Model (1) above provides a framework for evaluating demand as well as supply. Individual demanders for job j also have a complex function to be maximized. For example, each demander desires to hire some individual i that will have numerous "worker conditions" that would seem to include the academic qualifications required for job j ; be an agreeable individual; be able to teach well; be experienced; be likely to stay in the school system for some time into the future; and so on. Thus, the demander for job j would presumably wish to maximize an expected value function in choosing among the individual suppliers of teaching services. He might maximize a function of the following form:

$$(2) \quad EV_{ij} = \sum_k \sum_t q_{ijkt} d_{ijkt}$$

d_{ijkt} = the value assigned by demander j to i 's working at his job at time t when i has worker conditions k

q_{ijkt} = the probability assigned by j to the possibility that i will have worker conditions k at time t . $\sum_k q_{ijkt} = 1$ for all j , k , and t , where $k = r+1, r+2, \dots, s$

EV_{ij} = the expected value from employing individual i in job j

Conceptually the demand model parallels the supply model completely. The only change of significance is the way that k is defined. For the supplier it is defined as "job conditions" where $k = 1, 2, \dots, r$. For the demander it is defined as "worker conditions" where $k = r+1, r+2, \dots, s$. And as was the case for the supply model, the decision for demander j requires that he choose the supplier i maximizing EV_{ij} among the set of available job candidates for that position.

Models (1) and (2) can be simplified. Decision-making under uncertainty requires that the decision-maker maximize from a set of feasible acts, G , by selecting some act, $g(y)$, that is determined by some index. The demander then selects those acts, $g(y^*)$, that provide a maximum in G under the condition that $g(y^*) \geq g(y)$ for all y in G (65, pp. 15-17).

5. The decentralized labor market revisited

From a theoretical point of view, equations (1) and (2) define the workings of the decentralized labor market. Through efforts of the human calculus, suppliers can use present information to estimate the expected utility of the jobs x in the set F and choose $f(x^*)$. Meanwhile, the demanders of inputs seek information to estimate the expected value of the individuals y in the set G and choose $g(y^*)$. When a supplier i and a demander j independently find that their subjective evaluations are maximized, an offer would presumably be made by j . If i would accept the offer, the market transaction would end. If i felt that the terms of the offer could be improved, a period of negotiations would occur. The final result would depend on the strength of positions of the negotiators and their negotiating ability.

In sum, the labor market is perceived to have three steps: (1) information gathering; (2) market negotiating (might not be present in every case); and, (3) agreement or disagreement. It has been assumed that the maximizing process is part of the first step. The steps themselves may occur together or separately, and they may not be of equal importance and length. The information gathering step is probably the most time consuming and costly.

In view of the importance given to Kerr (52) earlier, a comparison of this formulation to Kerr's would seem appropriate. First of all, the above method has been developed as a more general approach to labor markets than that of Kerr (the managed market excepted). Each of the perfect, neoclassical, natural and institutional markets are explicitly included in models (1) and (2). For example, given the assumptions of the perfect market, there is but one variable, k , for both suppliers and demanders; namely, price, and both p_{ijkt} and q_{ijkt} are equal to unity for t if price is constant (i.e., $p_{ijkt} = 1$ if $k = P^0$ and $p_{ijkt} = 0$ if $k \neq P^0$ and similarly for q_{ijkt} . The term P^0 is constant price). Proceeding to the neoclassical market, additional k variables are introduced into (1) and (2), of which some can be noneconomic in nature. Moreover, since the assumption of perfect knowledge is relaxed, the probability values p_{ijkt} and q_{ijkt} will no longer be equal to unity with respect to price at time zero, although both approach unity over time since Kerr hypothesizes that the wage level will approach equality in the long run.

The natural market is clearly included since the model admits of any k variable and any probability value both for suppliers and demanders.

Finally, the institutional market is included since the addition of institutional constraints (e.g., certification requirements) merely adds additional k variables and different probability values for the suppliers and demanders.

The managed market of Kerr is also included; however, it should be noted that this market, as defined by Kerr, is one that reduces the institutional impact of demanders and increases the role of suppliers by giving them greater market power than they would have in the absence of the managed market. In other words, the managed market merely imposes constraints on the k variables ($k = r+1, r+2, \dots, s$) of the demanders.

6. The teacher shortage

The free market system depends on price and other adjustments in the decentralized labor market when excess demand or excess supply are present. Given that there is a teacher shortage (i.e., excess demand for teachers), then, the teacher shortage can be viewed in a number of different ways. And for each different situation of shortage, the shortage solution may be different.

If T is the set of all teacher inputs, F is the set of teaching jobs and G is the set of all jobs ($F \subset G$), then, the shortage of teachers may be defined by one or more of the following:

- a. if $T < F$ in absolute terms with the elements of both sets assumed to be homogeneous, then a teacher shortage can be said to exist;
- b. if $T \geq F$ but there exists a T' (e.g., physics teachers) and an F' (e.g., vacancies in physics) such that $T' < F'$, then a dif-

ferential shortage exists;

- c. if $T \geq F$ but there exists a T'' ($T'' \subset T$, and all of the elements of T'' are homogeneous) such that $T'' < F$ and \tilde{T}'' are poor or inadequate teachers, then a shortage exists with respect to qualified teachers (i.e., T'');
- d. if $T = F$ (no differential shortages are assumed to exist) but there exists an F^* ($F^* > F$) where F^* defines a "social optimum" (e.g., a political optimum or need), then a shortage may be said to exist since $T < F^*$;
- e. if the position chosen by some teacher is $g(x^*)$ on the basis of his subjective valuation when $T = F$ (no differential shortages are assumed to exist) where $g(x^*) \in G$ but $g(x^*) \notin F$, then a teacher shortage will exist; and,
- f. if $T \geq F$, but at the prevailing wage, S , there exists a T^0 ($T^0 \subset T$) such that $T^0 < F$, then the usual case of excess demand is being demonstrated.

Each of the above illustrates a possible approach to the problem of the teacher shortage. The appropriate definitions of shortage used in this study are contained in (e) and (f) above. The main emphasis has been placed upon definition (e) which will be discussed in greater detail below while definition (f) will be approached through a multivariate regression model in which the relative importance of salary will be evaluated with respect to its relative impact on the turnover rate in the sample school districts.

Definition (e) contains the essential notion of the shortage as the subsidiary definitions illustrate below:

e_1 . If $T = F$ and there exists an element of T , x , such that x does not know of some job y , $y \in F$, and x seeks employment in G (i.e., $\approx F$) then a shortage would exist due to the failure of x to obtain sufficient information about y ;

e_2 . If $T = F$ and x uses different search channels from those used by y such that neither comes in contact (i.e., a communication gap exists), then a shortage exists if $g(x^*)$ is chosen, where $g(x^*) \in G$ and $g(x^*) \notin F$; and,

e_3 . If $T = F$ and the variables in the decision set of x are perceived incorrectly by y (e.g., y thinks that fringe benefits are unimportant while x considers them to be very important), then x may very well choose $g(x^*) \in G$ rather than $f(x^*) \in F$, where $F \subset G$ but $f(x^*) \neq g(x^*)$ since the subjective and ordinal function of x is not maximized in F due to the incorrect perception of the relative importance of the variables in the decision set of x by y .

7. The role of information in labor markets

Both demanders and suppliers will base their decisions on information that is not readily available (1, p. 324), that is difficult to keep current (106, p. 94), and that especially for "long-distance migration--information about prospects must somehow compensate for the absence of personal experience" (118, p. 162).

The amount and quality of information available to the participants in labor markets (e.g., teachers and LSD administrators) has been studied by numerous researchers. Some of the wide-ranging results suggest (a) that man is a creature of habit and only responds to strong stimuli and

that "in the absence of such stimuli, people continue to do what they have done before under similar circumstances; then habits determine behavior" (49, p. 22); (b) that there is "a chronic lack of information" (16, p. 229), and that the knowledge "that most workers have of alternative job opportunities is limited" (72, p. 76); (c) that a worker's decision on employment "usually depends on a comparison between the characteristics of the job and the worker's minimum standards, rather than on a comparison of the job with other alternatives" (88, p. 212) and maximizing behavior; and (d) that ultimately "the operation of the labor market is intimately affected by the amount and kinds of labor market information that workers have" (79, p. 146) and that "unless workers have reasonably accurate and complete knowledge of the extent and nature of employment opportunities, there is no basis for assuming a purposeful movement of workers among jobs, and the foundation of theoretical analysis is weakened" (79, p. 187).

An inadequately informed labor force will tend to reduce the mobility of workers between jobs (8, p. 247; 64; 88, pp. 83-85; 118; 119) and result in some misallocation of labor inputs (9, p. 444; 79, p. 187). Both of these reasons are of considerable importance in the operation of labor markets (e.g., teacher markets) and both are closely related to the amount and quality of information available.

Although it would be interesting to study the role of information in the teacher market in Iowa this objective was never investigated, per se, in this study. The objectives were identified as being that of teacher choice, channels of the job search and other similar topics. This is the subject matter of the next chapter.

III. RESEARCH OBJECTIVES

In Chapter I it was noted that this research topic was designed to study the teacher market and teacher shortages. In Chapter II attention was placed upon markets and the role of subjective valuations in the labor market. This chapter relates the specific research objectives that were developed from the following general objective: The acquisition of descriptive information about the market for teachers in Iowa and the evaluation of the choice or decision variables that are characteristic of this market and its participants.

1. Demand for teachers

The demand for new teachers (NETs) was approached from the several specific objectives explained below.

a. Quantitative estimates of demand and turnover Sample survey
data was obtained to estimate the number of vacancies in the state of Iowa and the reasons for the vacancies arising in the first instance.

The demand for NETs by an LSD at time t , D_t , can be expressed as follows:

$$(1) \quad D_t = D_{1t} + D_{2t}$$

D_{1t} = number of contract renewals at time t by
teachers employed at $t-1$

D_{2t} = number of vacancies available for NETs at
time t

Moreover, D_{2t} is a composite variable:

$$(2) \quad D_{2t} = \Delta Q + \Delta E + R_{t-1}$$

ΔQ = change (increase or decrease) in the number of
teachers employed at time t due to quality changes

ΔE = change in the number of teachers employed at
time t due to enrollment changes

R_{t-1} = number of teachers ceasing employment effective
the period ending $t-1$ that must be replaced by
NETs (i.e., turnover)

Although R_{t-1} is expressed as a simple variable in equation (2), it is actually quite complex since the market for teachers is divided: Teachers differ by the subject area they are qualified to teach; by grade level to be taught; the competence and ability of the potential teachers; geographical location; and so on. In this analysis R_{t-1} is treated as a simple aggregate.

Finally, the rate of turnover, τ , can be defined as follows:

$$(3) \quad \tau = \frac{R_{t-1}}{D_t - \Delta Q - \Delta E} 100 = \frac{R_{t-1}}{D_{1t} + R_{t-1}} 100$$

Thus, the turnover rate is defined as the number of teachers per 100 that must be replaced at time t ; hence, it is necessary to eliminate changes in the number of teaching positions due to enrollment or quality changes.

b. Reasons for teacher resignations Based on the assumption that resignations occur in all LSDs over time, a second objective was to identify the LSDAs' perception of the three most frequent causes of teacher resignations. A teacher's decision to resign is based on one or more variables in his subjective choice function EU_{ij} that he tries to maximize. It is of interest to determine whether or not LSDAs perceive these variables correctly.

c. Ease of filling vacancies One of the definitions of a teacher shortage pertained to differential shortages. This kind of shortage and adaptations of it can be measured in numerous ways. For example, Scamman (93, pp. 142-156) computed a ratio based on the number of semester hours of formal preparation in selected teaching areas. In his computations a high ratio indicated that teachers in the teaching area were well qualified while a low ratio indicated that teachers were poorly qualified on the average. Moreover, a low ratio would indicate that a differential shortage existed in the area.

Kershaw and McKean (53, pp. 103-114) evaluated differential shortages in two ways. First, they computed the percentage of teachers prepared in selected subject areas that are teaching outside their major field, or their major and minor fields. Secondly, they counted the percentage of unfilled teaching assignments in selected teaching fields. This latter method has a serious deficiency since it conceals misallocations (e.g., it conceals an elementary education teacher who is teaching high school physics).

This study did not seek quantitative estimates of differential shortages. Rather, the objective was the identification of the teaching fields and grade levels that are the easiest and hardest to fill with qualified teachers. The ease or difficulty of filling vacancies constitutes one of the worker conditions in EV_{ij} . For a teaching field in which teachers are in excess supply, the maximization of EV_{ij} permits more freedom of choice than one in short supply. Thus, there would be more applicants and more opportunities to compute EV_{ij} .

d. Search channels and search costs

The recruitment of teachers by an LSD requires the communication of information to prospective employees. The LSDAs were asked to identify the search channels they use to find teachers for existing vacancies and the four channels that are best for communicating vacancy information to potential suppliers of teaching services to their LSD (106, pp. 101-103). The communication of information permits teachers to learn of vacancies and compute an EU_{ij} for them.

In addition, the LSDAs were asked to estimate (i) the amount of money budgeted for the recruitment of NETs, and (ii) the amount of time (opportunity costs) devoted to the search for NETs.

e. Maximization of EV_{ij}

A large number of decision variables influence an individual LSDA's decision set with respect to the presentation of a firm offer to an applicant for some teaching vacancy. LSDAs probably prefer to fill vacancies with qualified teachers (i.e., certified, experienced, etc.) to teach in a class and/or subject area. Some LSDAs might prefer teachers who are inexperienced while other LSDAs may prefer to hire experienced teachers.

Many other variables can be suggested that influence an LSDA's decision to make an offer. Unfortunately it is most unlikely that honest answers could be obtained from many LSDAs on this subject: They may prefer Caucasians to Blacks, men to women, inadequately prepared teachers to the well-prepared teachers (i.e., lower salaries), Protestants to Jews, young teachers to old teachers, and so on. Several inquiries about these variables and expected responses were solicited from individuals in public education. It was concluded that few LSDAs would be willing to

commit themselves to positions on matters that are so closely related to civil rights and equal opportunity. The decision was made to investigate a more operational objective.

If the LSDAs incorrectly perceive the relative importance of the choice variables of teachers, then the teacher shortage may be abetted because some, or many, of the potential suppliers of teaching services are attracted into employment in other occupations where employers are more perceptive than the LSDAs with respect to these choice variables. Thus, this objective was to determine the LSDAs' perception of the choice or decision variables in the expected value function EU_{ij} that teachers maximize in their search for employment. Thus, no attempt was made in this study to evaluate the variables in EV_{ij} .

f. Demand objectives in summary The general objectives investigated with respect to demand include:

- i. quantitative estimates of demand and turnover;
- ii. reasons for teacher resignations;
- iii. ease or difficulty of filling vacancies;
- iv. search channels and search costs; and,
- v. perception of teachers' choice or decision variables.

2. Supply of new teachers

From an operational standpoint, the new teachers in completing the questionnaires provided an opportunity to describe and analyze the several areas reviewed below.

a. General description of the NETs The following descriptive characteristics or "signature" of the NETs was sought: (i) sex; (ii) age; (iii) marital status; (iv) years of teaching experience; (v) highest degree held; (vi) sources of supply (or what will be called the work activity of the previous school year, 1967-1968); (vii) home state; (viii) percentage of time employed as a teacher in the 1968-1969 school year; and, (ix) the pattern of movement of the NETs with teaching experience between the three local school district size strata utilized in this study for descriptive and statistical purposes.

b. Maximization of EU_{ij} The choice model EU_{ij} represents a theoretical and general formulation of the choice process for a supplier of teaching and other labor services. Its computation requires (i) the variables in the choice set, and (ii) the utility and probability values for the job conditions. The objective in this study was to obtain insights into the relative importance of a prepared list of 24 variables. This more modest objective was chosen for the collection of ordinal and aggregate data that would permit limited statistical analysis and inferences about the teacher shortage.

In addition, the 24 variables were summarized to permit the comparison of five aggregate choice variables: the school; the administration; an economic variable; geographical location; and, future employment prospects.

c. Other dimensions of job choice Teachers may not seek to maximize a subjectively determined choice set; hence, they were asked whether or not they had a preferred teaching position (i.e., to have a position preferred over all others would, by inference, suggest that one EU_{ij}

would be perceived greater for some LSD than for all others considered). As a sequel it seemed of interest to discover how many NETs obtained their preferred position, if they had one.

The number of applications, interviews and firm offers received define further dimensions of choice. For example, the more firm offers, the more real choices that an individual NET has.

A final aspect of choice pertains to the existence of a minimum salary level. A minimum salary permits inferences about EU_{ij} . If a teacher's minimum is met the actual salary may take on decreasing importance in EU_{ij} .

d. Search channels and search costs The search for employment involves (i) the channels used to learn of vacancies and/or advise prospective employers of their availability, and (ii) the costs of job search.

The objectives with respect to job search were (i) the relative value of a selected list of eleven job search channels, (ii) the search method by which each NET "first learned" of the position he was hired to fill for the 1968-1969 school year, and (iii) a comparison of these responses.

The final objective under the heading search was that of search costs. It was assumed that there are only two cost elements in job search (i.e., money outlay, and the time or opportunity cost of the search).

e. Reasons for resignations The decision of a teacher to resign occurs when the EU_{ij} in his present position is less than in another. Since the NETs in the sample could be experienced or inexperienced, this objective had two parts: (i) why did the experienced teachers resign

from their previous position? and (ii) for what reasons would all of the NETs be most likely to resign from a position in public education in the future?

f. Alternatives to teaching Teachers are not restricted to teaching. The n jobs in EU_{ij} are not restricted to public education; hence, the alternatives to teaching employment was a general objective and was approached in several ways. First, the NETs were asked what they would most likely have been doing if their 1968-1969 teaching position had not been accepted. Second, they may have considered employment outside of public education for the 1968-1969 school year. If non-educational employment were investigated, they were asked to report the number of applications, interviews, firm offers received and the kind(s) of employment considered. Third, the acceptance of a teaching position is not a permanent commitment; hence, a further objective was the determination of non-educational employment activities that would attract the NETs from public education. The final objective was an estimation of the number of years the NETs planned to continue in public education in some capacity.

g. Supply objectives in summary The general objectives investigated with respect to the supply of teaching services included the following:

- i. description of NETs in the sample;
- ii. description and statistical analysis of numerous variables and dimensions of job choice;
- iii. search channels and search costs;

- iv. reasons for teacher resignations; and,
- v. employment alternatives to public education.

3. Market for public school teachers in Iowa

The final objective pertains to the market for school teachers in Iowa. Since a market requires exchange, there must be at least one demander and one supplier of any good or service. The approach to the market was delineated as the comparison of the several types of data obtained in the two surveys. The four objectives that follow are part of the market process.

a. Search channels and search costs If the demanders and suppliers of teaching services use different search channels, then, it is possible that the teacher shortage may be affected by this. Although one demand and one supply objective were outlined previously with respect to the search channels used by the market participants, the main objective was the comparison of the two sets of responses so that an inference could be made about the teacher shortage.

A further objective was to estimate the cost of operating this market for the state of Iowa by summing the outlay and opportunity costs for both the demanders and suppliers of teaching services.

b. Choice variables The specific objective with respect to the two sets of responses on the choice variables was the evaluation of whether or not the LSDAs perceive the choice variables the same as the NETs. Should there be a difference, then, it would be possible to infer that the failure of the LSDAs to perceive the NETs' choice variables correctly could be a cause of the teacher shortage.

c. Turnover rate The third objective of the market analysis was the explanation of the turnover rate between LSDs by means of multivariate regression analysis. By identifying the variable(s) that contribute to turnover, it would be possible to make inferences about the teacher shortage. For example, if salary should emerge as a relevant variable, then, it might be possible to infer that the teacher shortage is partially attributable to the prevailing salary levels.

d. Misemployment of NETs The final objective was related to the allocation of NETs to their teaching assignments. For example, one might ask whether or not teachers are misemployed (e.g., a music teacher whose primary teaching assignment is industrial arts). To the extent that misemployment occurs (as a result of differential shortages?) and produces teacher dissatisfaction, would be the extent to which (i) the market would not be performing well, and (ii) market participation would be increased (i.e., the turnover rate would be higher).

e. Market objectives in summary The general objectives considered with respect to the market for public school teachers in Iowa included the following:

- i. search channels and search costs;
- ii. comparison of LSDAs' rating of choice variables versus the way the NETs rated the same variables;
- iii. regression analysis of teacher turnover; and,
- iv. the misemployment of NETs.

In the next chapter a brief description of the way this study was conducted and the numerous steps that took place in the acquisition of the research data that permitted the preceding objectives to be achieved.

IV. METHOD OF PROCEDURE

The empirical data used in this research project was obtained, in the main, by survey techniques. In the first of two surveys, the local school district administrators (LSDAs) of the 59 local school districts (LSDs) drawn at random in the sample were interviewed. In the second survey of the 59 LSDs, the data was obtained from the new teachers (NETs) by means of a mail/self-administered questionnaire. This chapter is mainly devoted to a review of the methods of procedure and strategies used in the two surveys.

1. Universe and sample

The universe for this study can be viewed in three ways. First, there is the universe of LSDs. Secondly, there is the universe of LSDAs. Finally, there is the universe of teachers. Each universe is relevant in this study and each will be reviewed briefly.

a. LSD universe In the Spring of 1968 Iowa had 455 operating public high school districts. The universe of LSDs was defined to be these 455 LSDs. The Statistical Laboratory of Iowa State University, Ames, Iowa, drew the sample from this universe.

The six largest LSDs in Iowa were included in the sample as "certainty" districts due to their size. From the remaining 449 LSDs, 53 were selected at random. To ensure that all geographical parts of the state would be included, the 53 were selected from four geographical areas (i.e., northwest, northeast, southwest and southeast) of the state.

In the case of the 53 randomly chosen LSDs, each LSD had one chance in about 8.47 of being selected in the random draw.

b. LSDA universe The universe of LSDAs would include the school superintendents and their assistants, personnel directors, curriculum and other directors, principals and their assistants, teacher supervisors, and others whose time would be devoted to administrative, but not clerical, duties.

One LSDA was interviewed for each of the LSDs in the sample. The interviewers were instructed to seek an interview with the school superintendent. In the smaller LSDs most of the persons interviewed were superintendents while in the larger LSDs the interviewers were referred to those administrators who were most closely involved in the search for and recruitment of new teachers (e.g., personnel directors). The following table (Table 4.1) lists the titles of the LSDAs interviewed and the number of persons with that title who were interviewed.

c. Teacher universe The teacher universe could include all of the teachers in the 455 LSDs. For example, in the 1967-1968 school year there were 33,675 teachers in the 455 LSDs and 9572 of these teachers were under contract in the 59 LSDs in the sample (23, p. 93). Since many of the 9572 teachers in the sample LSDs would not have been in the market recently, the information that they could be expected to provide about the teacher market would be quite poor; hence, the universe of teachers was defined to include only those teachers who, in September, 1968, had not taught in that LSD during the previous school year. This group of teachers is described as "new teachers" (i.e., NETs) throughout this report. This definition would include both experienced and inexperienced teachers and only those teachers with a recent market experi-

ence. Based on the survey data obtained from the LSDAs during the June survey, there were 1756 NETs in the 59 LSDs in the sample.

Table 4.1. Titles of LSDAs interviewed and the number with each title^a

Titles of Persons Interviewed	Number of Persons Inter- viewed with Each Title
Superintendent	49
Director of personnel	5
Curriculum director	1
Director of research	1
Principal	1
Secretary of the School Board	1
Administrative assistant	<u>1</u>
Total	59

^aSurvey data.

The sample of the NETs was based on the six "certainty" districts plus the 53 LSDs drawn at random from the universe. For the 449 smaller LSDs, the probability that a given NET would be in the sample was 0.118 since all of the NETs in these districts were included in the teacher survey once a district was drawn (i.e., the sampling rate was one in 8.47 for the 449 smaller LSDs).

Approximately the same sampling rate was used for the six certainty LSDs. To achieve this, one of every eight schools in the certainty LSDs were included in the sample. Consequently, in the certainty LSDs, the probability was about 0.125 that a given NET would be included in the sample. As a result, it can be concluded that for any NET in the state of Iowa the probability of being included in the sample was 0.12.

2. Survey instruments

With two surveys it was necessary to construct two survey instruments, one for the LSDAs and one for the NETs. A copy of the interview schedule used in the survey of LSDAs is included as Appendix F while the survey questionnaire used for the NETs is included as Appendix G.

Although both survey instruments were developed over a period of time, the one used for the LSDAs was developed over a period of about six weeks to two months while the questionnaire developed for the NETs was constructed over a period of about one and one-half years. As a result, the latter is much superior.

Numerous sources were found to be of greater or lesser value in the development of the two survey instruments. Among the sources used in the construction of the interview schedule for the LSDAs would be included Borg (10), Brown (12; 13; 14), Cunningham and Morey (20), Mandell (68), Myers and Shultz (74), Olson (75), Pratt (83), Reynolds (88), Stone and Kendall (107) and Yoder (120). The teacher questionnaire was developed from Behrend (4), Borg (10), Brown (12; 13; 14), Cunningham and Morey (20), Ellsbree (31), Orlich, et al. (76), Parnes (79), Reynolds (88), Sheppard and Belitsky (98), Stigler (106), Van Houten (112), and Venus (113).

Both of the survey instruments were prepared and pretested prior to their use in the field. The instrument prepared for the interview survey was pretested with five LSDAs before the field work was begun. The mail questionnaire was pretested with four new teachers prior to the beginning of the new teacher survey. None of the individuals who assisted in the preparation and pretesting were included in the sample.

3. Survey strategies and timing

For two surveys such as those used in this study, it was necessary to develop strategies and effective timing to coordinate the large number of people who became involved in this study. Sound strategies and timing were deemed crucial to the acquisition of meaningful information at a minimum cost.

At the outset it was apparent that the cost of interviewing 500-600 new teachers would be prohibitive. Thus, the survey of the LSDAs was chosen to precede the survey of the new teachers. This particular strategy was intended to obtain the demand information and to gain the support, legitimation and assistance of the school administrators for the survey of their new teachers for the school year beginning September, 1968.

The time of the year in which the surveys would be launched was also of considerable importance. It seemed reasonable that the new teachers should be approached after their job choice had been made and while the reasons, circumstances, etc. of their choice would still be reasonably fresh in their minds. Moreover, it seemed desirable that the survey be conducted either prior to or at the very beginning of their contract period so that their on-the-job experience would not influence their responses to the questions in the questionnaires. For these reasons, it seemed necessary to conduct the survey of the NETs at the beginning of the contract period (e.g., during orientation) for the 1968-1969 school year. The time of both surveys was influenced by these considerations.

It was necessary to select an appropriate timing strategy for the LSDAs. There were three relevant considerations in choosing the timing of this survey. First, the survey should be conducted at a time when the school administrators would not be under seasonal pressures that might make them unavailable for an interview. Secondly, they should have had an opportunity to participate in the market by searching for and recruiting new teachers to fill vacancies for the 1968-1969 school year. Finally, the survey should be far enough in advance of the new teacher survey to permit the survey unit to organize the LSDAs and gain their support for the second survey. After some deliberation, the latter part of the month of June, 1968, emerged as a suitable time to survey the LSDAs. The burden of the previous school year would have eased by this time (although the pressure of the July budget deadline would surely be pressing upon the time of some of the LSDAs). The month of July was rejected since many LSDAs vacation then, and August seemed unacceptable since it would not allow enough time to organize the resources for the new teacher survey. The months of April and May were never considered seriously since the preparation of the LSDA survey schedule was not sufficiently advanced in these months.

4. Chronology of the surveys

On June 11, 1968, four interviewers met and discussed the method of asking the questions and recording the answers to the questions on the survey instrument designed for the LSDAs. A letter was sent to the superintendent of each of the 59 LSDs on June 10, 1968, prior to the interviewing in order to advise them that they would be contacted in the near

future. A copy of the letter can be found in Appendix B. All but one interview were completed by the end of June and all of the interviews were completed by July 22, 1968.

On July 19, 1968 a letter was sent to each of the persons interviewed in the LSDA survey. The respective administrators were thanked for their assistance and cooperation in June and their assistance was requested for the survey of the new teachers in their LSD for the forthcoming school year. Return envelopes and a form letter were included so that the LSDAs would be able to respond with as little effort and inconvenience as possible. The form letter was used to obtain two items of information: (a) how many new teachers had been hired so that the correct number of questionnaires could be mailed; and (b) to find out when the questionnaires would be needed for distribution to their new teachers (three dates in August were included and they were asked to check one). A copy of the letter and the short questionnaire are included as Appendix C.

Those administrators who had not responded to the July 19 letter by August 19 were contacted by telephone. All the administrators agreed to assist in the survey of their new teachers.

During the month of August the mail-type/self-administered questionnaires were sent to the LSDs. An accompanying letter was included to refresh the memory of the LSDAs with respect to the purpose of the questionnaires and the persons to whom the questionnaires were to be distributed. A sample copy of the typical letter sent to the LSDAs can be

found in Appendix D. Incidentally, this was the first letter that was not a form letter.

Many of the districts returned their questionnaires promptly. Some did not act so promptly; hence, numerous telephone calls, letters and other personal contacts were made to the LSDAs who were slow in returning the questionnaires. The last of the questionnaires arrived on December 4, 1968.

5. Response rate

In the survey of the LSDAs, 59 interviews were obtained (i.e., 100 percent). Not all of the questions were answered by every interviewee. Nevertheless, 99.5 percent of all possible information was obtained.

The actual response rate for the new teachers has not been so easy to obtain. Since the questionnaires were of the mail/self-administered type, and since a list of the names of the NETs was not obtained, a definitive response rate computation was not possible. Nevertheless, by combining the vacancy information acquired in June with the number of questionnaires requested by the LSDAs in response to the July 19, 1968 letter, and with the Iowa Professional Employee Data Sheet, 1968 (48a), an estimate of the response rate of 90.5 percent was made for the NETs in the survey.

Of course this response rate is meaningless if many of the questions were unanswered; hence, it was necessary to determine the percentage of the information supplied by the 631 NETs who completed the questionnaires. The 631 new teachers provided 98.7 percent of the information requested in the questionnaires (all inadequate, incorrect and missing information

are included in the 1.3 percent nonresponse category). Therefore, the actual response rate has been estimated to be 89.3 percent for the survey of the NETs.

6. Data analysis and statistical tests

The data analysis in both surveys consisted of developing codes for the data that was gathered and having the data punched on data cards for subsequent use with the computing facilities available at Iowa State University.

Much of the data gathered in the two surveys was of the perceptive and subjective type. In other words, much of the data was ordinal (e.g., Appendix F, questions 3, 4, 5, 6, 7, 8, and so on); hence, many of the statistical tests that were employed were of the non-parametric type:

"... parametric statistical tests, which use means and standard deviations (i.e., which require the operations of arithmetic on the original scores) ought not to be used with data in an ordinal scale. The properties of an ordinal scale are not isomorphic to the numerical system known as arithmetic." (100, p. 26).

The statistical tests to which much of the data have been largely concentrated would include (a) the Spearman rank correlation coefficient, r_s , (100, pp. 202-213), and (b) the Kendall coefficient of concordance, either W , or χ^2 (100, pp. 229-238).

Some of the data used in this study is of the parametric type and the much stronger statistical tests have been used (i.e., the t and F tests):

"Some nonparametric techniques are often called 'ranking tests' or 'order tests,' and these titles suggest another way in which they differ from parametric tests. In the computation

of parametric tests, we add, divide, and multiply the scores from the samples. When these arithmetic processes are used on scores which are not truly numerical, they naturally introduce distortions in those data and thus throw in doubt any conclusions from the test. Thus it is permissible to use the parametric techniques only with scores which are truly numerical." (100, p.3).

Having briefly surveyed the objectives of this research report in Chapter 3 and having briefly outlined the methods of procedures to obtain the survey data, etc., attention can now be directed to the three data chapters that follow.

V. DEMAND ANALYSIS

An economist, unlike many other persons, has an obligation to evaluate and present demand analysis correctly. Very simply, he has an obligation to speak of demand as a schedule of prices and quantities per time period, where price is the independent variable and the demand function is homogeneous of degree zero in prices and income (43, pp. 20-22). In this chapter, however, demand is being considered from a more indefinite and, admittedly, definitionally incorrect viewpoint. Demand is being treated as (i) the number of teachers required by the 59 LSDs in the sample for September, 1968, irrespective of price, to fill vacancies; (ii) the channels of search used by the demanders (i.e., LSDAs) to find new teachers; (iii) the costs (both outlay and opportunity costs) of the search for new teachers; (iv) the LSDAs' perception of the ease or difficulty in filling vacancies; and, (v) the LSDAs' perception of teachers' choice or decision variables.

Although this approach differs from the rigid definitional, economic analysis of demand, the theory of demand is not being rejected. Rather, the objective is to look behind the demand curve at some of the variables that influence the market behavior of LSDAs. It seems reasonably clear that individual demanders do not enter the teacher market with a precise demand schedule and that what is observed by researchers (economists?) in any one time period is an average market price and the quantity that is marketed. The simple demand function conceals many variables and it is to the other demand variables that the emphasis has been placed in this chapter.

1. Description of teaching vacancies

The vacancies in public education can be described in several different ways: (i) sample data versus population estimates; (ii) reasons for vacancies occurring (e.g., increased enrollment); (iii) vacancies by grade level; (iv) reasons for teacher resignations; and (v) the turnover rate.

a. Vacancies: sample and population estimates An estimate of the total number of teachers in the state of Iowa, September, 1968, can be obtained by using the sample (Appendix F, question 1) and other data (22). For example, it can be seen in Table 5.1 that for the largest LSD size strata used in this study (i.e., 200 or more teachers) there were, in the 1966-1967 school year, 9501 teachers in this strata of which 6173 were in the random sample. It can also be seen that the LSDAs of size strata one expected to have 1310 NETs for September, 1968, and the next school year.

If a simple proportionality rule is used with the aggregates in Table 5.1, then the estimated number of vacancies for the population could be obtained as follows:

$$(1) \quad \frac{V_s}{T_s} = \frac{V_p}{T_p}$$

where

V_s = number of vacancies in the sample LSDs

T_s = number of teachers in the sample LSDs

V_p = estimated number of vacancies in the population

T_p = total number of teachers in the population

Table 5.1. Number of vacancies by LSD size strata, June 1968

	Number of New Teachers ^a June 1968	Number of Teachers _b In Sample	Total 1966-1967 ^b
Size strata 1 200 + teachers	1310	6173	9501
Size strata 2 50-199 teachers	234	1361	11452
Size strata 3 Less than 50	<u>212</u>	<u>1048</u>	<u>8596</u>
Total	1756	8582	29549

^aSurvey data.

^b(22, pp. 14-25).

and simplifying (1),

$$(2) \quad V_p = \frac{V_s T_p}{T_s}$$

If V_p would be computed from the aggregated sample data, it would be an estimate of the total number of vacancies in Iowa's public (elementary and secondary) schools for the school year beginning September, 1968.

The use of the aggregate data would not be as good an estimate of V_p as would somewhat finer estimates by the LSD size strata since estimates based on equation (2) would be greatly influenced by the largest size strata (74.6 percent of the reported vacancies in the sample were in this size strata due to the inclusion of the six "certainty" LSDs). Because of the bias introduced by the largest size strata, equation (2)

was rewritten as follows, where the subscripts 1, 2, and 3 refer to the three LSD size strata of Table 5.1:

$$(3) \quad V_p = \frac{V_{s1}T_{p1}}{T_{s1}} + \frac{V_{s2}T_{p2}}{T_{s2}} + \frac{V_{s3}T_{p3}}{T_{s3}}$$

If the data for the three LSD size strata from Table 5.1 are inserted into equation (3), the estimated number of vacancies for September, 1968, is found to be 5724.2.

b. Causes of vacancies In this study it was assumed that the teaching vacancies in a given LSD could be attributable to three causes: (i) enrollment increases; (ii) increased quality; and (iii) replacement or turnover (Appendix F, question 2). Based on the survey of the LSDAs there were 1756 vacancies to be filled for September, 1968 in the 59 LSDs in the sample. Of the 1756 vacancies, 1401 (79.8 percent) were due to the replacement of teachers who, for one reason or another, ceased to be employed in their LSD at the end of the 1967-1968 school year. A further 251 vacancies (14.3 percent) were due to enrollment increases while the remaining 104 (5.9 percent) were due to increases in quality. The number of vacancies in the sample by LSD size strata and the estimates of the causes of the 5724.2 vacancies in the state of Iowa for the survey period are summarized in Table 5.2.

c. Vacancies by grade level In addition to finding out the causes of the 1756 vacancies, the LSDAs were asked to identify the grade level ranges in which these vacancies occurred (Appendix F, question 1). It can be noted in Table 5.3 that there were 400 vacancies (22.8 percent) in senior high school (grades 10-12), and that about one-half of the

Table 5.2. Causes of vacancies by LSD size strata^a

Vacancies Due to:	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Enrollment Increases				
i. Sample	220	17	14	251
ii. Population	338.6	143.0	114.8	596.4
Increased Quality				
i. Sample	50	32	22	104
ii. Population	77.0	269.3	180.5	526.8
Replacement (turnover)				
i. Sample	1040	185	176	1401
ii. Population	1600.7	1556.7	1443.6	4601.0
TOTAL				
i. Sample	1310	234	212	1756
ii. Population	2016.3	1969.0	1738.9	5724.2

^aSurvey data and (22, pp. 14-25).Table 5.3. Vacancies in selected grade level ranges by LSD size strata^a

Grade Level Range	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Kindergarten	71	10	8	89
Grades 1-3	306	40	29	375
Grades 4-6	223	31	21	275
Other elementary	124	24	7	155
Grades 7-9	294	43	27	364
Grades 10-12	262	61	77	400
Other, Jr. and Sr. High	<u>30</u>	<u>25</u>	<u>43</u>	<u>98</u>
TOTAL	1310	234	212	1756

^aSurvey data.

vacancies occurred in grades K-6 (894 vacancies) and the other one-half of the vacancies in junior and senior high school (862 vacancies).

In collecting the survey data on vacancies by grade level it was necessary to include the "other" classification since many teachers are hired to teach in more than one of the grade level ranges used in this study.

d. Reasons for teacher resignations The LSDAs were asked to identify and rank the three most frequent reasons for teacher resignations in their respective LSDs (Appendix F, question 3). Since the rank data does not yield a single summary result, per se, the rank data was weighted and summed. Very simply, a value of three was assigned to the first-ranked item, a value of two to the second-ranked item and a value of one to the third-ranked item. By summing these weights over the 59 LSDs it is possible to compare the weighted sums based on the LSDAs' perception of the reasons associated with teacher resignations.

The quality of the answers would not recommend the responses very highly since (as the interviews indicated) the typical LSDA does not hold terminal interviews (i.e., an interview held to determine the reasons and circumstances for resignations to occur) or else teachers are merely requested to answer questions on a standard form. This result was not surprising and it was expected that the answers to this question would be conjectural. Nevertheless, their answers would reflect their perception of the reasons for resignations; hence, their perception of the reasons for teacher resignations became one of the objectives about demand.

The LSDAs in size stratas two and three reported that the most frequent reason for resignations was the movement of teachers towards better LSDs while the LSDAs in the largest size strata reported that "spouse moved" was the most frequent cause of teacher resignations. These results are reported in full in Table 5.4 for the three LSD size strata by weighted sums. Moreover, no significance can be attached to the absolute value of the weighted sums, rather, the weighted sums represent ordinal data that are unique up to a monotonic transformation.

Table 5.4. LSDAs' perception of the reasons for teacher resignations: weighted sums by LSD size strata^a

Reasons for Resignations	LSD size Strata 1	<u>Weighted Sums</u>		State
		LSD Size Strata 2	LSD Size Strata 3	
Move to better LSD	2	21	61	84
Spouse moved	18	9	35	62
Prefer different geo- graphical location	2	20	28	50
Retirement	8	10	13	31
Maternity	0	18	12	30
Marriage	9	10	7	26
Further education	2	8	15	25
Find employment not in public education	1	1	8	10
Move closer to friends and relatives	0	2	8	10

^aSurvey data.

e. Turnover rate Although the turnover rate will be considered at greater length in Chapter VII, some of the observed turnover rates have been included at this time. For example, of the 59 LSDs in the sample, the highest turnover rate (i.e., 42.8 percent) was reported by an LSD in the smallest size strata (i.e., LSD size strata 3, the strata with less than 50 teachers in each LSD). Interestingly enough, the lowest turnover rate (i.e., 3.9 percent) was also reported by an LSD in the smallest size strata. The median turnover rate for the 59 LSDs was 13.2 percent and the average turnover rate was 14.4 percent.

The estimates of the highest, average and lowest turnover rates by LSD size strata are included in Table 5.5 below.

Table 5.5. Highest, average and lowest turnover rates by LSD size strata^a

Turnover Rate	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Highest	22.0	23.6	42.8	42.8
Average	14.9	12.7	15.7	14.4
Lowest	10.5	5.6	3.9	3.9

^aSurvey data.

2. Ease of filling vacancies

The LSDAs were asked several questions that sought their perception of the ease (difficulty) of filling vacancies (i) by grade level, (ii) by subject area, and (c) in general. In addition, the LSDAs were asked to estimate the average number of applicants per vacancy and to indicate in which months their NETs either were or would be expected to be hired.

Each of the above items is related to the ease that LSDAs encounter in their search for professional employees and is, by inference, a dimension of the teacher shortage.

a. Ease of filling vacancies by grade level The LSDAs were asked to identify the grade level(s) for which it was easiest to find teachers and those for which it was hardest (Appendix F, question 5). If multiple answers were given, the LSDAs were asked to rank the alternatives.

The difficulty with questions such as this one is that the responses can become very complex and difficult to analyze. To simplify this analysis, a numerical value was assigned to each of the responses in order to find an algebraic sum and average for the responses. If an LSDA responded "easiest" for some grade level, a value of +1.5 was assigned to the response. The answer "easy" was given a value of +0.5. The answer "hard" was assigned a value of -0.5 and the answer "hardest" a value of -1.5. With the use of these weights it is possible to evaluate the responses with a simple, and ordinal measure of the ease and/or difficulty that LSDAs perceive to exist in filling vacancies in selected grade level ranges for their respective LSDs. If the algebraic sum for a given grade level is positive, then, the inference is that for this grade level range vacancies are relatively easy to fill with qualified teachers while a negative sign indicates difficulty.

The algebraic sum for the grade level range 7-9 was found to be +0.17 and was positive for each of the LSD size strata; hence, it can be inferred that the LSDAs in the sample districts find it easier to fill vacancies for this grade level range. Again it cannot be inferred that

these weighted sums have meaning as pure numbers (e.g., an LSDA might have difficulty filling vacancies in all grade level ranges but consider it easier to fill vacancies in the grade level range 7-9 than in the others).

The algebraic sum for the grade level range 1-3 was also positive (+0.61) while the algebraic sums for the other grade levels ranges were negative; hence, by inference the LSDAs find it more difficult to find qualified teachers in these grade level ranges. The results are recorded in Table 5.6 by LSD size strata.

Table 5.6. Ease and/or difficulty of filling vacancies in selected grade level ranges by LSD size strata^a

Grade Level Range	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Kindergarten	+0.50 ^b	-1.30 ^c	+0.17	-0.25
Grades 1-3	+0.30	0	+0.67	+0.61
Grades 4-6	-1.50	-0.50	+0.50	-0.12
Grades 7-9	+1.00	+0.10	+0.05	+0.17
Grades 10-12	0	+0.35	-0.79	-0.43

^aSurvey data.

^bA value greater than zero indicates ease of filling vacancies.

^cA value less than zero indicates difficulty filling vacancies.

b. Ease of filling vacancies by subject area The LSDAs were also asked to identify the subject areas for which it was easiest and hardest to find qualified teachers (Appendix F, question 6). The method of weighting used in the preceding section for the grade level ranges was also used for the subject areas. Thus, a numerical value with a positive (negative) sign is one that is perceived by the demanders of teaching services (i.e., LSDAs) to be in excess (short) supply.

Not only does one expect that certain areas are easy to fill (e.g., history and social studies, physical and health education, etc.) as expected, but that the ones expected to be difficult are difficult to fill with qualified teachers (53; 80b).

In Table 5.7 the selected subject areas have been ranked in descending order from the most highly positive algebraic sum to the most highly negative. History and social studies appears first (algebraic sum is +1.28), then physical and health education (+1.06) and business education (+0.86). Moreover, since the signs of each is positive, the implication is that these subject areas are relatively easy to fill with qualified teachers. In addition, since the signs of these subject areas are positive for each of the LSD size strata, it can be inferred that the LSDAs in each of the size strata find it relatively easy to fill vacancies in these subject areas.

The five subject areas ranked at the end of the list in Table 5.7 are negative for each LSD size strata; hence, it can be concluded that the LSDAs in each strata consider it to be relatively difficult to fill vacancies in the following subject areas: guidance and counseling

Table 5.7. Ease and/or difficulty of filling vacancies in selected subject areas in junior and senior high schools by LSD size strata^a

Selected Subject Areas	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
History and Social Studies	+1.25	+1.17	+1.36	+1.28 ^b
Physical and Health Education	+0.90	+0.90	+1.25	+1.06 ^b
Business Education	+0.50	+0.83	+1.00	+0.86 ^b
Agriculture	0	+0.15	+0.50	+0.70
Driver Education	+0.50	+1.17	+0.17	+0.62 ^b
Biology	0	+0.50	+0.50	+0.50
Home Economics	0	-0.17	+0.70	+0.38
English	+0.50	-0.83	+0.06	+0.03
Mathematics	-0.83	-0.30	-0.12	-0.31 ^c
Earth Sciences	-0.50	+0.50	-1.00	-0.50
Art	+0.50	-0.50	-0.72	-0.58
Speech and Dramatics	+0.50	-1.00	-0.50	-0.64
Chemistry	-0.30	-0.79	-0.77	-0.69 ^c
Industrial Arts	-1.00	+0.10	-1.00	-0.71
Physics	-0.70	-1.21	-0.83	-0.91 ^c
Library Science	-0.70	-0.75	-1.25	-0.98 ^c
Foreign Languages	-0.75	-1.07	-1.10	-1.00 ^c
Music	-0.50	-1.50	-1.07	-1.14 ^c
Guidance and Counseling	-1.50	-0.90	-1.50	-1.20 ^c

^aSurvey data.

^bAll summary values in this row are positive (i.e., easy to fill).

^cAll summary values in this row are negative (i.e., hard to fill).

(-1.20); music (-1.14); foreign languages (-1.00); library science (-0.98); and, physics (-0.91).

c. Ease of filling vacancies: general statement The LSDAs were also asked to generalize about the ease of finding qualified teachers for vacancies (Appendix F, question 7). It can be noted in Table 5.8 that 66.1 percent of the responses were either good (61.0 percent) or excellent (5.1 percent). There is considerable agreement that qualified teachers can be obtained without too much trouble. Nevertheless, the 33.9 percent who responded poor (30.5 percent) and very poor (3.4 percent) represents a large number of LSDAs who would most likely subscribe to the following statement that was made by one of the LSDAs in the survey: "It is never easy to find a good teacher."

Table 5.8. General statement by LSDAs about the ease of filling vacancies by LSD size strata^a

General Statement of the Ease of Filling Teaching Vacancies	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Excellent				
a. Number of Responses	0	1	2	3
b. Percent	---	5.9	5.9	5.1
Good				
a. Number of Responses	6	12	18	36
b. Percent	75.0	70.6	53.0	61.0
Poor				
a. Number of Responses	2	3	13	18
b. Percent	25.0	17.6	38.2	30.5
Very Poor				
a. Number of Responses	0	1	1	2
b. Percent	---	5.9	2.9	3.4
Total				
a. Number of Responses	8	17	34	59
b. Percent	100.0	100.0	100.0	100.0

^aSurvey data.

d. Number of applicants per vacancy Another way of looking at the ease of filling vacancies is to look at the number of possible choices that an individual demander may have to choose from; hence, the LSDAs were asked how many applicants they had on the average for each vacancy (Appendix F, question 4). Their responses were averaged with the resulting observation that they have about 5.95 applications for every vacancy. Moreover, the first row in Table 5.9 reveals that the average number of applications per vacancy seems to increase as school district size declines (i.e., they are negatively related).

Table 5.9. Estimated average number of applications per teaching vacancy by LSD size strata^a

	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Average Number of Applications per Teaching Vacancy	5.25	6.29	6.32	5.95
LESS				
Average Number of Applications Made by New Teachers	3.73	4.75	5.52	4.67
Net Applications per LSD Strata	1.52	1.54	0.80	1.28

^a Survey data.

Quite obviously the average number of applicants for each vacancy overstates the real choice of each LSDA. First, individual teachers may be reasonably satisfied with their present employment but submit applications in search of employment that might offer a higher expected

utility (i.e., EU_{ij}) than their present employment. Secondly, overstatement also occurs because most teachers can be expected to apply to more than one LSD (NETs in this study submitted an average of 4.67 applications to prospective employers). For these and similar reasons it would seem reasonable to expect that the data in the first row of Table 5.9 overstates the number of choices that are available, on the average, for each vacancy.

To illustrate one aspect of the overstatement, the average number of applications by NETs (Appendix G, question 6) has been included as the second row in Table 5.9 and by subtracting row two from row one it is possible to find the "net applications" (or net choices) on the average for each vacancy by LSD size strata. For the entire sample (both surveys) it would appear that on the average there are about 1.28 applications for every vacancy in the state. The conclusion is that there are more teachers than vacancies; hence, it can be inferred that teachers are in excess supply (i.e., there is no teacher shortage).

A few words of caution would seem to be in order. First, not all of the applications are from teachers qualified for the vacancies (i.e., differential shortages can still exist). Secondly, since individual teachers from one LSD size strata can submit applications to the districts in the other two strata, the "net applications" data in the third row is not particularly reliable for each size strata. Finally, since it is probably easier for an individual teacher to identify the number of applications he submitted and since it is unlikely that the responses of the LSDAs were very precise (i.e., they were asked to give an

estimate--they were not asked to count--of the average number of applications per vacancy) the "net applications" data may be greatly in error. For these reasons, the data reported in Table 5.9 must be used and interpreted with extreme caution.

e. Months vacancies filled The choice of demanders can also be evaluated in terms of the months in which vacancies are filled. If all of an LSD's vacancies are filled in March, then this would suggest that (i) search costs are less, (ii) the LSD is reasonably attractive to teachers, and (iii) the LSD is likely to have a considerable degree of choice if (ii) is correct. On the other hand, if some other LSD does not fill any of its vacancies until August, it would seem reasonable to infer that (i) its search costs will be high, (ii) it is not an attractive LSD in which to work, and (iii) it does not have much choice (it gets the leftovers).

The LSDAs were asked when their vacancies were or would be filled for the school year beginning September, 1968 (Appendix F, question 10). However, since the survey of the LSDAs was conducted in June, much information of value was missed. For this reason the NETs were asked when they signed their contracts for the 1968-1969 school year (Appendix G, question 10). The results of the question posed to the NETs have been recorded in Table 5.10 where it can be noted, in terms of percentages, that there is very little difference between the three LSD size strata with respect to the months that NETs are hired.

This observation about the percentages can be substantiated by statistical analysis. If the Kendall coefficient of concordance is used

Table 5.10. Months when new teachers signed 1968-1969 contracts by LSD size strata^a

Months when Contracts Signed	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Before February				
i. Number	1	1	0	2
ii. Percent	0.4	0.5	0	0.3
February				
i. Number	7	2	2	11
ii. Percent	2.8	1.0	1.2	1.8
March				
i. Number	31	25	17	73
ii. Percent	12.3	12.1	9.9	11.6
April				
i. Number	71	62	54	187
ii. Percent	28.2	29.9	31.4	29.6
May				
i. Number	54	54	44	152
ii. Percent	21.4	26.1	25.6	24.1
June				
i. Number	36	26	17	79
ii. Percent	14.3	12.6	9.9	12.5
July				
i. Number	26	15	14	55
ii. Percent	10.3	7.2	8.1	8.7
August				
i. Number	22	16	19	57
ii. Percent	8.7	7.7	11.0	9.0
September				
i. Number	0	2	1	3
ii. Percent	0	1.0	0.6	0.5
Non-responses				
i. Number	4	4	4	12
ii. Percent	1.6	1.9	2.3	1.9
TOTAL				
i. Number	252	207	172	631
ii. Percent	100.0	100.0	100.0	100.0

^aSurvey data.

to test the ranks for each LSD size strata to evaluate the null hypothesis that there is no association (similarity) in the months that NETs are hired by LSD size strata, it is found that the observed chi-square is 22.8. The observed chi-square is greater than the theoretical chi-square at the one percent level (theoretical chi-square is 20.09).

Hence, the null hypothesis can be rejected at the one percent level and it can be inferred that in each LSD size strata vacancies are filled in about the same order, by month.

This point becomes clearer when reference is made to Table 5.11 where the percentages of Table 5.10 are reported in cumulative form. It can be noted that in April, for example, the cumulative percentages for each strata are 43.7, 43.5 and 42.5 (average is 43.3). The largest difference in the cumulative percentages occurs in May when the largest size strata had filled 65.1 percent of its vacancies while the second largest size strata had filled 69.6 percent of its vacancies!

Table 5.11. Months when new teachers signed 1968-1969 contracts by LSD size strata: cumulative percentages^a

Months when Contract Signed	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Before February	0.4	0.5	0.0	0.3
February	3.2	1.5	1.2	2.1
March	15.5	13.6	11.1	13.7
April	43.7	43.5	42.5	43.3
May	65.1	69.6	68.1	67.4
June	79.4	82.2	78.0	79.9
July	89.7	89.4	86.1	88.6
August	98.4	97.1	97.1	97.6
September	98.4 ^b	98.1 ^b	97.7 ^b	98.1 ^b

^aSurvey data.

^bDoes not sum to 100 percent due to non-responses (see Table 5.10).

3. Channels and costs of search by LSDAs

The recruitment of new teachers involves the search channels used to communicate vacancy information to teachers and the costs involved in the recruitment process.

a. Effectiveness of search channels The 59 LSDAs were given a prepared list of search channels and they were asked to identify the search channels used to communicate vacancy information to prospective teachers for their respective LSDs (Appendix F, question 8A). The four most frequently used search channels reported by the 59 LSDAs in the sample were the following: newspaper want ads (52 LSDAs); university placement (52 LSDAs); Iowa State Education Association (I.S.E.A.) employment service (37 LSDAs); and, friends and relatives or grapevine method (33 LSDAs). The other search channels used and a breakdown of the responses by LSD size strata are reported in Table 5.12 in the rows titled "No. using method."

The interviewees were then asked to rank the four search channels they considered to be the most effective in finding NETs to fill vacancies (Appendix F, question 8B). Since the rank data are difficult to investigate in raw form, the ranks were converted into simple aggregates through the use of weighted sums: a weight of four was given to the first ranked method; a weight of three to the second ranked method; a weight of two to the third ranked method; and a weight of one for the last ranked method of search. The sum of the weights for each method of search then constitutes a single measure representing an ordinal and aggregate measure of the perceived effectiveness of each search method used by LSDAs in searching for NETs to fill existing vacancies.

Table 5.12. Channels used to find new teachers and effectiveness of search channels using weighted sums by LSD size strata^a

Search Channels	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Newspaper Want Ads				
No. Using Method	6	15	31	52
Weighted Sum	14	55	117	186
University Placement				
No. Using Method	8	15	29	52
Weighted Sum	31	46	95	172
Friends and Relatives				
No. Using Method	5	13	15	33
Weighted Sum	12	22	33	67
I.S.E.A. Employment Service ^b				
No. Using Method	5	10	22	37
Weighted Sum	5	17	40	62
Do Nothing (Walk-ins)				
No. Using Method	2	2	2	6
Weighted Sum	7	4	8	19
Public Placement Services				
No. Using Method	3	2	4	9
Weighted Sum	5	6	7	18
Other Want Ads				
No. Using Method	3	2	3	8
Weighted Sum	2	7	8	17
Commercial Placement Services				
No. Using Method	1	1	7	9
Weighted Sum	--	4	10	14
Other Methods				
No. Using Method	2	3	--	5
Weighted Sum	1	1	1	3

^a Survey data.^b I.S.E.A. is the abbreviation for Iowa State Education Association.

The weighted sums for the search channels are recorded in Table 5.12 in descending order of the weighted sums. It can be noted that newspaper want ads have the largest weighted sum for the entire sample (i.e., 186), university placement ranks second (i.e., weighted sum is 172), friends and relatives ranks third (i.e., 67), and so on down the list.

Since all of the LSDAs did not rank four methods (all LSDAs did rank two methods as being effective), the rank data was also viewed from the first two ranks only. The results in Table 5.13 indicate that in terms of the weighted sums for the first two ranked search channels, newspaper want ads (180), university placement (161) and friends and relatives (24), still rank one, two and three. Moreover, in comparing Table 5.12 and Table 5.13, it can be noted that none of the LSDAs ranked commercial placement services first or second, nor did any of them rank other miscellaneous search channels not included in the prepared list either first or second.

Another interesting feature of Table 5.13 is that in the largest LSD size strata, university placement was perceived to be the most effective method of recruiting teachers. In fact, for this size strata the weighted sum of 31 for university placement exceeds the weighted sums for all of the other methods taken together (i.e., $30 > 25$). The LSDAs in the other two size strata perceived newspaper want ads to be the most effective of the search channels for NETs.

In view of some of the comments made by a few of the LSDAs, these results are not too surprising. Although a formal question was not posed to the LSDAs in which they were asked on what basis they chose between

Table 5.13. Effectiveness of search channels by LSD size strata: frequency of first two ranks and weighted sums^a

Search Channels	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Newspaper Want Ads				
Rank 1 Frequency	1	10	25	36
Rank 2 Frequency	2	5	5	12
Weighted Sum ^b	10	55	115	180
University Placement				
Rank 1 Frequency	7	5	8	20
Rank 2 Frequency	1	8	18	27
Weighted Sum	31	44	86	161
Friends and Relatives				
Rank 1 Frequency	0	0	0	0
Rank 2 Frequency	2	2	4	8
Weighted Sum	6	6	12	24
I.S.E.A. Employment Service				
Rank 1 Frequency	0	0	0	0
Rank 2 Frequency	1	2	3	6
Weighted Sum	3	6	9	18
Public Placement				
Rank 1 Frequency	0	0	1	1
Rank 2 Frequency	1	0	2	3
Weighted Sum	3	0	10	13
Other Want Ads				
Rank 1 Frequency	0	1	0	1
Rank 2 Frequency	0	0	2	2
Weighted Sum	0	4	6	10
Do Nothing (Walk-ins)				
Rank 1 Frequency	0	1	0	1
Rank 2 Frequency	1	0	0	1
Weighted Sum	3	4	0	7

^aSurvey data.^bA weighted value of four was given to rank 1, and a weighted value of three was given to rank 2.

the two search methods ranked one and two, numerous LSDAs offered brief and interesting comments. The following comments were expressed in favor of newspaper want ads:

" Newspaper want ads provide more contacts for each vacancy than any other method.

" Newspaper want ads are useful in finding experienced teachers. They are not too useful however if a vacancy must be filled immediately.

" Many university students do not take the time to visit the campus placement office: they apply to schools that advertise in the paper."

And several LSDAs spoke about the acceptability of newspaper ads:

" About ten years ago newspaper want ads were not looked upon favorably, but in recent years they have gained in popularity and are widely used.

" It used to be unethical to advertise in newspapers but now it is our best source of applicants."

Three LSDAs spoke against the use of newspaper want ads:

" I think it's too bad that we have to use newspaper ads. I'm from the old school that thinks it [recruiting] should be done through school channels [university and college placement]. We get all their credentials from the school before we consider interviews.

" Newspaper want ads are a shopping ground for all teachers in the state of Iowa. It gives the teacher an unfair advantage in that they can be choosy in selecting the best job available.

" Teaching is a professional job. It doesn't seem right to advertise teaching vacancies in the newspaper."

Several poignant comments were directed at university placement:

" Altho I have used university placement services I have not found on-campus recruiting to be very productive. For me the latter is to go out on safari and come back empty-handed.

" Unless you know the placement officer and get in early you don't get anybody.

" We are not happy with [University X]. They ask a student what geographical location he wants and if he did not choose ours, they will not let us see his credentials or talk with him--even though we might have the exact position he wants and might change his mind on the location."

Another comment was directed at public employment services:

" Several persons have been referred to our school system, but none have been hired. If teachers resort to the public placement services it indicates something is wrong."

The various comments are self-explanatory; however, there are a few observations that may be appropriate here. First, the LSDAs that either expressed satisfaction or dissatisfaction with newspaper want ads were from smaller LSDs. Secondly, it was also in the smaller LSDs where the various comments were made in opposition to college and university placement services.

b. Costs of search (i.e., recruitment) The LSDAs were asked how much money was budgeted for recruiting new teachers for the vacancies to be filled for the 1968-1969 school year (Appendix F, question 11). They were also asked to estimate the total number of manhours (i.e., opportunity costs) devoted to the search for new teachers (Appendix F, question 12).

Probably the most significant finding learned about the costs of search is the following: LSDAs have only a vague idea of what it costs them to recruit new teachers. The comments of a few LSDAs illustrate this finding:

"I'll answer but it will be a wild guess."

"I don't think we have a budget breakdown as such."

"My estimate is a wild guess and would have no statistical significance."

Rather interestingly, this finding fits the criticism levied against school administrators by the Committee for Economic Development (CED) when it urged "immediate exploration by school administrators of the application of program accounting techniques in order to identify costs in school systems and to take advantage of cost comparisons" (18, p. 19).

Because of the rather questionable nature of the cost (both outlay and opportunity) estimates, no attempt was made to evaluate these estimates in a rigorous way.

In answer to the question, how many dollars were budgeted, the typical answer was: "We do not have a budget item for recruitment." Since this was expected, the interviewers were instructed to try and obtain some kind of an answer even if the answer were a wild guess. Of the 58 LSDAs who answered the question, the total expenditure was found to be \$70,005. If this value is expanded to estimate the total expenditures for all LSDs in the state (i.e., the number of vacancies in the sample was 1756 and the estimated number of vacancies for the state was found to be 5724.2) then the estimated dollar outlay for recruitment in the state of Iowa amounts to: $\$70,005(5724.2/1744) = \$229,766$.

The total number of manhours that the LSDAs estimated would be devoted to the recruitment of new teachers for the 1968-1969 school year amounted to 29,848 manhours. They were asked to include the time of both professional and non-professional employees in this manhour estimate. Since the number of manhours does not provide a measure that is comparable to the estimated outlay of dollars for recruiting, the manhour estimate was converted into a dollar value. The estimated total recruiting cost (both outlay and opportunity costs) for some LSD was obtained as follows:

$$\hat{R} = R_B + (a_1 w_1 \bar{S} + a_2 w_2 \bar{S})(M/1560)$$

where

\hat{R} = estimated total recruitment cost

R_B = estimated outlay recruiting cost

a_1 = coefficient to convert \bar{S} to an estimate of the salary for LSDAs

w_1 = proportion of total manhours, M , attributable to LSDAs

\bar{S} = average 1967-1968 LSD salary

a_2 = coefficient to convert \bar{S} to an estimate of the salary for non-professional employees (secretaries and clerks)

w_2 = proportion of total manhours, M , attributable to non-professional employees

M = manhours devoted to recruiting (i.e., the opportunity cost of recruiting)

1560 = the estimated number of hours that a teacher is employed on the basis of an eight-hour day for a 195-day contract period

The values of R_B and M were obtained in the survey of LSDAs. The a_1 coefficient was estimated to be 1.59 by computing the average salary of administrators for the 1968-1969 school year and dividing by the average teacher salary for the same school year (48b). The value of a_2 was assumed to be one-half (i.e., 0.5). On the basis of survey data and some careful questioning of the LSDAs in a few LSDs, it appeared that

both w_1 and w_2 would be about equal; hence, each was given a value of one-half (i.e., 0.5). Finally, \bar{S} was obtained from data available at the Department of Public Instruction (47).

After computing \hat{R} for each LSD in the sample, a total of \$216,910 was obtained and this dollar value constitutes the estimated cost of recruitment of the 58 sample LSDAs who answered the question. In other words, the estimated opportunity cost was \$146,905 (i.e., \$216,910 - \$70,005) for the 58 sample LSDs.

Finally, it is possible to estimate the total cost of recruiting for the state of Iowa using the same proportional rule utilized for the total recruiting budget. The estimated total recruiting cost for the state of Iowa amounts to:

$$\$216,910(5724.2/1744) = \$708,660.$$

Alternatively, one might say that the average cost of recruiting one new teacher, on the basis of "guesstimates," is about \$124.

4. Perception of teachers' choice variables

Due to the reservations noted in Chapter III about the difficulty of acquiring accurate estimates of the importance of the choice variables used by LSDAs to select from applicants for extant vacancies, it seemed reasonable to inquire about the LSDAs' perception of the importance of the choice variables used by new teachers (i.e., NETs) to choose among LSDs in general (Appendix F, question 24).

Each LSDA was asked to rate the importance of each choice variable on a prepared list by using a rating scale that varied from a numerical value of three (i.e., very important) to a numerical value of zero (i.e., not important). By summing the numerical responses for each variable and

computing the average, the five choice variables that emerged as the most important are the following: (i) salary (2.71); (ii) availability of teaching materials and teaching facilities (2.61); (iii) geographical location (2.51); (iv) courses and/or class assignments (2.49); and, (v) quality of school (2.44). The remaining choice variables and the computed averages by LSD size strata are recorded in Table 5.14.

One of the rather interesting features of Table 5.14 can be found in the column headed "state." In this table there are four economic variables (salary, fringe benefits, low cost of living and good opportunities for outside income). Salary is ranked first for all of the respondents and the other three variables are ranked eighteenth, nineteenth and twentieth in a list of twenty variables.

5. Concluding discussion

The first-hand experience of the author in the survey of the LSDAs provided a surprising insight that was not dispelled during the period of data analysis. It was a sense of "misgiving" about the performance of the teacher market (i.e., the exchange and matching process, and the market as an institution) and the competence of LSDAs to use the teacher market.

It was expected that the LSDAs would have formed broad and incisive generalizations about the retention of teachers (i.e., the minimization of market activity) and the relative effectiveness of alternative methods of teacher recruitment. They talked cases. They were problem-oriented. They seemed either reluctant or unable to abstract and make generalizations about the teacher market. They seemed to have few, if

Table 5.14. LSDAs' average ratings of choice variables by LSD size strata^a

Choice Variables	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Salary	2.88	2.70	2.68	2.71
Availability of teaching materials and teaching facilities	2.38	2.82	2.56	2.61
Geographical location	2.25	2.41	2.61	2.51
Courses and/or class assignments	2.63	2.59	2.41	2.49
Quality of school	2.50	2.59	2.35	2.44
Reputation of administrators	2.38	2.29	2.27	2.293
Competence and friendliness of colleagues	2.38	2.41	2.20	2.288
Low pupil-teacher ratio	2.38	2.35	2.15	2.2372
Nearness to graduate school	2.50	2.18	2.20	2.2372
Daily planning periods	2.50	2.18	2.09	2.17
Size of school and/or school district	1.88	2.24	1.97	2.03
Community size	2.12	2.06	1.97	2.02
Quality of students	1.88	2.06	2.00	2.00
Democratic organization	1.88	1.94	2.03	1.9830
Good recreational and cultural opportunities	2.00	2.18	1.88	1.9827
Low workload	2.25	1.59	1.91	1.86
Good promotional opportunities	1.62	1.94	1.70	1.76
Fringe benefits	1.88	1.69	1.47	1.59
Low cost of living	1.75	0.88	1.44	1.32
Good opportunities for outside income	1.13	1.12	1.03	1.07

^aSurvey data.

any, common theories to guide their actions. They conveyed the impression that the market is a random and perverse process of which they had little control or understanding. Many of their answers were prefaced with "I really don't know" or "It depends on many things."

Admittedly there are good years and bad years, some vacancies are easy to fill and others are hard to fill, and so on. Nevertheless, if the LSDAs do not form generalizations about the operation of the teacher market, it is doubtful that they can utilize the market efficiently due to their concern with the parts and their apparent failure to comprehend the whole. One insightful interview in the pretest stage was with a school administrator who stated over and over again: "They should be able to answer that question--but they probably won't have the answer."

Although the teacher market is intangible, it is real. There are many deviations and exceptions, yet, its operation does follow principles and patterns. It exists in time and space, otherwise vacancies would not be filled. And of the two sets of participants (school administrators and teachers), the set of school administrators is the most frequent participant; hence, to an economist, this group would have the best chance to be familiar, skilled and competent in the marketplace. The set of LSDAs has the most resources and opportunities to analyze the market. To conclude that LSDAs are much less skillful than expected must be classed as the biggest disappointment of this study.

The significance of this disappointing conclusion is magnified by the realization that a teacher shortage exists. Surely, more astuteness

is required in a tight market (i.e., a shortage situation) than in a surplus market.

Why do teachers resign? How much does it cost to recruit a new teacher? What is the most effective search channel for recruiting new teachers? These questions are of importance in handling day-to-day recruitment problems in school districts. Yet, many of the LSDAs had no idea why teachers resign--they knew teachers resigned but not why. They knew that recruitment costs money and requires some of their time--but now how much time or money. They advertise in the newspaper and/or use university placement services--but did not know the relative effectiveness of these and other search channels. One is reminded of a novice fisherman; that is, someone who throws a line into a pool of water and is happy if he gets anything.

If the market is not understood by its most frequent users, it should not be surprising to find that the demanders and suppliers are not being brought together. The market for teachers is a matching process; hence, there is a need for the efficient exchange of large amounts of information if good matches are to be consummated. In the final analysis the burden of improving the efficiency of this market must lie with the most frequent users and the ones who have the greatest resources, namely, the school districts.

What can school administrators do to improve the efficiency of the teacher market? A better understanding of the market would be helpful. Accurate and meaningful termination interviews and improved record keeping on recruitment activities at the school district level could provide instructive insights and generalizations. Larger school districts

could acquire a considerable amount of information in a single year while smaller school districts might have to accumulate their information over several years. And in the case of the very small school districts it might be necessary for them to pool their information. School administrators may find other research to be useful as well, but certainly this seems like a good place to start if the operation of the teacher market is to be improved and the teacher shortage eased.

VI. SUPPLY ANALYSIS

An economist has an obligation to treat supply as rigorously as demand. Thus, he has a duty to treat supply as a schedule of prices and quantities. Unlike the theory of demand for labor inputs, the theory of supply with respect to labor has not been developed as a rigorous schedule of prices and quantities. The usual direction that exceptions have taken to the rigorous theory of labor supply have largely been concentrated in the definitional framework of net advantages. Adam Smith referred to this in the eighteenth century:

"The whole of the advantages and disadvantages of the different employments of labour must, in the same neighbourhood, be either perfectly equal or continually tending to equality. If in the same neighbourhood, there was any employment evidently either more or less advantageous than the rest, so many people would crowd into it in the one case, and so many would desert it in the other, that its advantages would soon return to the level of other employments. This at least would be the case in a society where things were left to follow their natural course, where there was perfect liberty, and where every man was perfectly free both to chuse what occupation he thought proper, and to change it as often as he thought proper. Every man's interest would prompt him to seek the advantageous, and to shun the disadvantageous employment." (103, p. 99).

And Alfred Marshall addressed himself to the same notion in the 19th century:

"... the attractiveness of a trade depends on many other causes besides the difficulty and strain of the work to be done in it on the one hand, and the money-earnings to be got in it on the other. And when the earnings in any occupation are regarded as acting on the supply of labour in it, or when they are spoken of as being its supply price, we must always understand that the term earnings is only used as a short expression for its 'net advantages.' We must take account of the facts that one trade is healthier or cleaner than another, that it is carried on in a more wholesome or pleasant locality, or that it involves a better social position." (70, pp. 556-557).

The contents of this chapter focus attention on net advantages.

Supply has been approached from the importance of the variables (i.e., net advantages) that attracted teachers to their new employment positions in September 1968; the search channels and costs (both outlay and opportunity costs) of seeking employment; the reasons for resignations (ex ante and ex post); and, the kinds of work activity that are attractive to teachers.

1. Description of the new teachers

The new teachers (NETs) of the LSDs can be described in numerous ways. The descriptive variables included in this section include sex, age, marital status, experience, highest degree held, home state, percent of time employed in present position, and sources of supply (e.g., homemakers, students, and other sources). Moreover, each of the above has been viewed with respect to the three LSD size strata. Finally, an estimate of the direction of movement has been made for those NETs who were employed as teachers in public education during the 1967-1968 school year.

a. Sex of NETs Of the 631 NETs who completed questionnaires, 219 (34.7 percent) were male and 412 (65.3 percent) were female. The sample results compare rather well with the population of Iowa teachers in the 1967-1968 school year when 35.1 percent were male and 64.9 percent were female (23, p. 101).

The survey results are classified by sex and LSD size strata in Table 6.1 where a rather interesting feature can be noted. The percentage of male NETs rises from 30.2 percent to 34.8 percent to 41.3 percent as one moves from the largest to the smallest LSD size strata.

Table 6.1. Sex of new teachers by LSD size strata^a

Sex of New Teachers	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Male				
i. Number	76	72	71	219
ii. Percent	30.2	34.8	41.3	34.7
Female				
i. Number	176	135	101	412
ii. Percent	69.8	65.2	58.7	65.3
TOTAL				
i. Number	252	207	172	631
ii. Percent	100.0	100.0	100.0	100.0

^aSurvey data.

b. Age of NETs Almost fifty percent (49.9 percent) of the 628 NETs who responded to the question on age were under 25 years of age. Rather interestingly, for the population of teachers employed in Iowa's LSDs for the 1967-1968 school year, only 9.9 percent were under 25 years of age (23, p. 103). Of course it is probable that the 293 NETs (Table 6.6) who were students in the 1967-1968 school year would greatly affect the percent of NETs under 25 years of age for the sample versus the population. (The implicit assumption is that a substantial number of the former students would be under 25 years of age.)

It can also be noted in Table 6.2 that 72.2 percent of the NETs in the sample were under 30 years of age. Only 12.4 percent of the NETs were over 40 years of age. Thus, it can be inferred that older teachers have place utility (118) and are less likely to move (place utility is associated with some position in space).

Table 6.2. Age of new teachers by LSD size strata^a

Age of New Teachers	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Under 22 years				
i. Number	78	54	55	187
ii. Percent	31.1	26.1	32.4	29.7
23 - 24 Years				
i. Number	50	45	32	127
ii. Percent	19.9	21.7	18.8	20.2
25 - 29 Years				
i. Number	56	52	32	140
ii. Percent	22.3	25.1	18.8	22.3
30 -34 Years				
i. Number	20	18	20	58
ii. Percent	8.0	8.7	11.8	9.2
35 - 39 Years				
i. Number	18	14	6	38
ii. Percent	7.2	6.8	3.5	6.1
40 - 44 Years				
i. Number	11	8	8	27
ii. Percent	4.4	3.9	4.7	4.3
45 - 49 Years				
i. Number	8	4	9	21
ii. Percent	3.2	1.9	5.3	3.3
50 Years and Over				
i. Number	10	12	8	30
ii. Percent	4.0	5.8	4.7	4.8
Subtotal				
i. Number	251	207	170	628
ii. Percent	100.1	100.0	100.0	99.9
No Age Response	1		2	3
TOTAL	252	207	172	631

^aSurvey data.

c. Marital status of NETs About 68 percent of the 631 NETs were married and 28 percent had never been married at the time of the survey. About four percent of the NETs reported themselves to be separated, divorced or widowed.

These results are included in Table 6.3 by LSD size strata where it can be noted that the NETs who were married formed an increased percent of teachers hired as LSD size falls. The opposite is true for those NETs who were never married.

Table 6.3. Marital status of new teachers by LSD size strata^a

Marital Status of New Teachers	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Never Married				
i. Number	79	59	38	176
ii. Percent	31.3	28.5	22.1	27.9
Married				
i. Number	163	139	129	431
ii. Percent	64.7	67.1	75.0	68.3
Separated				
i. Number	--	--	1	1
ii. Percent			0.6	0.2
Divorced				
i. Number	6	7	3	16
ii. Percent	2.4	3.4	1.7	2.5
Widowed				
i. Number	4	2	1	7
ii. Percent	1.6	1.0	0.6	1.1
TOTAL				
i. Number	252	207	172	631
ii. Percent	100.0	100.0	100.0	100.0

^aSurvey data.

d. Years of teaching experience Of the 630 teachers who reported their total years of teaching experience in public education, 46.5 percent had no experience (Table 6.4) and only 22.8 percent had five or more years of teaching experience.

For the 1967-1968 school year, 27.8 percent of all classroom teachers in Iowa had less than five years of teaching experience (23, p. 97) compared to the 77.1 percent in the sample that had less than five years of experience. This would seem to suggest, as a general rule on the basis of the survey data, that if a teacher resigns he will probably be replaced by a new teacher with less teaching experience in public education.

Table 6.4. Years of teaching experience of new teachers by LSD size strata^a

Years of Teaching Experience of New Teachers	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
No Experience				
i. Number	124	87	82	293
ii. Percent	49.2	42.0	48.0	46.5
1-2 Years Experience				
i. Number	45	34	27	106
ii. Percent	17.9	16.4	15.8	16.8
3-4 Years Experience				
i. Number	29	31	27	87
ii. Percent	11.5	15.0	15.8	13.8
5-9 Years Experience				
i. Number	35	35	16	86
ii. Percent	13.9	16.9	9.3	13.6
10 or More Yrs. Experience				
i. Number	19	20	19	58
ii. Percent	7.5	9.7	11.1	9.2
Subtotal				
i. Number	252	207	171	630
ii. Percent	100.0	100.0	100.0	99.9
No Response	-	-	1	1
Total	252	207	172	631

^aSurvey data.

e. Highest degree held by NETs The smaller LSDs tend to hire more teachers with no degree and fewer teachers with advanced degrees than the larger LSDs. Nevertheless, a substantial percent (73.5 percent) of the NETs held a bachelor's degree in education and another 12.6 percent held a bachelor's degree in some other field. There were 86.1 percent NETs in the sample who held a bachelor's degree, 10.1 percent held a master's degree and a mere 3.8 percent held no degree. These results are summarized in Table 6.5 by LSD size strata.

Table 6.5. Highest degree of new teachers by LSD size strata^a

Highest Degree of New Teachers	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
No Degree				
i. Number	2	13	9	24
ii. Percent	0.8	6.3	5.3	3.8
B.A. or B.S. in Education				
i. Number	180	160	120	460
ii. Percent	71.7	77.7	71.0	73.5
B.A. or B.S. not in Education				
i. Number	34	18	27	79
ii. Percent	13.6	8.8	16.0	12.6
M.A. or M.S. in Education				
i. Number	26	11	8	45
ii. Percent	10.4	5.3	4.7	7.2
M.A. or M.S. not in Education				
i. Number	9	4	5	18
ii. Percent	3.6	1.9	3.0	2.9
Subtotal				
i. Number	251	206	169	626
ii. Percent	100.1	100.0	100.0	100.0
No Response	1	1	3	5
TOTAL	252	207	172	631

^aSurvey data.

f. NETs' work activities: 1967-1968 school year By identifying

the work activities of the NETs during the school year prior to the survey year (i.e., 1967-1968), it is possible to identify the sources of supply. The question posed to the NETs (Appendix G, questions 29 and 30) was an open-ended question that allowed multiple answers; hence, the number of responses, 684, exceeded the number of respondents, 628.

The largest source of NETs for the survey year was undergraduate students (40.3 percent) which was followed very closely by public school teachers (37.9 percent). A further 13.4 percent of the NETs had been homemakers during the 1967-1968 school year, and 6.4 percent had been graduate students. These four work activities accounted for 98.0 percent of the sources of supply of NETs. The above work activities and others are reported in Table 6.6 by LSD size strata.

A second table (Table 6.7) is included for the four activities noted above (the graduate and undergraduate student categories have been combined). One of the interesting features of this table is the row of percentages for students. There seems to be very little difference in these percentages by LSD size strata. Even the smallest LSDs seem to fare about as well as the large LSDs in hiring students. In the interviews in the smaller LSDs, several LSDAs observed that university placement officers were not too helpful. However, this may have been a reflection of something other than their success in hiring recent and/or prospective students. It may very well be that university placement officers do not treat a small LSD as well as a large one--possibly due to economies of scale--and this may be the principal reason why some of the

Table 6.6. NETs' work activity in 1967-1968 by LSD size strata^a

NETs' Work Activity: 1967-1968 School Year	LSD Size Strata 1		LSD Size Strata 2		LSD Size Strata 3		State	
	No.	%	No.	%	No.	%	No.	%
Professional Workers	3	1.2	7	3.4	2	1.2	12	1.9
Agricultural Workers	-	-	1	0.5	1	0.6	2	0.3
Proprietors, Managers and Officials	-	-	2	1.0	-	-	2	0.3
Clerical and Kindred Workers	2	0.8	1	0.5	6	3.5	9	1.4
Sales Workers	2	0.8	4	1.9	-	-	6	1.0
Skilled and Unskilled Workers	1	0.4	1	0.5	1	0.6	3	0.5
Homemakers	33	13.2	27	13.2	24	13.9	84	13.4
STUDENTS:								
Undergraduate	107	42.8	77	37.3	69	40.1	253	40.3
Graduate	19	7.6	11	5.3	10	5.8	40	6.4
TEACHERS:								
Public School	92	36.8	82	39.8	64	37.2	238	37.9
Private School	4	1.6	1	0.5	2	1.2	7	1.1
College and Uni- versity	2	0.8	1	0.5	2	1.2	5	0.8
Other	9	3.6	10	4.9	4	2.3	23	3.7
Total Number of Work Activities: 1967-1968	274 ^b	109.6 ^c	225 ^b	109.3 ^c	185 ^b	107.6 ^c	684 ^b	109.0 ^c
No. of NETs Responding	250		206		172		628	
No. of Non-Respondents	2		1		-		3	

^aSurvey data.^bAdds to more than total number of respondents due to multiple answers.^cAdds to more than 100 percent due to multiple answers.

Table 6.7. Three sources of supply of NETs by LSD size strata^a

Sources of Supply	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Students (both Graduate and Undergraduate)				
i. Number	126	88	79	293
ii. Percent	50.4	42.7	45.9	46.7
Public School Teachers				
i. Number	92	82	64	238
ii. Percent	36.8	39.8	37.2	37.9
Homemakers				
i. Number	33	27	24	84
ii. Percent	13.2	13.1	14.0	13.4
Total of Three Sources ^b				
i. Number	251	197	167	615
ii. Percent	100.4	95.6	97.1	98.0
Total Sources Reported ^b				
i. Number	274	225	185	684
ii. Percent	109.6	109.3	107.6	109.0
No. of NETs Responding ^b	250	206	172	628
No. of Non-Respondents	2	1	--	3

^aSurvey data. Work activity is a term interchangeable with supply source.

^bThe total number of NETs who responded to the question on work activity or supply sources is less than the number of sources reported since the open-ended question permitted multiple responses.

administrators in the smaller LSDs volunteered their criticisms of university placement services. In the final analysis, however, when the hiring has been completed, the smaller LSDs seem to do as well in attracting new graduates as larger LSDs and thus succeed much better than their comments would lead one to expect.

g. Home state of NETs The NETs were asked to identify their "home state" (Appendix G, question 22). Of the 625 NETs who answered this question, 464 (74.2 percent) said they were from Iowa (Table 6.8). Another 118 teachers (18.9 percent) were from states that were defined to be "states adjacent to Iowa" (i.e., Illinois, Kansas, Minnesota, Missouri, Nebraska, South Dakota and Wisconsin). Thus, 582 of the 625 NETs (93.1 percent) considered their "home state" as either Iowa or a state adjacent to Iowa. And as a matter of interest it might be noted that one NET reported his home state to be "all over the world!"

Table 6.8. Home state of new teachers by LSD size strata^a

Home State of New Teachers	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Iowa				
i. Number	181	158	125	464
ii. Percent	72.4	76.7	74.0	74.2
States Adjacent to Iowa ^b				
i. Number	45	37	36	118
ii. Percent	18.0	18.0	21.3	18.9
Rest of United States				
i. Number	24	11	8	43
ii. Percent	9.6	5.3	4.7	6.9
Subtotal				
i. Number	250	206	169	625
ii. Percent	100.0	100.0	100.0	100.0
No Response	2	1	3	6
Total	252	207	172	631

^aSurvey data.

^bStates adjacent to Iowa includes Illinois, Kansas, Minnesota, Missouri, Nebraska, South Dakota and Wisconsin.

h. Percent of time employed 628 NETs reported on the amount of time--that is, full-time or part-time fractions thereof--for which they had contracted to work in the 1968-1969 school year (Appendix G, question 26). The results (Table 6.9) clearly indicate that 609 (97.0 percent) of the NETs were employed on a full-time basis. Moreover, there is very little variation in this percentage by the three LSD size strata.

Table 6.9. Percent of time employed by LSD size strata^a

Percent of Time Employed	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Full-time (100 percent)				
i. Number	245	199	165	609
ii. Percent	97.6	96.1	97.1	97.0
Less than Full-Time				
i. Number	6	8	5	19
ii. Percent	2.4	3.9	2.9	3.0
Subtotal				
i. Number	251	207	170	628
ii. Percent	100.0	100.0	100.0	100.0
No Response	1	--	2	3
Total	252	207	172	631

^aSurvey data.

i. Inter-LSD movement of NETs Of the 631 NETs in the sample, 223 (35.3 percent) reported that they had taught in a public school district during the preceding school year, 1967-1968 (Appendix G, questions 29, 31 and 32). It would seem reasonable to suggest hypotheses about the direction of movement of teachers who resign, etc. from one teaching position for another. One might hypothesize, for example, that movement would occur from smaller to larger LSDs because of (i) better

facilities (e.g., school plant, and educational program; medical, entertainment and cultural facilities; etc.), and (ii) better salaries (i.e., in the 1967-1968 school year the average salaries for the three LSD size strata were as follows: LSD size strata 1, \$7629; LSD size strata 2, \$7071; and, LSD size strata 3, \$6334) (47).

If, for example, it is assumed that, ceteris paribus, the price of teaching services (salary) is the variable causing inter-LSD movement, then it would seem logical to hypothesize that teacher movement would occur from smaller LSDs to larger LSDs, on the average, given the above salary information. Curiously enough this expectation does not appear to be supported by the survey data. Two tables and supporting discussion have been prepared to illustrate this result.

In Table 6.10 frequency data have been prepared by LSD size strata for the size LSD in which a teacher was located in the pre-survey year, and the LSD size strata in which a teacher accepted employment for the survey year, 1968-1969. It can be noted in Table 6.10, for example, that of the 223 NETs in this subsample, 91 resigned from the largest LSD size strata, 67 from the second largest and 65 from the smallest LSD size strata. The 223 relocated themselves with 58 accepting employment in the largest size strata, 80 in the second largest and 85 in the smallest size strata. Hence, the school districts in the largest size strata experienced a net change of -33 teachers (i.e., $58 - 91 = -33$), the second largest gained 13, and the smallest strata gained 20 teachers. The conclusion is fairly evident: The movement of teachers was towards smaller LSDs and not towards the larger LSDs that pay the higher average salaries to their professional employees. Although there may be some sampling er-

ror, this randomly drawn sample would not be expected to include any bias. Hence, the above results for the subsample are an unbiased estimate of the direction of movement in the state.

Table 6.10. Inter-LSD teacher movement by LSD size strata^a

	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	Total
Number of Resignations in Each Strata, Year Ending 1967-1968	91	67	65	223
New Location by Strata, Year Beginning 1968-1969	58	80	85	223
Net Change	-33	+13	+20	0

^aSurvey data.

The data presented in Table 6.10 disguises intra-LSD strata movements. Moreover, a movement from an LSD of 20 teachers (size strata 3) to one with 40 teachers (size strata 3) is different from a movement from a district with 20 teachers to one with 60 teachers (size strata 2). And a movement from an LSD with 20 teachers to one with 1000 teachers (size strata 1) is quite different. To compensate for the various movements a system of weighting was developed that incorporates both intra-LSD strata and inter-LSD strata movements. This weighting system permits the computation of a single number representing the pattern of teacher movement in the aggregate.

A movement within a size strata was given either a weight of +0.5 (i.e., a movement to a larger LSD within the strata) or a weight of -0.5 (i.e., a movement to a smaller LSD within the strata). A movement to an LSD one size strata larger was given a weight of +1.5 and a movement to an LSD size strata two sizes larger was given a weight of +2.5. Similarly, a movement to an LSD one size strata smaller was given a weight of -1.5 and to an LSD two sizes smaller a weight of -2.5.

An individual teacher employed in LSD size strata one (largest strata) during the pre-survey year could have made one of four different moves: (i) to a larger district in strata 1 (weight = +0.5); (ii) to a smaller district in strata 1 (weight = -0.5); to strata 2 (weight = -1.5); and, to size strata 3 (weight = -2.5). By multiplying the weights times the frequency of each move, and then summing algebraically a weighted value of the pattern of movement for size strata one is obtained. If the number is positive, the movement occurred to larger districts and if negative the movement is towards smaller districts. A weighted value of zero would indicate that movements cancelled each other out.

Similar weights and movements occur for the other two size strata. The sum of all of weights (see Table 6.11) is zero. If the weighted values are summed over all of the movements, a negative value implies a movement to smaller districts, a positive value implies a movement to larger districts, and a value of zero implies the net effects of teacher movements cancel each other out.

Table 6.11. Inter-LSD and intra-LSD movement of teachers by LSD size strata^a

Description of Movement	Frequency	Weight	Weighted Value
LSD Strata 1 Resignees Moved to:			
i. A Larger LSD in Strata 1	19	+0.5	+ 9.5
ii. A Smaller LSD in Strata 1	14	-0.5	- 7.0
iii. LSD Size Strata 2	41	-1.5	- 61.5
iv. LSD Size Strata 3	17	-2.5	- 42.5
Algebraic Weighted Sum for LSD Strata 1			-101.5
LSD Strata 2 Resignees Moved to:			
i. LSD Size Strata 1	14	+1.5	+ 21.0
ii. A Larger LSD in Strata 2	13	+0.5	+ 6.5
iii. A Smaller LSD in Strata 2	7	-0.5	- 3.5
iv. LSD Size Strata 3	33	-1.5	- 49.5
Algebraic Weighted Sum for LSD Strata 2			- 25.5
LSD Strata 3 Resignees Moved to:			
i. LSD Size Strata 1	11	+2.5	+ 27.5
ii. LSD Size Strata 2	19	+1.5	+ 28.5
iii. A Larger LSD in Strata 3	23	+0.5	+ 11.5
iv. A Smaller LSD in Strata 3	12	-0.5	- 6.0
Algebraic Weighted Sum for LSD Strata 3			+ 61.5
Algebraic Sum Over All LSD Size Strata = -101.5 - 25.5 + 61.5 = -65.5			
Number of NETs Moving to a Larger LSD	99		
Number of NETs Moving to a Smaller LSD	124		

^aSurvey data.

Of the 91 teachers employed in the largest size strata in the 1967-1968 school year, 19 moved to a larger LSD within the first strata (weighted value of +9.5), 14 made a movement to a smaller LSD within the largest strata (weighted value of -7.0), 41 moved from the largest to the second largest size strata (weighted value of -61.5) and 17 moved to the smallest size strata (weighted value of -42.5). The algebraic sum for the largest size strata is -101.5 (i.e., $-101.5 = +9.5 - 7.0 - 61.5 - 42.5$).

Since the algebraic sum is negative it can be concluded that the pattern of the teachers' movement who resigned from LSDs in size strata one was towards smaller LSDs in the survey year.

Similarly it can be noted in Table 6.11 that the pattern of movement for teachers who resigned from the second largest size strata (LSD size strata 2) was also to smaller LSDs since the algebraic sum is negative (i.e., -25.5). The pattern of movement for the teachers who resigned from LSDs in the smallest size strata was towards larger LSDs since the sign of the algebraic sum is positive (i.e., +61.5).

Finally, the algebraic sum over all of the teachers in this subsample is negative (i.e., $-65.5 = 101.5 - 25.5 + 61.5$); hence, it can be concluded that in the aggregate the pattern of movement of the 223 teachers was towards smaller LSDs in the survey year.

Of course, the algebraic sum of the weighted values over all of the teachers, -65.5, is not unique since it is based on an arbitrary scale. Nevertheless, given the survey data, the three size strata and any linear transformation of these arbitrary weights, the same result will occur: The net movement of teachers between LSDs was towards smaller LSDs.

2. Choice variables of NETs

The NETs were asked two questions (Appendix G, questions 1 and 2) to obtain ordinal data about the variables that were important to them in seeking the teaching positions accepted for the 1968-1969 school year. The first question asked the NETs to rate the importance of each variable in a prepared list of 24 according to a scale ranging from a numerical value of three (very important) to a numerical value of zero (not impor-

tant). In question two they were asked to (i) use the same rating scale on five summary choice variables, and (ii) rank the same five summary choice variables.

Another way of looking at choice is to investigate the number of LSDs from which firm offers of employment were obtained. Presumably a NET with a number of firm offers would have a better opportunity to maximize an ordinal and subjective utility function than a NET who had but one firm offer (of course, a teacher might only apply for one position that is considered to be his "first" choice and then look no further if an acceptable offer of teaching employment is received). As a further aspect of the choice process, each NET was asked if there were a teaching position that was preferred over all others and whether or not this position was obtained (Appendix G, question 9). The NETs were also asked to give a general description of the availability of information on teaching employment in their areas of specialization (Appendix G, question 5).

Finally, and in view of numerous contradictions in previous research over the importance of salary as a choice variable, the NETs were asked whether or not they had a minimum salary (Appendix G, question 14). Presumably, the salary level received is not as important if it exceeds one's minimum than if it falls near or below one's minimum.

a. Importance of individual choice variables The NETs were asked to rate the importance of a list of choice variables (Appendix G, question 1) in their decision to choose their 1968-1969 teaching position on a four numeral rating scale that varied between three (very important) and zero (not important). By adding the numerical responses for each of the listed variables (24 in all), an ordinal estimate of the

aggregate and subjective valuation for each variable is obtained. If the aggregate is then divided by the number of respondents an average response is obtained.

The variable with the largest average response value is "teaching assignment(s)" with a value of 2.27, and the second highest value is for "salary" (2.19). In the last pretest of the questionnaire prepared for the NETs, the teacher completing the questionnaire said: "I chose my job because the school superintendent showed an interest in me and my major area, art." Because of this suggestion the NETs were asked to rate the importance of the following item: "School administrators showed an interest in me and my field of work in the contacts I had with them." This item ranked third with a value of 2.18 behind teaching assignment(s) and salary. The 24 choice or decision variables that the NETs were asked to rate are listed in Table 6.12 by LSD size strata in descending order.

There are some curious patterns in looking across several of the rows for the three size strata (although it must be realized that comparisons of the average responses on the basis of their absolute size is hazardous since the results have meaning with respect to ordinality; hence, they are only unique up to a monotonic transformation). Nevertheless, it is interesting to note that the average value for salary increases from 2.13 to 2.22 to 2.23. That is, salary becomes more important as the LSD size gets smaller. The average salary level falls from \$7629 to \$7071 to \$6334 for the same three size strata. So, salary becomes more important as the salary level declines. Certainly the re-

Table 6.12. Average ratings of choice variables by LSD size strata^a

Choice Variables	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Teaching Assignment(s)	2.10	2.39	2.38	2.27
Salary	2.13	2.22	2.23	2.19
LSDAs Showed an Interest in Teacher and/or Teaching Field	2.08	2.26	2.22	2.18
Availability of Teaching Materials and Teaching Facilities	2.07	1.99	2.0176	2.03
Competent and Friendly Colleagues	2.05	2.01	1.865	1.99
Future Salary Prospects	1.84	1.85	1.78	1.93
Reputation of LSD	2.02	1.814	1.74	1.88
Geographical Location of Community	1.682	1.90	2.0175	1.85
Reputation of LSDAs	1.72	1.95	1.860	1.83
Friends, Relatives and/or Spouse Nearby LSD	1.96	1.75	1.58	1.79
Size of School and/or LSD	1.679	1.811	1.63	1.71
Size of Community	1.70	1.74	1.42	1.63
Low Pupil-Teacher Ratio	1.50	1.51	1.70	1.56
Quality of Students	1.31	1.39	1.57	1.41
Daily Planning Periods	1.32	1.41	1.48	1.39
Fringe Benefits	1.44	1.35	1.29	1.37
Nearness to Graduate School	1.46	1.21	1.13	1.29
Teachers Play an Active Role in Policy-Making	1.25	1.33	1.25	1.27
Good Entertainment and Re- creational Facilities in Community	1.42	1.25	0.84	1.21
Low Workload	1.14	1.17	1.07	1.13
Good Opportunities for Future Employment in Nearby LSDs	0.88	0.72	0.86	0.82
Good Opportunities for Outside Income	0.72	0.60	0.49	0.62
Good Opportunities for Jobs Outside of Public Education	0.64	0.60	0.38	0.55
Marriage Prospects	0.44	0.35	0.25	0.35

^aSurvey data.

lationship has not been evaluated rigorously, nor is it likely that a rigorous test is possible given the nature of the data, nevertheless, the result is interesting.

Other interesting observations for the three size strata can be observed in Table 6.12 as the LSD size strata declines from the largest to the smallest: (i) availability of teaching materials becomes less important; (ii) competent and friendly colleagues becomes less important; (iii) reputation of LSD becomes less important; (iv) geographical location becomes more important; (v) low pupil-teacher ratio becomes more important; (vi) quality of students becomes more important; (vii) daily planning periods become more important; (viii) fringe benefits become less important; (ix) nearness to graduate school becomes less important; (x) good entertainment and recreational facilities become less important; (xi) good opportunities for outside income become less important; (xii) good opportunities for jobs outside of public education become less important; and, (xiii) marriage prospects become less important. The other variables in the list (Table 6.12) reflect mixed patterns across the three strata.

Similar tables to Table 6.12 could be included for other groupings of the choice or decision variables. However, to simplify the presentation and still include the essential relationships of the choice variables with respect to other categories, several statistical tests were run for the ranks of the choice variables by the following descriptive variables: (i) sex of the NETs; (ii) age of the NETs; (iii) marital status of the NETs; and, (iv) LSD size strata. Each of the following null hypotheses were rejected at the one percent level:

- H_{6.1} There is no relationship in the ratings of the importance of the list of choice or decision variables when ranked by the male and female teachers in the sample.
- H_{6.2} There is no relationship in the ratings of the importance of the list of choice or decision variables when ranked by different age groupings of the NETs.
- H_{6.3} There is no relationship in the ratings of the importance of the list of choice or decision variables when ranked by the marital status of the NETs.
- H_{6.4} There is no relationship in the ratings of the importance of the list of choice or decision variables when ranked by the NETs in each of the LSD size strata.

Since each of the above hypotheses are rejected at the one percent level of significance, it can be concluded that the NETs in the sample rated the 24 choice or decision variables about the same (i.e., the ratings are associated) when statistically tested by (i) male versus female teachers, (ii) age, (iii) marital status, and (iv) LSD size strata. The statistical results are summarized in Table 6.13. For example, since

Table 6.13. Ratings of choice variables by sex, age, marital status and LSD size strata of respondents: statistical analysis^a

List of Choice Variables Rated with Respect to the Following Groupings of NETs	Theoretical Value	Observed Value
i. Sex of NETs	$r_s = 0.485^b$	$r_s = 0.930^{**}$
ii. Age Groupings of NETs	$x^2 = 41.64^c$	$x^2 = 171.64^{**}$
iii. Marital Status of NETs	$x^2 = 41.64^c$	$x^2 = 64.24^{**}$
iv. LSD Size Strata	$x^2 = 41.64^c$	$x^2 = 66.58^{**}$

^aSurvey data.

^bCritical value for the one percent level of significance (100,p.284).

^cCritical value for the one percent level of significance (100,p.249).

^{**}Significant at the one percent level.

the observed r_s for sex of NETs exceeds the theoretical r_s , it can be concluded that male and female teachers attach about the same order of importance to the list of variables when they are ranked and tested with the Spearman rank correlation coefficient. The other three sets of statistical tests were based on the Kendall coefficient of concordance.

b. Importance of summary choice variables After being asked to rate the importance of the 24 choice variables in the prepared list (discussed in the preceding section), the NETs were asked to rate five summary choice variables (Appendix G, question 2). The rating scale ranged from a numerical value of three (very important) to a value of zero (not important). The rating values for each variable were summed over the responding NETs and the average response was computed for each of the five summary choice variables.

The five summary variables were designed to summarize the 24 choice or decision variables (as best this could be done). The five summary variables included the following:

- i. The school (i.e., students, building, class size, courses or grade level taught, teaching aids, reputation of the school, etc.);
- ii. Administration and supervision of the school (i.e., progressive school board, pleasant and congenial supervisors, etc.);
- iii. Economic variable (i.e., salary, fringe benefits and advancement prospects);
- iv. Geographical location (i.e., nearness to graduate school, friends, relatives and/or spouse nearby; climate; recreational and cultural facilities; etc.); and,

- v. Future employment prospects (in public education and/or other occupations in this locale).

The average value for geographical location is 2.31; for the school it is 2.25; for the economic variable 2.12; for administration and supervision of the school 2.11; and for future employment prospects 1.07. Although the absolute value of these numbers has no meaning, nevertheless, the average value for future employment prospects is so low that it does seem reasonable to infer that the future does not have much impact on the choice or decision sets of the NETs in this study.

Interestingly enough, the variable geographical location was ranked eighth in the prepared list of 24 variables (Table 6.12); however, as a summary variable it is ranked first. And while salary was second in Table 6.12, the economic variable is third in the summary table (Table 6.14). Table 6.14 reports the average responses for the ratings of the five summary variables by LSD size strata.

Table 6.14. Average importance of summary choice variables by LSD size strata^a

Choice Variables, Summary	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Geographical Location	2.34	2.28	2.31	2.31
The School	2.18	2.28	2.30	2.25
Economic Variable	2.11	2.17	2.06	2.12
Administration and Supervision of the School	1.98	2.16	2.23	2.11
Future Employment Prospects	1.20	1.00	0.95	1.07

^aSurvey data.

An interesting hypothesis that was considered with respect to the ratings of the summary choice variables is the following:

- H_{6.5} There is no relationship in the ratings of the importance of the five summary choice variables when ranked by the 99 NETs who were employed in public education in the pre-survey year and moved to a larger LSD versus the 124 NETs who were employed in public education in the pre-survey year and moved to a smaller LSD (see Table 6.11).

The null hypothesis is accepted at the five percent level. The observed r_s of 0.700 is less than the theoretical r_s of 0.900 at the five percent level (100, p. 294). Therefore, it can be inferred that the 99 who moved to larger LSDs rated the summary variables differently than the 124 who moved to smaller LSDs. The main source of the discrepancy in the ranks of the two groups is the following: (i) the economic variable was ranked second by the 99 and fourth by the 124; (ii) the administration and supervision of the school was ranked fourth by the 99 and third by the 124; and, (iii) geographical location was ranked third by the 99 and second by the 124. Both groups ranked the school first and the future last.

The ratings of the above summary variables were checked by means of a second question (Appendix G, question 2). An individual NET might give one choice variable (e.g., school) a rating value of three (very important) and another variable (e.g., geographical location) a value of two (moderately important). However, there is still the possibility that if this NET would rank school versus geographical location, he might rank location first and school second. For this reason the NETs were asked to rank the five summary variables. (Incidentally, there were a surprisingly large number of cases in which the ratings were not in full agreement with the rankings. Unfortunately, a quantitative count of the actual

number of discrepancies is not available.) The rank data provided by the teachers were converted into a descending ordinal scale in which a rank of one was given a value of five, a rank of two a value of four, and so on. These weights were then summed over the responding NETs and an average response was computed.

The results (Table 6.15) reveal that the school is now ranked first (average weight of 3.64); geographical location is second (average weight of 3.55); the economic variable is third again (average weight of 3.24); administration and supervision of the school is again fourth (average weight of 3.14); and future employment prospects is last again (average weight of 1.46).

If the NETs had been consistent in rating the summary variables versus ranking them, the rank-order of the averages in Table 6.14 would be identical to the rank-order of the averages in Table 6.15. Since two of the variables are interchanged for the two methods, it can be concluded that there were some inconsistencies in the responses.

Table 6.15. Average ranks of summary choice variables by LSD size strata^a

Choice Variables, Summary	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
The School	3.55	3.65	3.75	3.64
Geographical Location	3.58	3.50	3.57	3.55
Economic Variable	3.28	3.22	3.21	3.24
Administration and Supervision of the School	3.00	3.21	3.25	3.14
Future Employment Prospects	1.62	1.44	1.24	1.46

^aSurvey data.

The economic variable is of interest. Its importance (relatively) as a decision variable does not emerge clearly from this research or other research. For example, Orlich, et al. (76) conclude that economic variables are important while Brown (13) concludes that matters other than money are important. Although it would be grossly presumptuous to assert that the method used in this research is the "best" way to evaluate the relative importance of salary as a decision variable, it does seem much superior to the method used by Orlich, et al. in which the importance of the economic variables emerged from a weighting system that was not based on the overt answers of their respondents. They took a list similar to the one in Table 6.12, selected the ones that seemed to come under different summary headings and averaged the single responses under summary headings in order to obtain their summary results.

The summary choice variables of Tables 6.14 and 6.15 were subjected to limited statistical analysis. The ratings of the summary choice variables of Table 6.14 and the rankings of the summary choice variables in Table 6.15 were statistically tested (i.e., Kendall coefficient of concordance) by LSD size strata. The following hypotheses were rejected at the one percent level of significance:

- H_{6.6} There is no relationship in the ratings of the importance of the list of summary choice variables when rated by the NETs in each of the LSD size strata (Table 6.14).
- H_{6.7} There is no relationship in the rankings of the list of summary choice variables when ranked by the NETs in each of the LSD size strata (Table 6.15).

Therefore, it can be inferred for both hypotheses that the NETs who accepted employment in the three size strata consider the summary listing in about the same way. The statistical coefficients, both observed and theoretical, are included in Table 6.16.

Table 6.16. Summary choice variables: statistical analysis^a

	Theoretical Value	Observed Value
a. Importance of Summary Choice Variables by LSD Size Strata	$W = 75.6^b$	$W = 83.5^{**}$
b. Ranking of Summary Choice Variables by LSD Size Strata	$W = 75.6^b$	$W = 82.0^{**}$
c. Average Responses of (a) Above by Average Responses of (b) Above	$r_s = 0.90^c$	$r_s = 0.90^*$

^aSurvey data.

^bSiegel (100, p. 286). Critical value for one percent level of significance.

^cSiegel (100, p. 284). Critical value for five percent level of significance.

*Significant at the five percent level.

**Significant at the one percent level.

The final statistical test of the two sets of summary results was to determine whether or not the ratings and rankings had been performed by respondents from the same population. The following null hypothesis is barely rejected at the five percent level of significance:

- H_{6.8} There is no relationship between the ratings of the importance of the list of summary choice variables versus the rankings of the same list of choice variables.

Since the observed and theoretical values of r_s are equal for the five percent level of significance the null hypothesis is rejected. The statistical results for this hypothesis are also included in Table 6.16.

c. Other dimensions of job choice In addition to the variables that influence the decision set of a teacher in the market, there is the possibility of evaluating the number of teaching positions investigated, and the number from which a firm offer was received (Appendix G, question 6). For the 625 NETs who answered the question, they applied to an average of 4.55 school districts (214 NETs or 34.4 percent of the respondents submitted only one application), had 2.79 interviews at different districts, and received an average of 1.95 concrete offers of teaching employment. These results are included in Table 6.17 along with the results by LSD size strata.

Moreover, the acceptance of some teaching position does not mean that the teacher's preferred position was obtained. Thus, one question (Appendix G, question 9) that was included for the NETs pertained to job preference. The NETs were asked if they had a job preference. If they had a preference, they were then asked if they obtained their preference. Of the 628 NETs who answered the question, 83 percent had a teaching preference and of those having a preference, 22.9 percent did not obtain their preference (i.e., 93 of 506 failed to obtain their job preference). The results are summarized in Table 6.18.

The NETs were asked to generalize about the availability of information on job vacancies in their teaching specialty in public education

Table 6.17. Average number of applications, interviews and concrete offers received by LSD size strata^a

	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Average Number of Applications Submitted by Each NET	3.73	4.75	5.52	4.55
Average Number of Personal Interviews for Each NET	2.68	2.77	2.95	2.79
Average Number of Concrete Offers Received by Each NET	1.86	2.04	1.99	1.95

^aSurvey data.Table 6.18. Job preferences versus jobs obtained by new teachers^a

Statement of NETs' Preferences	Number	Percent
a. Number of NETs Having a Preference	506	83.0
b. Number of NETs Not Having a Job Preference	104	17.0
c. Number of Teachers Failing to Answer Question	21	
TOTAL Number of NETs	631	100.0
d. Number of NETs That Had a Preference and Obtained the Position that Was Preferred	413	77.1
e. Number of NETs That Had a Preference and Did Not Obtain the Position That Was Preferred	93	22.9
f. Number of NETs Having a Preference	506	100.0

^aSurvey data.

(Appendix G, question 5). 617 NETs answered the question. The results strongly support the following statement: The NETs believe themselves to be well informed on job vacancies in their areas. 209 of the NETs (33.9 percent) replied that the available vacancy information is "excellent." A further 362 teachers (58.6 percent) replied "good." Hence, 92.5 percent of the 617 respondents believe that the information available on job vacancies in their own field is good or excellent. Twenty-four NETs (3.9 percent) replied "poor" and 22 NETs (3.6 percent) replied "very poor" to this general statement on the availability of vacancy information.

Another question pertained to minimum salary (Appendix G, question 14). The NETs were asked if they had a minimum salary and the range if they had a minimum. Unfortunately, it is very difficult to analyze this kind of question due to the complexity of the respondents who differed by age, sex, family responsibilities, amount of formal education, academic major and/or minor, years of teaching experience, length of contract period, and so on. Nevertheless, the fact that 70.3 percent reported a minimum salary does suggest that there is a floor salary for a large number of NETs. Moreover, this may help to explain why the NETs did not evaluate the economic variable too highly among the summary variables: Of the 437 NETs who reported that they had a minimum salary, only 3.2 percent received a salary below the minimum range that was specified. With respect to the importance of salary as a choice variable, the above suggests that as salary received reaches and then exceeds the minimum, the more likely one would expect that the relative importance of salary would decrease in importance as a choice or decision variable.

3. Search channels and search costs

The new teachers who completed the questionnaires were asked four questions about their search for teaching employment for the 1968-1969 school year. First they were asked to rate the value of each item on a prepared list of job search methods or job search channels (Appendix G, question 4). The five numeral rating scale varied between four (a most valuable method) and zero (method not used).

The NETs were then asked to identify the job search channel through which they "first learned" of the position accepted for September 1968 (Appendix G, question 4). Finally, they were asked (i) how many man-hours were devoted to their search for employment and (ii) how much money (Appendix G, questions 12 and 13, respectively).

a. Average value of search channels Each NET was asked to rate the value of each of 11 different job search channels on a prepared list with a five numeral rating scale that varied from four to zero. By summing over the numerical values assigned to each search channel for all NETs rating the search channel, and finding the average response, then, it is possible to rank the average values and make comparisons.

University placement services ranked first with an average value of 2.42 and newspaper want ads ranked second (2.09). The third ranked item has been called "blind contacts" and refers to the contacts that NETs made to LSDs by inquiring with letters, telephone calls and walk-ins. It has a 1.86 value. The fourth ranked search channel is former teachers or professors (1.67), friends and relatives is fifth (1.54) and "was recruited" is sixth (1.27). These values are summarized in Table 6.19

along with the other job search channels included in the prepared list by LSD size strata.

A further point of interest in Table 6.19 is that the NETs' responses reveal university placement services to be rated a more valuable method for the larger LSDs than for the smaller ones and for newspaper want ads the opposite is true. (Incidentally, this agrees exactly with the LSDAs' responses.) The pattern of responses for the other individual search channels by LSD size strata are mixed.

Table 6.19. Average value of search channels by LSD size strata^a

Search Channels	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
University Placement Services	2.63	2.29	2.26	2.42
Answered Newspaper Want Ads	1.31	2.38	2.91	2.09
Blind Contacts ^b	2.12	1.73	1.62	1.86
Former Teachers or Professors	1.85	1.50	1.58	1.67
Friends and Relatives	1.52	1.64	1.46	1.54
Was Recruited	1.25	1.40	1.16	1.27
I.S.E.A. Employment Service	0.62	0.67	0.48	0.60
Answered Other Advertisements	0.44	0.50	0.53	0.49
Public Placement Services	0.383	0.31	0.30	0.34
Commercial Placement Services	0.379	0.33	0.27	0.33
Advertised Availability	0.13	0.15	0.15	0.14

^aSurvey data.

^bBlind contacts includes (i) the writing of letters to see if any positions are open, (ii) telephone calls to LSDs to see if any positions are open, and (iii) walk-ins to see if any positions are open.

Another way to classify the responses to the rating of values of search channels is by years of experience. Presumably, teachers with more experience in the profession would have more savoir-faire and evaluate the list of search channels differently than their less experienced or inexperienced counterparts. There seems to be some tendency for the more experienced teachers to believe university placement services to be less valuable than the less experienced teachers. On the other hand, newspaper want ads become increasingly valuable with increasing experience (Table 6.20). The other patterns for the individual search channels by years of experience seem to offer mixed patterns.

Table 6.20. Average value of search channels by years of teaching experience in public education^a

Search Channels	None	Years of Teaching Experience					State
		1-2	3-4	5-9	Over 9		
University Placement Services	2.64	2.25	2.46	2.198	1.93	2.42	
Answered Newspaper Want Ads	2.00	2.08	2.16	2.200	2.38	2.09	
Blind Contacts	1.92	2.24	1.99	1.81	1.53	1.86	
Former Teachers or Professors	1.87	1.48	1.57	1.58	1.26	1.67	
Friends and Relatives	1.43	1.66	1.82	1.75	1.17	1.54	
Was Recruited	1.21	1.13	1.19	1.42	1.70	1.27	
I.S.E.A. Employment Service	0.52	0.38	0.52	0.88	1.09	0.60	
Answered Other Advertisements	0.51	0.40	0.23	0.47	0.77	0.49	
Public Placement Services	0.30	0.28	0.14	0.51	0.67	0.34	
Commercial Placement Services	0.32	0.25	0.28	0.40	0.55	0.33	
Advertised Availability	0.14	0.07	0.11	0.20	0.26	0.14	

^a Survey data.

The average aggregate values of the selected search channels were ranked and statistically tested for the following null hypotheses:

- $H_{6.9}$ There is no difference in the ratings of the value of the list of search channels when ranked by LSD size strata.
- $H_{6.10}$ There is no difference in the ratings of the value of the list of job search channels when ranked by years of teaching experience.

Both of the above hypotheses are rejected at the one percent level of significance using the Kendall coefficient of concordance test. For $H_{6.9}$ the observed chi-square is 28.42 and for $H_{6.10}$ the observed chi-square is 46.02. For both hypotheses the theoretical chi-square is 23.21 at the one percent level of significance. In other words, the NETs who accepted positions in the three size strata attached about the same rank-order to the list of search channels. Similarly, the teachers, when classified by years of teaching experience, attach about the same rank-order to the list of search channels.

The result with respect to the classification by years of teaching experience seems somewhat surprising. In general, it had been expected that inexperienced NETs would have tended to favor formal search channels while the experienced NETs would have tended to favor the less formal search channels. No doubt there are some plausible explanations for this result. Maybe the flow of information in the teacher market is such that teachers attach the same value to the several search channels irrespective of their years of teaching experience. Maybe the respondents failed to tell the truth as it is, but tell it as they think it should be told. Maybe everybody, both experienced and inexperienced teachers, just bungles into the teacher market without any understanding or information

about its operation. A definitive explanation is probably impossible and certainly was not an objective of this research. Nevertheless, the next few paragraphs offer a puzzling contrast to the results discussed in this and the preceding paragraph.

b. "First learned" of present position As a logical follow-up to the question on the rated value of each search channel, the respondents were asked to identify the channel by which they "first learned" of the vacancy they were hired to fill for the 1968-1969 school year. As it turns out in retrospect, this question yields (i) some interesting results, and (ii) some interesting questions. For example, with respect to the interesting questions, if teacher X learns of a teaching vacancy from his mother who read of the vacancy in the newspaper want ads, then, and presumably, X would answer the question correctly by responding "My mother!" Yet, the complete answer probably should include the qualification about the newspaper want ads. This ambiguity is part and parcel of the results of the data presentation that follows.

If one assumes that the above reservation is unimportant, and it may be, then the results to the question on first learned method reveal some interesting comparisons. In the preceding section and its accompanying table (Table 6.19) it was noted that university placement services ranked first by the average value method; however, it ranked considerably lower (fifth, to be precise) by the parametric statistics as can be seen in Table 6.21. There would seem to be something other than chance operating here. Possibly teachers have learned the rules of job search rather well: "Most teachers find teaching employment via two formal

Table 6.21. Methods "first learned" of present position by LSD size strata^a

"First learned" Method	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Answered Newspaper Want Ads				
i. Number	24	74	79	177
ii. Percent	10.1	38.2	47.9	29.8
Blind Contacts				
i. Number	77	32	18	127
ii. Percent	32.5	16.5	10.9	21.4
Friends and Relatives				
i. Number	45	35	29	109
ii. Percent	19.0	18.0	17.6	18.3
Was Recruited				
i. Number	30	30	16	76
ii. Percent	12.7	15.5	9.7	12.8
University Placement Services				
i. Number	39	13	15	67
ii. Percent	16.5	7.7	9.1	11.3
Former Teachers or Professors				
i. Number	13	7	6	26
ii. Percent	5.5	3.6	3.6	4.4
Public Placement Services				
i. Number	1		1	2
ii. Percent	0.4		0.6	0.3
I.S.E.A. Employment Service				
i. Number	1			1
ii. Percent	0.4			0.2
Answered Other Advertisements				
i. Number	1			1
ii. Percent	0.4			0.2
Commercial Placement Services and Advertised Availability				0
Other Reasons				
i. Number	6	1	1	8
ii. Percent	2.5	0.5	0.6	1.3
Total Responses				
i. Number	237	192	165	594
ii. Percent	100.0	100.0	100.0	100.0
NETs not Answering Question	17	17	11	45

^aSurvey data.

search channels, university placement and newspaper want ads" and then they add parenthetically to themselves ("but I believe that informal search channels are the best for me"). It would seem plausible to believe that the first learned method is a more accurate reflection of the corridors of search than the average rated value of the list of search channels.

In any case, newspaper want ads do rank first among the first-learned methods with 177 NETs responding. The second and third channels ranked by the frequency of NETs first learning by them are informal channels: blind contacts (127 NETs); and, friends and relatives (109 NETs). The fourth most frequent first-learned method is "was recruited" with 76 NETs reporting (i.e., was recruited means that someone looked for these NETs specifically and made a firm offer). University placement is fifth with 67 NETs reporting. The sixth ranked first learned channel included 26 NETs who responded "former teacher or professors." A further 12 NETs reported a variety of other channels and 45 (7.1 percent) did not answer the question.

The above frequencies of first learned methods have been cross-tabulated by LSD size strata in Table 6.21 where it can be noted that 10.1 percent of the NETs in size strata 1, 38.2 percent in size strata 2 and 47.9 percent in size strata 3 learned of their vacancies through newspaper want ads. On the other hand, blind contacts worked for 32.5 percent of the NETs in size strata 1, 16.5 percent in size strata 2 and 10.9 percent in size strata 3. The other tabulations of the first-learned methods by size strata in Table 6.21 seem to offer mixed patterns.

Years of teaching experience was cross-tabulated with respect to the first learned methods of job search since it seemed to offer some interesting considerations. More teachers with no experience (81) learned of their present position through newspaper want ads than through university placement services (52). Another 50 NETs with no experience first learned of their present position through blind contacts. All of the first learned methods by years of experience are reported in Table 6.22.

In addition, the first six first learned methods (i.e., ranks one through six) in Table 6.22 were statistically tested by years of teaching experience. The following null hypothesis is rejected at the one percent level of significance using the Kendall coefficient of concordance test where the observed chi-square is 18.03 and the theoretical chi-square is 15.09 at the one percent level:

- H_{6.11} There is no relationship in the first learned methods ranked from one to six by the years of teaching experience of the new teachers.

It is not possible to conclude that NETs with varying years of experience first learned of the position accepted for September 1968 by different search channels.

Finally, the first learned method was considered with respect to the work activity of the respondents during the previous school year. It would seem reasonable to expect that those NETs who had been undergraduate students would tend to learn of their first job through university placement services. The answer is in the negative. 68 undergraduate students learned of their position through newspaper want ads, 44 through blind contacts, 42 through university placement services, and 39 through friends

Table 6.22. Methods "first learned" of present position by years of teaching experience in public education^a

"First learned" Method	Years of Teaching Experience					State
	None	1-2	3-4	5-9	Over 9	
Answered Newspaper Want Ads	81	27	22	25	21	177 ^b
Blind Contacts	50	33	15	19	10	127
Friends and Relatives	39	17	27	19	7	109
Was Recruited	29	15	8	13	11	76
University Placement Services	52	4	3	4	4	67
Former Teachers or Professors	19	1	3	2	1	26
Public Placement Services	1				1	2
I.S.E.A. Employment Service					1	1
Answered Other Advertisements		1				1
Commercial Placement Services and Advertised Availability						0
Other Reasons	8					8
Total Responses	279	98	78	82	56	594
NETs not Answering Question	19	9	10	5	2	45 ^c

^aSurvey data.

^bOne new teacher said his present position was "first learned" through newspaper want ads; however, this teacher did not report years of teaching experience.

^cThe total responses (594) plus the one teacher noted in footnote b above and the 45 NETs not answering the question on first learned method totals to 639, eight greater than the sample size of 631. This is attributable to eight teachers who gave two first learned methods.

and relatives. Of the NETs who had been public school teachers during the previous school year, 75 first learned through newspaper want ads, 55 through blind contacts, 51 through friends and relatives and a further 25 were recruited. These results and those for the other 1967-1968 work activities versus first-learned methods are recorded in Table 6.23 for the NETs who answered both questions.

c. Search channels: a comparison The final part of the analysis of the job search channels of the NETs is to test whether or not their responses to the average rating value for the several search channels is the same or different from the same job search channels through which they first learned of their present position. The following null hypothesis was evaluated with the Spearman rank correlation coefficient for the six search channels which were ranked one through six for both sets of data:

$H_{6.12}$ There is no relationship in the first learned methods versus the average rating values of the six job search channels ranked one through six.

The observed r_s is 0.143. The theoretical r_s is 0.829 at the five percent level of significance. Therefore, it can be concluded that the null hypothesis, $H_{6.12}$, cannot be rejected at the five percent level. The observed r_s is considerably lower than the theoretical r_s ; hence, it can be inferred without qualifications that the search channels the NETs consider to be valuable for learning of teaching vacancies are not the same as the ones by which they learned of the vacancies they were subsequently hired to fill.

Table 6.23. Last year's work activity by "first learned" method^a

Last Year's Work Activity	"First learned" Method	Frequency
Professional Workers	Answered Newspaper Want Ads	5
	Friends and Relatives	5
	Was Recruited	2
Agricultural Workers	Answered Newspaper Want Ads	1
	Was Recruited	1
Proprietors, Managers and Officials	Answered Newspaper Want Ads	1
	Was Recruited	1
Clerical and Kindred Workers	Answered Newspaper Want Ads	5
	Friends and Relatives	2
	Blind Contacts	1
Sales Workers	Blind Contacts	2
	Answered Newspaper Want Ads	1
	Friends and Relatives	1
	Was Recruited	1
	Former Teachers or Professors	1
Skilled and Unskilled Workers	Answered Newspaper Want Ads	1
	University Placement Services	1
	Former Teachers or Professors	1
Undergraduate Students	Answered Newspaper Want Ads	68
	Blind Contacts	44
	University Placement Services	42
	Friends and Relatives	39
	Was Recruited	28
	Former Teachers or Professors	17
	Other Reasons	5
	Public Placement Services	1
Graduate Students	Answered Newspaper Want Ads	11
	University Placement Services	11
	Blind Contacts	6
	Former Teachers or Professors	3
	Was Recruited	3
	Other Reasons	2
	Friends and Relatives	1

^aSurvey data.

Table 6.23 (continued)

Last Year's Work Activity	"First learned" Method	Frequency
Homemakers	Blind Contacts	23
	Answered Newspaper Want Ads	18
	Was Recruited	18
	Friends and Relatives	16
	Former Teachers or Professors	2
	University Placement Services	1
	Other Reasons	1
Public School Teachers	Answered Newspaper Want Ads	75
	Blind Contacts	55
	Friends and Relatives	51
	Was Recruited	25
	University Placement Services	11
	Former Teachers or Professors	4
	I.S.E.A. Employment Service	1
	Public Placement Services	1
	Other Reasons	1
Private School Teachers	Blind Contacts	10
	Friends and Relatives	2
	University Placement Services	1
College and University Teachers	Answered Newspaper Want Ads	2
	Former Teachers or Professors	1
Other Teachers	Blind Contacts	8
	Was Recruited	7
	Friends and Relatives	6
	Answered Newspaper Want Ads	2

d. Costs of job search by NETs The costs of seeking employment include both (i) the out-of-pocket costs, and (ii) the opportunity costs of one's time (Appendix G, questions 12 and 13). The NETs were asked how many manhours they devoted to their search for employment and how much money they spent out of their own pocket seeking employment for September 1968.

The teachers who answered these two questions (585 answered both) reported that they devoted an average of 30.31 manhours and an out-of-pocket average expenditure of \$23.17 to their search for employment for 1968-1969. Furthermore, it is relatively simple to convert the manhours' estimate to a dollar value and project the total expenditures on job search for all NETs in the state of Iowa for the market period ending September 1968. Also, it should be noted that the following computation is based on a fundamental assumption about the value of the manhours devoted to the job search, namely, the salary received by each of the NETs for the year 1968-1969 is the basis upon which the estimated manhours is converted into dollars.

The estimated number of manhours was converted into dollars and the total job search costs of the NETs in the sample were obtained in the following way:

$$C = \sum_{i=1}^{585} \left[\frac{S_i}{(8)(195)} M_i + Z_i \right]$$

where

C = total cost of job search of the 585 NETS who reported both
manhours and out-of-pocket money expenditures

S_i = salary of the i th NET for the 1968-1969 school year

$(8)(195)$ = an eight-hour day times the average teacher contract length of 195 days

$\frac{S_i}{(8)(195)}$ = estimated hourly wage of the i th teacher

M_i = estimated number of manhours the i th NET spent searching for employment

Z_i = out-of-pocket expenditures of the i th NET

$i = 1, 2, 3, \dots, 585$ new teachers.

Using the above formula the value of C was found to be \$88,954; hence, there was an average dollar cost of \$152.05 (median expenditure was \$75) associated with the job search for each of the 585 NETs who answered both questions. Ten percent of the 585 incurred search costs of less than \$13, while on the high side, ten percent incurred costs of more than \$400 (seven NETs reported costs in excess of \$1000).

In the chapter on demand it was estimated that there were 5724.2 vacancies to be filled for September, 1968. If it is assumed that this number of vacancies were filled and that on the average the total cost of the job search was \$152.05, then, the estimated total cost of the job search for all NETs in the state of Iowa for September, 1968, would be \$870,365.

4. Reasons for resignations

The NETs who had been previously employed in public education were asked why they left their previous place of employment (i.e., ex-post analysis) in public education. In addition, all of the NETs were given a list of variables and asked to rate the importance of each variable in causing them to resign from one teaching position for another in the

future (i.e., ex-ante analysis). The rating scale is similar to those described before (i.e., a value of three is very important, two is moderately important, one is slightly important and zero is not important).

a. Reasons for resignations: ex-post Although the decision to resign may be attributable to a single cause, there is every reason to expect that more than one event or personality will lead to a resignation; hence, the teachers were asked to check the reason(s) that led them to leave their previous place of employment in public education (Appendix G, question 28--The NETs were asked to check no more than three reasons on a prepared list).

Of the 631 teachers in the sample, 337 had one or more years of teaching experience in public education and gave a total of 628 reasons for leaving their previous place of employment in public education (607 of the responses were from the prepared list and 21 others were for a variety of reasons. The most frequent response of the NETs was "to be with spouse" (97 NETs). A further 182 reported that they resigned to accept a position that was either "better professionally" (92 NETs) or "better paid" (90 NETs). 81 NETs said they resigned because of "dissatisfaction with their previous position." 110 NETs offered geographical-type reasons for their resignations with 56 desiring "to teach nearer home" and 44 desiring a "different geographical location." 53 resigned to "become full-time homemakers." Another 35 NETs cited "dislike of superior," 29 mentioned "conditions at home" and 29 resigned to "further their education." The above reasons for resignations are reported in Table 6.24 by LSD size strata.

Table 6.24- Frequency of reasons for resignations by LSD size strata^a

Reasons for Resignations	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
To be with Spouse	44	30	23	97
Accept Better Professional Position	36	31	25	92
Accept Better Paid Position	34	30	26	90
Dissatisfied with Previous Position	29	28	24	81
To Teach in an LSD Nearer Home	16	24	16	56
Become Full-time Homemaker	20	18	15	53
Desired Different Geo- graphical Location	17	14	13	44
Disliked Superior	11	16	8	35
Conditions at Home	10	13	6	29
To Further Education	10	12	7	29
Ill Health	1	--	--	1
Number of Responses	228	216	163	607
Number of Respondents	128	120	89	337
Number of NETs without Teaching Experience	124	87	82	293
Other	--	--	1	1

^aSurvey data.

Female NETs resigned most frequently "to be with their spouse" (97 NETs), and to "become full-time homemakers" (53 NETs). The most frequent reasons that were given by male NETs included the acceptance of a "better professional position" (66 NETs), acceptance of a "better paid position" (58 NETs) and "dissatisfaction with previous position" (50 NETs). These and other results are reported in Table 6.25 by sex of the respondents.

Table 6.25. Frequency of reasons for resignations, 1967-1968 by sex^a

Reasons for Resignations:	Male	Female	State
To be with Spouse	6	91	97
Accept Better Professional Position	66	26	92
Accept Better Paid Position	58	32	90
Dissatisfied with Previous Position	50	31	81
To Teach in an LSD Nearer Home	17	39	56
To Become Full-time Homemaker	--	53	53
Desired Different Geographical Location	19	25	44
Disliked Superior	19	16	35
Conditions at Home	2	27	29
To Further Education	14	15	29
Ill Health	1	--	1
Retirement	--	--	--

^aSurvey data.

The reasons for resignations (ex-post) can be cross-tabulated with (i) LSD size strata, (ii) sex of NETs, and (iii) marital status of NETs. Statistical tests were used to evaluate the following null hypotheses:

- H_{6.13} There is no relationship in the reasons for resignations (ex-post) of the NETs by LSD size strata in which employment was accepted for the 1968-1969 school year.
- H_{6.14} There is no relationship in the reasons for resignations (ex-post) of the NETs by sex.
- H_{6.15} There is no relationship in the reasons for resignations (ex-post) of the NETs who were married or never married.

The reasons "ill health" and "retirement" were not considered in the statistical analysis since only one NET reported ill health as a reason for a previous resignation and no one reported retirement.

The reasons for resignations by LSD size strata is significant at the one percent level; hence, it can be inferred that NETs accepting employment in the three size strata had left their previous employment for about the same reasons. Similarly, the reasons for resignations by sex is also significant at the one percent level and the null hypothesis is rejected, thus permitting the inference that the male and female NETs resigned from their previous employment in public education for about the same reasons.

The reasons for resignations by marital status (i.e., married and never married only) is not significant and the null hypothesis is accepted at the five percent level of significance. Therefore, it can be inferred that the teachers who were married and the teachers who had never been married resigned from their previous employment in public education for different reasons. The above statistical results can be found in Table 6.26.

b. Reasons for resignations: ex-ante All of the NETs were asked to rate the importance of each variable in a prepared list that might cause a teacher to resign from one teaching position for another in the future (Appendix G, question 17). The NETs were given a four numeral rating scale that varied between three (very important) and zero (not important). The numerical responses were summed for each ex-ante reason and an average was obtained.

The highest average value was for "administration and supervision of the school" (value of 2.313) and it was followed very closely by the "economic variable" (i.e., salary, fringe benefits and advancement prospects) with a value of 2.305. The third ranked item is "the school"

Table 6.26. Comparison of reasons for resignations, ex-post, by selected variables: statistical analysis^a

	Theoretical Value	Observed Value
A. Reasons for Resignations by LSD size strata ^b	$\chi^2 = 21.67^c$	$\chi^2 = 25.25^{**}$
B. Reasons for Resignations by Sex of New Teachers ^d	$r_s = 0.600^e$	$r_s = -0.91^{**}$
C. Reasons for Resignations by Marital Status ^f	$r_s = 0.600^e$	$r_s = 0.277$

^aSurvey data.

^bThe resignations reasons "ill health" and "retirement" were not included in this comparison by LSD size strata.

^cCritical value for one percent level of significance (100, p. 249).

^dResigned to become full-time homemaker, ill health and retirement were not included in the comparison by sex of new teachers.

^eCritical value for five percent level of significance (100, p. 284).

^fThe variables ill health and retirement and full-time homemaker were not included in the comparison by marital status

^{**}Significant at the one percent level.

(2.29), and fourth is "the community" (2.10). These results are summarized in Table 6.27 by LSD size strata. It can also be noted in this table that the first two ranked ex-ante reasons (i.e., "administration and supervision of the school" and "the economic variable") become more important as probable causes of future resignations as the size strata declines.

Table 6.27. Ex-ante reasons for resignations by LSD size strata^a

Ex-ante Reasons for Resignations	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Administration and supervision of the school	2.26	2.34	2.36	2.313
Salary, fringe benefits and advancement prospects	2.26	2.28	2.40	2.305
The school	2.29	2.30	2.27	2.29
The community	2.11	2.24	2.11	2.15
Necessary for spouse to move (if married)	2.27	2.075	1.87	2.10
Become full-time homemaker	1.92	2.15	2.03	2.02
Geographical Location	1.99	2.072	1.96	2.01
Return to school to continue education full-time	1.74	1.75	1.70	1.73
Desire for change	1.58	1.48	1.49	1.52
Marriage	1.00	0.86	0.62	0.85

^aSurvey data.

Since it is possible that the results could vary according to different characteristics of the teachers, several non-parametric statistical tests were made on the list of reasons. The average values in the prepared list of probable causes of future resignations were classified with respect to the following descriptive variables: (i) LSD size strata; (ii) sex; (iii) age; (iv) marital status; (v) years of teaching experience; and (vi) job preference. The respective null hypotheses for the above descriptive variables were cross-tabulated with the prepared list of probable causes of future resignations and were statistically tested.

The null hypotheses of no relationship between the list of variables by age, marital status, years of teaching experience, and job preference are rejected at the one percent level of significance. A rather interesting finding here is that when marital status is evaluated with respect to the ex-post reasons the null hypothesis is not rejected; however, when marital status is evaluated with respect to the ex-ante reasons the null hypothesis is rejected at the one percent level. These results are contradictory.

The null hypothesis for the ex-ante reasons by LSD size strata is rejected at the one percent level of significance. Finally, when the list of ex-ante reasons is tested relative to sex, the null hypothesis is not rejected; hence, it would appear that males and females expect to resign from employment positions in public education in the future for different reasons.

The above statistical results are summarized in Table 6.28.

5. NETs' evaluation of alternatives to teaching

The final objective of this chapter pertains to the alternatives that teachers might consider outside of public education. This objective was approached from four points of view:

- a. What would each NET be doing in the 1968-1969 school year if teaching employment had not been accepted in the LSD in which teaching employment was accepted?
- b. What employment positions in non-educational fields of work were investigated prior to accepting present teaching position?
- c. Which non-educational employment opportunities would be most likely to attract teachers from employment in public education?

Table 6.28. Comparison of ex-ante reasons for resignations by selected variables: statistical analysis^a

Ex-ante Variables of Table 6.27 by the Following Variables	Theoretical Value	Observed Value
A. LSD size strata	$x^2 = 21.67^b$	$x^2 = 24.00^{**}$
B. Sex of new teachers ^c	$r_s = 0.600^d$	$r_s = 0.467$
C. Age of new teachers	$x^2 = 21.67^b$	$x^2 = 52.90^{**}$
D. Marital status of new teachers (never married and married only)	$r_s = 0.746^e$	$r_s = 0.815^{**}$
E. Years of teaching experience	$x^2 = 21.67^b$	$x^2 = 44.71^{**}$
F. Job preference ^f	$r_s = 0.746^e$	$r_s = 0.939^{**}$

^aSurvey data.

^bCritical value for one percent level of significance (100,p. 249).

^cThe ex-ante variable "become full-time homemaker" was not included since male respondents were instructed to skip this item.

^dCritical value for five percent level of significance (100, p.284).

^eCritical value for one percent level of significance (100, p. 284).

^fJob preference consisted of the comparison of the average ex-ante variables with (i) those NETs who had a preferred employment position and obtained it, and (ii) those who had a job preference but failed to obtain the preferred employment position.

^{**}Significant at the one percent level.

d. How many years does each NET expect to teach in public education?

The line of questioning did not go on to ask the NETs to project reasons for leaving teaching employment, rather, the limited objective pertaining to the kinds of employment that teachers would tend to look at should they leave teaching, seemed to be of sufficient interest in itself.

a. Most likely alternative to present position The NETs were asked to indicate (open-ended question) what they would most likely be doing if they had not accepted the teaching position obtained for the 1968-1969 school year (Appendix G, question 3).

Three alternatives to teaching in their present position dominated the 731 responses given by the 626 NETs who answered this question. 474 NETs (75.5 percent) indicated that they would be filling a teaching position in some capacity (i.e., 335 said they would be teaching elsewhere, 100 said they would be teaching in the same LSD as last year, and there were 37 miscellaneous responses). A further 100 NETs (16.0 percent) said that they would have been students (i.e., 6 as undergraduates and 94 as graduate students). 89 (14.2 percent) said that they would have been homemakers if their 1968-1969 teaching position had not been accepted.

The rest of the 70 alternatives were scattered among 32 different employment headings used in this study (see Table 6.29). Twenty-two said they would have been in the Armed Forces, one said "any lucrative job" and other responses ranged from dishwashers to religious workers.

b. Non-educational positions considered: 1968-1969 The 631 NETs were asked if they had considered employment outside of public education for the 1968-1969 school year (Appendix G, question 11). Of the 629 NETs who answered this question, 88 (i.e., 14.0 percent) indicated that they had applied for positions outside of public education. The 88 NETs submitted an average of 2.47 applications, had an average of 1.40 interviews and received an average of 1.03 firm offers (see Table 6.30).

Table 6.29. Alternative work activities that the NETs believed would have occupied them in 1968-1969 had their present teaching position not been accepted^a

Alternative Work Activity to Teaching 1968-1969	Frequency	Percent
<u>Professional, technical and kindred workers</u>		
Religious workers	2	
Social workers	4	
Writer	1	
Performer	1	
Research worker (geneticist)	1	
Computer scientist	1	
Extension	1	
Library work	1	
Other professional	<u>1</u>	
Total: professional, technical and kindred	13	2.1
<u>Agricultural workers</u>		
Farmers	3	
Other agricultural worker	<u>1</u>	
Total: agricultural workers	4	0.6
<u>Managers, officials and proprietors</u>		
Self-employment	2	
Administration	2	
Public relations	2	
Civil service	<u>2</u>	
Total: managers, officials and proprietors	8	1.3
<u>Clerical and kindred workers</u>		
Bookkeeper	1	
Secretarial work	3	
Clerical workers	2	
Other office workers	<u>1</u>	
Total: clerical and kindred workers	7	1.1
<u>Sales workers</u>		
Salesmen, unspecified	4	
Salesman, agricultural	1	
Travel consultant	1	
Sales representative	1	
Salesman, insurance	<u>1</u>	
Total: salesworkers	8	1.3
<u>Skilled and unskilled workers</u>		
Armed Forces	22	
Prepared food worker	1	
Factory worker	1	
Assistant train master	1	
Dishwasher	1	
Any available work	<u>2</u>	
Total: skilled and unskilled workers	28	4.5

^a Survey data.

Table 6.29 (continued)

Alternative Work Activity to Teaching, 1968-1969	Frequency	Percent
<u>Students</u>		
Undergraduate students	6	
Graduate students	<u>94</u>	
Total: students	100	16.0
<u>Homemakers</u>		
Total: homemakers	89	14.2
<u>Teachers</u>		
Teach in the same LSD as 1967-1968	100	
Teach elsewhere than present LSD	335	
Teach near present location	15	
Public school teacher	1	
College and university teaching	3	
Substitute teaching	17	
Teacher's aide	<u>1</u>	
Total: teachers	472	75.5
<u>Other responses</u>		
Desire any change from teaching	1	
A lucrative job	<u>1</u>	
Total: other responses	2	0.3
<u>Total number of responses</u>	<u>731^b</u>	
<u>Cumulative percent</u>		116.9 ^c
Number of NETs not answering question	5	

^b Number of responses (731) exceeds number of NETs due to multiple responses.

^c Cumulative percent exceeds 100 percent due to multiple responses.

Table 6.30. Number of non-educational employment positions considered (applications, interviews and firm offers received) by the NETs for 1968-1969^a

Description	Frequency	Average
Number of NETs considering non-educational employment positions for 1968-1969	88	
Applications submitted for non-educational employment		
i. Number	217	
ii. Average Number Submitted		2.47
Interviews with non-educational employers		
i. Number	123	
ii. Average Number of Interviews		1.40
Firm offers received from non-educational employers		
i. Number	91	
ii. Average Number of Firm Offers		1.03

^aSurvey data.

As part of the same question, the NETs were asked to identify the individual occupations that they considered outside of public education. The 80 NETs answering this part of the question provided 115 responses to this open-ended question. Most of the responses were for "professional, technical and kindred work" (46 responses or 52.3 percent). 20 NETs (22.8 percent) considered employment in the "managers, officials and proprietors" classification. A further 18 (20.4 percent) considered "sales" work. A detailed listing of the non-educational employment activities considered by the 88 NETs is included as Table 6.31.

Table 6.31. Kinds of non-educational employment opportunities considered by the NETs for the 1968-1969 school year^a

Non-Educational Employment Opportunities Considered	Frequency	Percent
<u>Professional, technical and kindred work</u>		
Counseling work	2	
Religious work	1	
Social work	12	
Arts (journalism, performers, TV work, design)	6	
Research	4	
Health care	2	
Recreation	1	
Accountant	1	
Chemist	2	
Computer work	4	
Extension work	4	
Library work	4	
Other professional work	3	
Total: Professional, technical and kindred work	46	52.3
<u>Agricultural work</u>		
Total: Agricultural work	2	2.3
<u>Managers, officials and proprietors</u>		
Self-employment	3	
Managerial work	5	
Other administrative work	5	
Civil service	7	
Total: Managers, officials and proprietors	20	22.8
<u>Clerical and kindred work</u>		
Bookkeeper	1	
Secretarial work	6	
Clerical work	2	
Other office work	2	
Total: Clerical and kindred work	11	12.5
<u>Sales work</u>		
Salesmen, unspecified	9	
Travel consulting	2	
Sales manager	1	
Representative	1	
Insurance	5	
Total: Sales work	18	20.4

^aSurvey data.

Table 6.31 (continued)

Non-Educational Employment Opportunities Considered	Frequency	Percent
<u>Skilled and unskilled work</u>		
Skilled work	3	
Armed Forces	6	
Unskilled work	<u>4</u>	
Total: Skilled and unskilled work	13	14.8
<u>Students</u>		
Graduate Students	<u>3</u>	
Total: Students	3	3.4
<u>Education</u>		
Private Teaching	<u>2</u>	
Total: Education	2	2.3
Total Frequency of all Employment Opportunities Considered: 1968-1969	<u>115^b</u>	
Cumulative Percent		132.8 ^c
Number of NETs not Answering Question	8	

^b Number of responses (115) exceeds number of respondents (88) due to multiple responses.

^c Cumulative percent exceeds 100 percent due to multiple responses.

c. Employment alternatives attractive to NETs The employment alternatives that NETs might consider to teaching employment describes the more inclusive notion of a labor market that is missing when attention focuses purely on the teacher market. To obtain some understanding of the labor market in which teachers project their future participation, the 631 NETs were asked to indicate (open-ended question) two types of occupational employment that would most likely attract them from teaching in public education (Appendix G, question 18). Since multiple answers were allowed (two were requested), the total number of responses was 1011 and of this total, 115 NETs (11.4 percent) showed a preference for some kind of teaching employment.

Among the employment activities noted by the NETs to be competitive with teaching were the following: social workers (38 responses); arts (63); farming (41); self-employment (35); and various kinds of sales work (70). These and other occupations that are potentially attractive to the NETs in this sample are recorded in Table 6.32.

d. Years expected to remain in public education. The 631 NETs were asked how many years they expected to remain in public education in some capacity (Appendix G, question 16). Since the question was open-ended, multiple responses occurred (i.e., 671 responses from the 622 NETs who answered the question). The responses were of two varieties: (i) numerical answers in years; and, (ii) word statements.

154 NETs provided numerical responses and of these 27.3 percent indicated that they would remain in public education for more than five years while the vast majority of the 154 (72.7 percent) believed that they would cease public education employment in five years or less. These

Table 6.32. Employment opportunities that are attractive to the NETs in non-educational work activities^a

Employment Description	Frequency	Percent
<u>Professional, technical and kindred work</u>		
Counseling work	9	
Religious workers	8	
Social workers	38	
Arts (journalism, performers, design)	63	
Research	23	
Medical workers	16	
Recreation	8	
Accountants and lawyers	7	
Computer science	12	
Conservationist	3	
Extension	6	
Home economist	5	
Library work	18	
Other professional work	<u>14</u>	
Total: professional, technical and kindred	230	22.7
<u>Agricultural work</u>		
Farming	41	
Ranching	2	
Animal husbandry	3	
Other agricultural work	<u>1</u>	
Total: agricultural work	47	4.7
<u>Managers, officials and proprietors</u>		
Self-employment	35	
Business work (undefined)	28	
Management or managers	13	
Personnel administration	21	
Other administration	9	
Public relations and promotional work	10	
Banking	2	
Civil service	13	
Elected officials	<u>8</u>	
Total: managers, officials and proprietors	139	13.8
<u>Clerical and kindred work</u>		
Bookkeepers	1	
Receptionists	3	
Secretarial work	22	
Clerical work	3	
Other office work (undefined)	<u>8</u>	
Total: clerical and kindred work	37	3.7

^a Survey data.

Table 6.32 (continued)

Employment Description	Frequency	Percent
<u>Salesworkers</u>		
Salesmen (undefined)	52	
Athletic goods salesmen	3	
Agricultural goods salesmen	2	
Real estate salesmen	1	
Travel consultants	7	
Sales managers	3	
Representatives	3	
Insurance salesmen	5	
Merchandising and marketing	<u>3</u>	
Total: salesworkers	79	7.8
<u>Skilled and unskilled work</u>		
Skilled workers	6	
Construction	8	
Armed Forces	2	
Prepared food workers	4	
Factory workers	18	
House painters	2	
Truckers	2	
Airline workers	2	
Other unskilled work	<u>2</u>	
Total: skilled and unskilled work	46	4.6
<u>Students</u>		
Graduate students	<u>16</u>	
Total: students	16	1.6
<u>Homemakers</u>		
Total: homemakers	300	29.7
<u>Education</u>		
No occupation would attract me from public education	61	
Private school teaching	8	
College and university teaching	19	
Substitute teaching	1	
Nursery school teaching	3	
Private teaching (self-employment)	21	
Other teaching	<u>2</u>	
Total: education	115	11.4
<u>Any lucrative field would attract me from teaching</u>	2	
<u>Total Responses</u>	1011	
<u>Cumulative Percent</u>		100.0

results are reported in Table 6.33 by LSD size strata.

Table 6.33. Number of years NETs expect to remain in public education by LSD size strata^a

Number of Years	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
One Year				
i. Number	6	7	4	17
ii. Percent	8.7	14.9	10.5	11.0
Two Years				
i. Number	14	9	5	28
ii. Percent	20.3	19.2	13.2	18.2
Three Years				
i. Number	11	3	7	21
ii. Percent	16.0	6.4	18.4	13.6
Four to Five Years				
i. Number	19	13	14	46
ii. Percent	27.5	27.6	36.9	29.9
Over Five Years				
i. Number	19	15	8	42
ii. Percent	27.5	31.9	21.0	27.3
Total				
i. Number	69	47	38	154
ii. Percent	100.0	100.0	100.0	100.0

^aSurvey data.

In addition, there were 517 word statements about the NETs' future in public education. Of the 517, there were 319 (61.7 percent) who indicated that they would remain in public education until retirement. The word statement responses are summarized in Table 6.34 by LSD size strata.

Table 6.34. Word statement of length of time the NETs expect to remain in public education in some capacity by LSD size strata^a

Word Statement Given	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
Until Retirement				
i. Number	127	104	88	319
ii. Percent	61.3	61.9	62.0	61.7
No Idea How Long				
i. Number	17	23	24	64
ii. Percent	8.2	13.7	16.9	12.4
Until Family Arrives				
i. Number	28	17	12	57
ii. Percent	13.5	10.1	8.5	11.0
Until Married				
i. Number	14	13	7	34
ii. Percent	6.8	7.7	4.9	6.6
Will Remain Many Years				
i. Number	18	7	6	31
ii. Percent	8.7	4.2	4.2	6.0
Depends on Teaching Success				
i. Number	1	2	1	4
ii. Percent	0.5	1.2	0.7	0.8
Until Better Job is Found				
i. Number	1	1	1	3
ii. Percent	0.5	0.6	0.7	0.6
As Long as I'm Needed				
i. Number	1	1		2
ii. Percent	0.5	0.6		0.4
Until Advanced Degree Completed				
i. Number			2	2
ii. Percent			1.4	0.4
Depends on Spouse's Location				
i. Number			1	1
ii. Percent			0.7	0.2
TOTAL				
i. Number	207	168	142	517
ii. Percent	100.0	100.0	100.0	100.1

^aSurvey data.

6. Concluding discussion

The expected value model, EU_{ij} , for the suppliers of teaching services has not been referred to specifically in this chapter. Nevertheless, this model has been explored implicitly and a number of insights have been gained about EU_{ij} . For example, more than half of the teachers who had been teaching during the previous school year apparently found a greater EU_{ij} in a smaller LSD than the ones in which they had been teaching. Other dimensions of EU_{ij} were explored through the three sets of data on teacher choice or decision variables; the number of jobs considered; the search channels used to acquire information on alternative jobs; the costs of searching; the reasons for resignations; and, the kinds of jobs in non-educational employment activities that are attractive to teachers.

One generalization that emerged clearly is that teachers do have preferences and do formulate expectations about employment opportunities. Moreover, some of them are willing to spend a considerable amount of time and money evaluating alternatives, both in and out of public education.

In general, the responses with respect to EU_{ij} were much better than had been anticipated. Nevertheless, there were some subsidiary findings that have raised new doubts and questions. For example, the observed discrepancy between the way teachers rated the search channels and the way they first learned of the positions they accepted, was an unexpected result. The implications for the teacher market and teacher shortage may be of significant interest. Newspaper want ads are quite important for recruiting teachers (based on the first-learned analysis) while university

placement is disappointly unimportant, relatively speaking, for both experienced and inexperienced teachers.

Another observation gained from the observation and review of many questionnaires is based on the experience of only one teacher. Specifically this teacher was dismissed at the end of the 1967-1968 school year for having become the most highly paid teacher in the school district who "was not a coach." Is this an isolated case or were there other teachers in the sample who had the same experience? How many teachers in the state of Iowa experienced a similar fate in the survey year? Under such circumstances school districts can force teachers to enter the market for questionable reasons. It can increase teacher militancy and lead to teacher unions, rigid contracts and seniority rules. All of which would surely be anathema to many school administrators.

And this may not be an undesirable situation. It would be difficult to argue that teacher contracts are favorable to both parties. Teachers ordinarily sign a contract to fill the generic position called "teacher." In other words, the individual teacher frequently has nothing more than the oral agreement of an LSDA about the subject and/or grade level(s) that will be taught. Yet, in the list of teacher choice or decision variables, teaching assignment(s) was ranked first. The assignment is a job condition and is not specified in the contract. It does seem surprising that the most important teacher choice or decision variable is not specified clearly in many contracts. It is as if the LSDAs were operating in a buyers' market (i.e., the suppliers of teaching services exceed the number of available positions).

How many prospective teachers decide against teaching because of the "broad and unlimited discretion" (63, p. 331) given to the administrators in the contract? How many teachers become disillusioned with teaching and seek non-educational employment because of the one-sided agreement? If either of the last two questions are answered "one teacher," then at least one cause of the teacher shortage has been identified.

VII. MARKET ANALYSIS

1. Introduction

A market is a multifaceted vehicle in which goods and/or services are exchanged. In some markets information is readily available (e.g., the stock market) while in other markets information is much more difficult to obtain (e.g., most labor markets). To assert that a supplier of labor services makes a rational and calculated choice from competing alternatives must surely be modified by the realization that "many of the most important features of a job cannot be appraised until one has worked on it" (88, p. 109).

If one can accept the belief that demanders and suppliers cannot weigh alternatives very easily due to a lack of information and correspondingly high risk, it should not be surprising to expect new teachers (NETs) to place some reliance on "informed" individuals such as friends, relatives and others with whom respect and rapport have been established and can be exploited as a source of information on employment opportunities and/or conditions of employment. Thus, it should not be surprising that this chapter will compare the search channels of NETs and local school district administrators (LSDAs) since this process is of paramount importance as that part of the market operation in which information gathering and information exchange occurs. It is, moreover, in the market where the question of the teacher shortage can be explored.

In the two preceding chapters numerous tables have been included that pertain to the importance of teacher-choice variables. The results thus far have not revealed a dominant explanation of teachers' choice

criteria although it is reasonably clear that salary and teaching assignment rank rather high in some instances. The following general conclusions have emerged from the two preceding chapters:

- i. the LSDAs believe that teachers tend to resign so that a move can be made to a "better" school district;
- ii. the NETs who resigned from their previous teaching positions indicated (ignoring those who resigned to be with their spouse) that they had sought a better professional position and/or a better paid position;
- iii. the LSDAs indicated that salary is the most important choice variable of teachers;
- iv. the NETs rated the teaching assignment as the most important choice variable; and,
- v. the NETs, using two different summary methods of the choice variables, said that the "school" was the most important in one case and that geographical location was the most important in the other.

There are other variables that could be noted as well, but the general lack of agreement in the numerous responses is not as comforting as unanimous agreement would be.

Much space in the literature has been captured by conflicting observations and theories about the choice variables and choice criteria of the suppliers of labor services. This discourse has been articulated primarily in the context of choice based on economic criteria versus

choice based on other variables. For example, Brown in his study of the academic marketplace noted that the "professor's motivations ... conform to the stereotype of a man who stresses matters other than money" (13, p. 248) while Caplow and McGee conclude "that professors are happy with their wages, can be rejected out of hand by anyone acquainted with the milieu" (16, p. 55). And commenting more specifically on the teacher market, Kershaw and McKean have summarized some results claiming "that teachers rank pay rather low as a factor attracting them to teaching" (53, p. 44) while Orlich, et al. stress the importance that teachers attach to economic variables (76, pp. 81-94).

Theoretical arguments supporting salary as an important choice variable have been advanced by Benson (5, p. 420), Bloom and Northrup (8, p. 245) and Hicks (44, p. 76) while others have endeavored to minimize the importance of salary as a choice variable. This can be observed in Denison (25, p. 182), Ellsbree (31, p. 63); Lampman (60, p. 96) and Shister (99). In view of the apparent lack of agreement on the relative importance of salary as a variable influencing suppliers of teaching services, in this chapter some attention is given to salary as a market variable.

Another dimension of the market exists in the allocation of teachers to teaching positions. There seems to be no reason to expect that teachers are misemployed (e.g., teachers qualified to teach French who are teaching high school physics), nevertheless misemployment probably occurs and may tend to occur most frequently among the newly hired employees. Moreover, there is reason to believe that newly hired teachers may expect to teach in their area of interest but find that they are

placed in a teaching position outside their area of teaching and academic interest. The teacher may thus find himself in a position of dissatisfaction and about which he may be able to do little:

"... the individual contract is invariably drawn up unilaterally by the school board. As a result, the contract protects the board more than the teacher; the fine print is almost always drawn in the board's favor ...

"Individual contracts usually give the school administration broad and unlimited discretion in dealing with teachers. As a rule, the only limits on the discretion of the school administration are those set by law." (63, p. 331)

A misallocated NET may very shortly become a NET again when he resigns for another position in which "teaching assignment" will be a choice variable of major interest. Hence, in the final section of this chapter the allocation of the NETs is considered.

2. Recruitment and job search: channels and costs

In the two preceding chapters the survey results were reported for both the demanders and suppliers of teaching services. These results will be compared and contrasted below.

a. Recruitment and job search channels The first choice to be made in evaluating the search channels of LSDAs and NETs is that of which survey data are the "best." In both surveys two questions were addressed to each respondent (the lists differed somewhat in each survey). Each LSDA was asked to identify the methods used to recruit NETs (Table 5.12) and then they were asked to rank the effectiveness of four methods used to seek NETs for their vacancies (Tables 5.12 and 5.13). The search methods reported in Table 5.13 seemed preferable for the LSDAs since it consisted of rank data on the search channels for the first two

ranks only (i.e., all LSDAs were asked to rank four methods but all did not rank four; however, all of the LSDAs did rank at least two search methods).

Similarly, the NETs were asked two questions on job search channels. They were asked to rate the value of each search channel on a prepared list (Table 6.19) and they were asked to identify the channel by which they "first learned" of the vacancies they were hired to fill (Table 6.21). It would seem that the latter is more meaningful.

On the basis of the above considerations it is possible to evaluate the responses of the LSDAs' perception of the most effective search channels versus the "first learned" methods for the NETs (search channels not included in both lists were not considered in this analysis). Table 7.1 lists all of the search methods used in the two surveys along with the total weighted sum for the LSDAs (Table 5.13) and the number of NETs who "first learned" of their present position by each method (Table 6.21).

Table 7.1 clearly reflects two facts that are of particular interest. First, it can be noted that of the total weighted value for the LSDAs (i.e., 413), only a weighted value of 31 (i.e., 7.5 percent) is associated with informal or passive search channels (i.e., friends and relatives, and do nothing or walk-ins). On the other hand, of the 594 NET responses to the question of how they "first learned" of their present position, 262 (i.e., 44.1 percent) gave responses representing informal methods (e.g., blind contacts, friends and relatives, and former teacher or professors). This somewhat divergent result seems to reflect (i) the difficulty of demanders to utilize effectively informal search methods as part of its "burden of solicitation:"

"The main reason for workers undertaking the burden of solicitation is that it is cheaper for them than for employers. When an employer has numerous employees the probability that a given employer needs additional workers is much greater than the probability that a given worker will accept a job offer."
(106, p. 102)

while (ii) the suppliers of inputs are more likely to use informal search channels for the numerous reasons cited in Brown (12; 13; 14), Katz (50), Myers (72), Myers and Shultz (74, pp. 70-72), Parnes (79, pp. 162-174), Reynolds (88, pp. 49-50), and Stone and Kendall (107).

Table 7.1. Recruitment and job search channels: LSDAs and NETs^a

Search Channels and/or "First Learned" Method	LSDAs Weighted Value	NETs Number "first learned"
Newspaper Want Ads	180	177
LSDAs, Do Nothing or NETs, Blind Contacts	7	127
Friends and Relatives (Grapevine)	24	109
University Placement	161	67
Public Placement Services	13	2
ISEA Employment Service	18	1
Other Ads	10	1
Commercial Placement	0	0

LSDAs, Other Reasons	0	--
NETs, Other Reasons	--	8
NETs, Former Teachers or Professors	--	26
NETs, Was Recruited	--	76

^aSurvey data.

Table 7.1 is also of interest for statistical reasons. The Spearman rank correlation coefficient was found to be 0.626 (the theoretical r_s is 0.643 at the five percent level) for the eight variables above the dashed line of Table 7.1; hence, there is no reason to reject the following null hypothesis:

- H_{7.1} There is no relationship in the way LSDAs seek teachers for vacancies and the way teachers "first learn" of the vacancies for which they are hired.

The acceptance of the above hypothesis does suggest that the present market for teachers in the state of Iowa is inefficient with respect to communication of vacancy information and/or teacher availability. For a market to be an efficient allocative mechanism there is a need for information to be readily available to both demanders and suppliers. Bodenhofer has observed that "from a macro-economic point of view, returns accruing from better information in the labor market are represented in a more efficient allocation of manpower" (9, p. 444). Similar views on the importance of the role played by information as an aid to efficient allocation can be found in Denison (25, p. 201), Hirsch (45, p. 31), Katona (49, p. 21), Liebhafsky (64), Reynolds (88, pp. 213-215), Stigler (106, p. 104), and Yoder (119, p. 82).

Moreover, this result merits consideration with respect to the teacher shortage. To the extent that the demanders and suppliers appear to differ in their use of the channels through which employment vacancies and teacher availability are communicated, to this extent a teacher shortage can be abetted by the inefficient use of the available recruitment and search channels.

b. Recruitment and job search costs In the two preceding chapters it was estimated that the outlay and opportunity costs for the recruitment of new teachers in Iowa's 455 LSDs were \$708,660 for the vacancies to be filled for the 1968-1969 school year, and that for the NETs the outlay and opportunity costs were \$870,365. On the basis of these estimates, it would appear that the estimated costs of recruiting and searching (i.e., the cost of operating the market) amounted to \$1,579,025 in the survey year. Moreover, it would appear that a goodly portion of the costs of operating this market are borne by the suppliers of teaching services (i.e., 55.1 percent).

Needless to say, the validity of any estimate about who bears the burden of the aggregate search costs is greatly dependent on the cost estimates of the individual respondents, both the LSDAs and the NETs. Nevertheless, it does seem interesting to note the estimated percentage burden of the NETs relative to the total estimated cost and to realize that all of the costs are not included. For example, Sjaastad notes that the addition of new employees involves on-the-job training (i.e., teacher orientation) and that "migration involves a 'psychic' cost" (102, pp. 84-85). It is quite probable that if all of the teacher market costs could be tallied (i.e., outlay, opportunity, on-the-job training, psychic, plus the costs of teachers who participated in the market and then decided not to change employers), the total would no doubt exceed the \$1.58 million estimate by a wide margin.

It might also be noted as a matter of interest that expenditures by LSDs on recruiting relative to their total expenditures is rather small. Based on the above noted recruiting expenditures of \$708,660 versus the

total expenditures and transfers for the 1967-1968 school year of \$413.7 million (23, p. 74), seventeen one-hundredths of one percent were spent on recruiting. Moreover, there is reason to believe that the LSDAs' estimates are unreliable due to their crude source (i.e., "guesstimates" and "wild guesses").

3. Teacher choice variables: LSDAs and NETs

The LSDAs were asked to rate the importance of a list of variables that would be expected to influence a teacher's choice of one LSD over another (Appendix F, question 24). Then in the second survey, the NETs were given a similar list of variables in which they were asked to rate the importance of each choice variable (Appendix G, question 1). The LSDAs were asked to rate the importance of 20 variables while the NETs were asked to rate 24 variables. Seventeen of the variables were rated by both LSDAs and NETs.

Table 7.2 lists the 17 variables that were rated by both the demanders and suppliers of teaching services in this sample. The average responses for the aggregate and ordinal data were previously included for the LSDAs in Table 5.16 and for the NETs in Table 6.12.

The computed Spearman rank correlation coefficient, r_s , is 0.881 for the variables listed in Table 7.2. Since the observed r_s is considerably greater than the theoretical r_s of 0.412 for the five percent level and of 0.584 for the one percent level, it would appear that the rank data for these 17 variables reflects a high degree of association; hence, the following null hypothesis is easily rejected at the one percent level:

Table 7.2. Average ratings and ranks of the importance of teacher choice variables: new teachers versus local school administrators^a

Choice Variables	New Teachers		Administrators	
	Average	Rank	Average	Rank
Courses and/or Class Assignments	2.27	1	2.49	4
Salary	2.19	2	2.71	1
Availability of Teaching Materials and Teaching Facilities	2.03	3	2.61	2
Competent and Friendly Colleagues	1.99	4	2.288	6
Geographical Location of Community	1.85	5	2.51	3
Reputation of School Administrators	1.83	6	2.293	5
Size of School and/or School District	1.71	7	2.03	10
Size of Community	1.63	8	2.02	11
Low Pupil-Teacher Ratio	1.56	9	2.2372	7.5
Quality of Students	1.41	10	2.00	12
Daily Planning Periods	1.39	11	2.17	9
Fringe Benefits	1.37	12	1.59	16
Nearness to Graduate School	1.29	13	2.2372	7.5
Democratic Organization (Teachers Play an Active Role in Decision-Making)	1.27	14	1.9830	13
Good Entertainment and Recreational Facilities in Community	1.21	15	1.9827	14
Low Workload	1.13	16	1.86	15
Good Opportunities for Outside Income	0.62	17	1.07	17

^a Survey data.

H_{7.2} There is no relationship between the way the NETs and LSDAs rate variables that reflect teacher choice.

As a matter of interest it can be noted in Table 7.2 that the first six variables listed occupy the first six ranks for both the LSDAs and the NETs, although the rank orders are different. If a Spearman rank correlation test is performed on these six choice variables (i.e., key choice

variables) the null hypothesis of no relationship would be accepted at the five percent level. This might lead one to conclude that the LSDAs perceive the rank order correctly for the 17 variables but do not perceive the order correctly for the key choice variables.

The implication of the high degree of association for the 17 variables bears some relevance to the teacher shortage. If the null hypothesis $H_{7.2}$ had been accepted it would have been possible to conclude that the LSDAs perceived the choice variables to have a different order of importance than the new teachers in the sample. This would have permitted one to infer that the teacher shortage would be partly attributable to the failure of the LSDAs to perceive the correct order of importance of the teacher choice or decision variables.

Every choice variable is different in intensity and no attempt was made to measure this. Nevertheless, if the six key variables of the 17 that are ranked from one to six are tested with the Spearman rank correlation test, the observed coefficient is not statistically significant at the five percent level; hence, the inference permitted on the basis of the six variables is that there is no association. In other words, the LSDAs do not perceive the same order for these six key variables as do the NETs.

Based on the second test of significance, it is possible to infer that the teacher shortage may be partially attributable to the failure of the LSDAs to perceive the correct order for the six most important teacher choice or decision variables in this list.

4. Turnover rate: statistical analysis

It would seem reasonable to consider teacher choice to have a dual nature. If a teacher has a subjective value and weighting system for choosing between teaching vacancies, and if it can be argued that teacher resignations reflect the existence of the same variables operating but as repelling rather than as attracting forces, then, if quantitative data can be generated to represent the choice variables in Table 7.2, the same choice or decision variables can be used to explain the turnover rate for each of the LSDs in the sample. As can be imagined, it is not possible to obtain quantitative estimates that would be acceptable proxies for all of the variables listed in Table 7.2 (at least it would not be easy even if possible). Since this regression analysis is but one small part of a larger whole, long and exhaustive efforts were not pursued in the hope of acquiring quantitative estimates for all seventeen variables.

It was fairly easy to obtain the 1967-1968 average salary for each of the 59 LSDs in the sample (47) and the dollar expenditures for books, supplies, etc. was obtained from the Department of Public Instruction and converted to an average expenditure per pupil (97). Other variables such as LSD size and community population were easily obtained (46). The IPSEDS reports (47) proved to be an excellent source of information permitting the computation of the following descriptive averages for each of the sample LSDs: average age; average number of semester hours of academic preparation per teacher; percent of teachers unmarried; percent of teachers under 30 years of age; percent of teachers both unmarried and under 30 years of age; average number of years of teaching experience;

and, average number of years of tenure (teacher tenure refers to the number of years a teacher has been employed in his present LSD).

Quite obviously the above variables are a mixture of (a) choice variables and (b) descriptive variables. Moreover, very few choice variables are included. Yet this should not be too difficult to understand upon consideration of the difficulty that can be encountered in trying to find proxy variables for such things as competent and friendly colleagues, reputation of LSDAs, daily planning periods, democratic organization, good entertainment and recreational facilities in the community, low workload, and good opportunities for outside income. On the other hand, numerous variables can be handled with considerable difficulty. For example, Scamman (93) looked at teacher assignments and wrote his dissertation on the subject. Since his estimates were not available it hardly seemed feasible to spend several months re-computing his estimates for such a small part of this research.

Geographical location is a variable for which quantitative estimates can be obtained with ease. That is, if it is possible to define in an aggregative way what geographical location means. Geographical location may impel a teacher to seek employment in a small community or a large community, near parents, near spouse's parents, near a college, near friends and relatives, and so on. In other words, geographical location is not a singular variable but one that incorporates a multi-dimensional domain. In a word, this variable was used, but only in a very restricted way. It was assumed that Fox's analysis of functional economic areas is a meaningful way to define geographical location; hence, the distance was

computed between each LSD and the central city in its respective functional economic area (33).

The variable low pupil-teacher ratio was not used, although it is readily available. Probably it will suffice to say that this variable is one of questionable value. For example, a large LSD may have a high ratio while a small LSD may have a low ratio. These ratios may only reflect LSD size (inversely related) in which the smaller LSDs are required to hire numerous specialists in order to ensure that their program conforms to the legal requirements. To the extent that economies of scale exist for the larger LSDs is the extent to which smaller LSDs will have a large number of teachers relative to their student population (i.e., a low pupil-teacher ratio). In fact, numerous LSDAs, particularly in the larger LSDs, pointed out in the interview survey that a low pupil-teacher ratio is meaningless since it disguises so many other considerations.

In any case the statistical analysis that follows does offer some interesting results and is worthy of consideration for this reason. To begin with, it became apparent at a very early stage (in fact, months before any attempt was made to run any regressions) that the survey information on turnover was grossly inadequate. Since the only turnover rate information available was for one year (1968-1969, the survey year), it seemed obvious that the turnover rate for this year could be subject to extreme (both high and low) random disturbances and that it would be a waste of time and money trying to explain random disturbances. And unfortunately, there did not seem to be any information available that would

permit the computation of the turnover rate in each of the sample LSDs over several years in order to obtain an average turnover rate.

Fortunately, however, there is another variable that is influenced by the turnover rate. For example, if an LSD has 20 teachers and all resign at the end of year t , then, the average tenure for year $t+1$ will be zero. On the other hand, if there are no teacher resignations, the average tenure will increase by one year. And in general one might say that a low average tenure is due to a high turnover rate over time and a high average tenure is due to a low turnover rate over time. On the basis of this assumed relationship, average tenure was used as the dependent variable to be explained by multiple regression analysis. A more rigorous statement of the relationship of the turnover rate to average tenure is included in Appendix E, and how average tenure was adjusted to account for changes in the number of teachers employed in the sample LSDs.

As a matter of interest Table 7.3 has been prepared so that some idea can be obtained of that part of the correlation matrix relevant for average tenure and the turnover rate versus the other thirteen (independent) variables that were chosen to explain the variation in the two dependent variables (i.e., average tenure and the turnover rate). It can be noted that all of the variables are more highly correlated with average tenure than with the turnover rate. And, incidentally, it can be observed that average tenure and the turnover rate are significantly correlated with each other at the one percent level and in the expected direction (i.e., a negative relationship).

Table 7.3. Correlation coefficients for average tenure (adjusted) and the turnover rate by selected independent variables^a

Independent Variables	Dependent Variables	
	Average (adj.) Tenure	Turnover Rate
Turnover Rate	-0.4205**	--
Average Salary	0.6158**	-0.2367*
Salary Index	0.2622*	-0.0327
Number of Students in LSD	0.3622**	-0.0097
Number of Units Offered	0.4059**	-0.0096
Population of LSD	0.3548**	-0.0141
Distance to Nearest Central City	-0.1559	0.1436
Average Age	0.4976**	-0.2096
Average Number of Semester Hours	0.4726**	0.0156
Percent of all Teachers Unmarried	0.2048	0.1368
Percent of all Teachers Under 30 Years	-0.4537**	0.2404*
Percent of all Teachers Both Unmarried and Under 30 Years	-0.1884	0.1495
Average Experience	0.7692**	-0.2766*
Average Expenditure on Other Instructional Costs	0.1737	0.0209

^aAppendix A describes each of the variables and gives the data source.

** Significant at the one percent level.

* Significant at the five percent level.

Altogether 29 different multiple regressions were run. Ten of the models used turnover as the dependent variable and the remaining 19 used average tenure as the dependent variable. The most accurate statement that can be made about this regression analysis is that the results were not encouraging. For example, when average tenure was the dependent

variable, the intercept was highly negative (varying between -14.15 and -19.52) while R^2 varied between a high of 0.583 and a low of 0.541. On the other hand, when the turnover rate was used as the dependent variable, the intercept varied between +23.58 and +46.00 while R^2 varied between 0.092 and 0.290! At least R^2 is fairly reasonable for average tenure; however, it is difficult to accept the highly-negative intercept.

All in all, the only interesting feature of this analysis pertains to the explanation of average tenure. Of the 13 independent variables, some are duplications (e.g., LSD population, number of students and number of units offered) and some are not acceptable (e.g., years of experience is highly correlated with years of tenure). Nevertheless, average salary and average age, when used to explain average tenure, give an R^2 of 0.541, the b-values for both variables are highly significant at the one percent level, and the observed F of 33.054 is also highly significant (at the one percent level, the theoretical F value is 2.925). The only part of this analysis that is uneasily comforting is the fact that salary explains more of the variation in average tenure than any other variable (average experience explains more and for obvious reasons).

The quasi-conclusion that salary is a better explanatory variable for average tenure than any other variable used in this regression analysis would seem to support earlier comments in the literature about the importance of salary on turnover. Behrend (4), Ellsbree (31, p. 24, p.44 and p. 63), Greene (38), Hall (39) and Van Houten (112, p. 103 and p. 139) observed a relationship between teacher turnover and salary. In addition, Ladinsky stated that "our data suggest that for all professional, tech-

nical and kindred workers income is second only to age as a determinant of geographic mobility" (56, p. 494).

The conclusion that salary is a key variable for explaining average tenure suggests that (i) the LSDAs seem to have perceived the importance of salary fairly well and (ii) the prevailing salary levels may be partly responsible for the teacher shortage since teacher turnover would seem to be a part of exodus from teaching to alternative work activities.

5. Misemployment of teachers

The misemployment of teachers may be a potential source of teacher discontent that could lead to teacher turnover. Moreover, it would seem more likely that a new teacher would be misemployed than one who has been teaching in an LSD for one or more years. The latter would have gained influence and be able to exert this influence while an NET would likely be given the unfilled teaching assignments whether or not he is qualified. For these reasons the NETs were asked to identify (i) their academic majors and minors and (ii) their primary, secondary and tertiary teaching assignments (Appendix G, questions 36-40). The results, by LSD size strata, are summarized in Table 7.4 where it can be noted that for the principal teaching assignments, 79.7 percent of all the NETs were teaching in their academic major. Moreover, the percentage of NETs who had a principal teaching assignment in their major area differs very little by LSD size strata.

However, when the teaching assignments are considered relative to the assignments outside of the primary teaching fields it is readily apparent that of the 624 NETs who answered these questions, there were 89

Table 7.4. Teaching assignments by LSD size strata^a

Description	LSD Size Strata 1	LSD Size Strata 2	LSD Size Strata 3	State
<u>Principal teaching field of NETs</u>				
a. Major, number teaching in major	200	161	136	497
percent teaching in major	80.0	78.9	80.0	79.7
b. Minor, number teaching in minor	33	28	26	87
percent teaching in minor	13.2	13.7	15.3	13.9
c. NETs teaching in neither major or minor, number	32	26	19	77
percent	12.8	12.7	11.2	12.8
d. NETs responding, number	250 ^b	204 ^b	170 ^b	624 ^b
percent	106.0 ^c	105.3 ^c	106.5 ^c	105.9 ^c
<u>Second and third teaching fields of NETs</u>				
a. Major, number teaching in major	14	11	9	34
percent teaching in major	5.6	5.4	5.3	5.4
b. Minor, number teaching in minor	16	8	22	46
percent teaching in minor	6.4	3.9	12.9	7.4
c. NETs teaching in neither major nor minor, number	25	22	42	89
percent	10.0	10.8	24.7	14.3
d. NETs responding, number	250 ^b	204 ^b	170 ^b	624 ^b
percent	22.0 ^c	20.1 ^c	42.9 ^c	27.1 ^c

^aSurvey data.^bThis number is not equal to the three numbers immediately above since multiple answers occurred.^cThe percentages were computed using "NETs responding" as the denominator; hence, because of multiple answers the sum of the three numbers immediately above does not equal 100 percent.

teaching assignments (14.3 percent of the 624 NETs) in second and third fields in which the NETs had neither a major nor a minor (also, 42 of the 89 assignments were in the smallest LSD size strata).

There is a further dimension to the subject of misallocation; namely, the occurrence of teacher misallocations by subject area. It would have been better if the questionnaires for the NETs had asked for the number of semester hours of academic preparation in the several teaching areas noted. Since the data acquired was for the ill-defined terms of academic major(s) and minor(s), it would be specious to evaluate the survey data with great precision. A much more reasonable approach would be to use the IPSEDS data on all teachers in the state (48) and compare the assignments of all teachers to new teachers. Since the latter, if handled with care and precision, would require a considerable amount of time and expense if "good" research procedures would be the criteria, no attempt was made to obtain and evaluate the misallocation of NETs more explicitly than has been done.

6. Concluding discussion

This chapter has been included to present findings on the interaction of supply and demand forces. Moreover, the findings were handled in the context of the teacher shortage.

First, it was observed that the efficient communication of information in the teacher market in Iowa is subject to serious question. Both school administrators and teachers find newspaper want ads to be the best channel of communication, yet the statistical analysis indicated that the channels used by the demanders and suppliers of teaching services are different.

One of the interesting features of the data gathered on search channels is the reliance that teachers place on informal channels. And it would be difficult to suggest how the informal channels could be used more efficiently. One of the advantages of informal search is that friends and relatives, and "blind contacts" provide up-to-date vacancy information. An advertisement in the daily paper also brings with it the probability that a vacancy exists. On the other hand, a job-seeker can have no assurance that the jobs on file in various placement and employment offices are current.

The use of intermediaries such as placement and employment agencies requires a great deal of cooperation between the agencies and the users; hence, if the users fail to cooperate, failure results. Yet, it is probable that the greatest potential for market improvement lies with the better use of intermediaries in which the users cooperate fully and keep the information current. It is possible that a more formalized market is difficult to develop, nevertheless, it is a desirable goal to move towards, albeit slowly.

A second result noted in this chapter is the observed relationship in the responses of the school administrators and teachers with respect to job choice variables. For the full list of seventeen variables, the two sets of responses showed a high degree of association; however, for the six "key" variables, there was a marked discrepancy. The latter result is particularly noteworthy because of the discrepancy for the teaching assignment(s) variable (i.e., teachers ranked it first and the administrators ranked it fourth). It would be difficult to explain this apparent discrepancy, nevertheless, it might prove valuable to investi-

gate this lack of agreement at greater length and test meaningful hypotheses that would bear on the importance of teaching assignment(s) as a job choice variable.

The third topic of this chapter, and the most interesting topic in the entire study (of which there were a great many topics) was the brief multiple regression analysis of turnover. In all probability a more penetrating analysis could be extremely rewarding. An excellent study of turnover can be made if the available data is good, and for Iowa teachers the data is generally excellent (i.e., it is available and is potentially excellent with the allocation of more time than was allowed in this study). In fact, the only firm recommendation that has emerged in this study is that a thorough analysis should be made of teacher turnover in the state of Iowa using the available statistics.

Fourthly, it had been expected that there would be misemployment, and there was some misemployment (20.3 percent of the new teachers were misemployed). Moreover, it had been expected that more misemployment would occur in small school districts than in large ones. Neither of these expectations were fulfilled. For the individual teacher who is misemployed, the experience may be traumatic. Nevertheless, it would seem that on the average, teachers are allocated fairly well among the vacancies without an undue amount of misemployment.

This chapter is not complete without referring again to Kerr's five market models (discussed in Chapter II) and evaluating the performance of the teacher market in the context of one of Kerr's five models. The teacher market is characterized by varying degrees of competition. In most years the basic salary (B.A. and no experience) moves

upward in about the same way in most of Iowa's school districts. Thus, one might infer that there is some tendency for salaries to be equilibrated. Yet, there are marked differences in the structures of the salary schedules and average salaries differ widely. All in all, it seems that salaries are characterized more by differences than by similarities between Iowa's school districts.

The information flow seems to be informal rather than formal. Although this generalization must be couched in qualifications, nevertheless, the flow of information between the market participants is not well organized, and this is surely one way of judging the organization of the market as a whole: The flow of information is poorly organized.

The two-factor salary schedule (education and experience) that is prevalent throughout most of Iowa's school districts is not designed to handle differential shortages. Kershaw and McKean (53), for example, have argued rather convincingly that premiums should be paid to teachers qualified to teach in academic areas in which there are differential shortages. This practice is not generally followed! All teachers, irrespective of what they teach, are ordinarily paid according to the salary schedule. It would be exceedingly costly to raise the general salary schedule to obtain enough teachers in the shortage areas. It would be much less costly to pay premiums in shortage areas (although it may be difficult for individual administrators to identify shortage areas, it might be possible to identify them on a state-wide basis with the assistance of the Department of Public Instruction). A fuller utilization of the price system to attract more qualified teachers into

the shortage areas would seem to be an efficient way to ease differential shortages.

The above three comments about the teacher market (i.e., that salaries differ widely, that information flows tend to differ between the participants, and that the price system is not utilized fully) permit the conclusion that the teacher market is similar to Kerr's "natural market." A few comments from Kerr clearly demonstrate this conclusion:

"The natural market may ... be defined as one in which the average worker has a narrowly confined view of the market and, in addition, is not an alert participant in it. Unions do not exist. Employers, while not formally organized, either because of smallness of number or informal co-operation (the 'tacit, but constant and uniform combination, not to raise the wages of labour above their actual rate' of which Adam Smith spoke), can exercise some monopsonistic influence in the labor market. Sovereignty is jointly held by the consumer and the employer. Wages are not set uniformly at the competitive level, and resources are not utilized to the best advantage. The operation of the market does not determine wages, but, rather, sets the limits within which they are fixed and influences the specific levels within these limits." (52, pp. 281-282)

It would appear that Kerr was describing the teacher market in Iowa: A market that is not responsive to supply and demand forces; a market that minimizes price (salary) considerations; and, a market that is basically inefficient.

VIII. SUMMARY

The purpose of this research topic was to study the market for public school teachers in Iowa. The survey technique was selected as the data source. A random sample of 59 local school districts (LSDs) was drawn from the 455 LSDs in the state of Iowa. The survey consisted of two stages: (i) the survey of local school district administrators (LSDAs), and (ii) the survey of the new teachers (NETs) in the same LSDs. The survey work began in mid-June, 1968 and ended early in December, 1968.

The first stage was used to gather information about the demand for and recruitment of NETs in the sample LSDs. The response rate, based on the percentage of total possible information, was 99.5 percent. The second stage was used to gather information about the supply of NETs, their choice variables, their channels of job search, the costs of their job search, etc. The response rate, based on the percentage of total possible information, was 89.3 percent.

Underlying the general analysis was the assumption that a teacher shortage exists and that the comparison of the data results of the two surveys would yield differences that could help to explain the teacher shortage.

1. Demand for NETs

a. Vacancies: reasons for and description of The 59 LSDs reported 1756 vacancies for the 1968-1969 school year and it was estimated that there were 5,724.2 vacancies to be filled in the 455 LSDs in the state of Iowa. Also, of the 1756 vacancies, it was estimated

that 79.8 percent were attributable to teacher resignations (i.e., teacher turnover), 14.3 percent to enrollment increases and 5.9 percent to quality increases.

The highest turnover rate was 42.8 percent and the lowest was 3.9 percent. The average turnover rate for the sample was 14.4 percent and the median turnover rate was 13.2 percent.

b. Ease of filling vacancies The LSDAs perceived vacancies in the grade level ranges 1-3 and 7-9 to be easier to fill, in the aggregate, than the other grade level ranges. And they perceived the teaching vacancies in some subject areas to be easier to fill than in others. Among the subject areas that were easiest to fill, relatively speaking and in the aggregate, the following were included: history and social studies, physical and health education, business education and driver education. While the subject areas that were found to be relatively difficult to fill with qualified teachers included the following: mathematics, chemistry, physics, library science, foreign languages, music, and guidance and counseling. In general, 66.1 percent of the LSDAs indicated that their ability to fill vacancies with qualified teachers was either "excellent" or "good."

c. Search channels and costs The LSDAs reported that they relied mainly on college and university placement services, and newspaper want ads to recruit new teachers (NETs) for their teaching vacancies. They also estimated the number of dollars budgeted and manhours devoted to the recruitment of NETs. On the average, they estimated that an outlay of \$40.1 and 17.1 manhours are required to recruit a teacher for a

vacancy in the state of Iowa. If the number of manhours is converted into a dollar value, the estimated cost of recruiting one NET amounted to about \$124.

d. Teacher choice variables In response to a question asking the LSDAs to rate each variable in a list that might influence an NET's choice of one teaching location over another, the summary results revealed salary to be the most important choice variable on the average. The remaining variables with a predominantly economic dimension were ranked at the end of the list on the average. These variables included fringe benefits, low cost of living and good opportunities for outside income (i.e., moonlighting). Thus, for a list of twenty choice variables that might influence an NET to choose one LSD over another, there were four economic variables. Salary was ranked number one and the remaining three noted above were ranked 18, 19 and 20 respectively.

2. Supply of NETs

a. Description of NETs From a descriptive point of view, there were 631 NETs in the survey, of which 34.7 percent were males, 49.9 percent were under 25 years of age, 68.3 percent were married (27.9 percent were unmarried), 46.5 percent had no experience (77.2 percent had less than five years of teaching experience), 3.8 percent had not completed a baccalaureate degree (10.1 percent had a master's degree), 46.7 percent of the 631 NETs were students during the previous school year (another 36.9 percent were public school teachers, and 13.4 percent were homemakers), 74.2 percent considered Iowa to be their home state, and 97.0 percent of the NETs had signed a contract to teach full-time during the

1968-1969 school year. The above leads to the general expectation that an NET is usually female, under 25 years of age, married and inexperienced. In addition, the average NET has a bachelor's degree, was a student during the previous year, calls Iowa her home state, and is employed full-time.

b. Inter-LSD and intra-LSD teacher movement To assess the direction of movement of experienced teachers between the three LSD size strata, a method of weighting was used. The results indicated that the direction of movement in the aggregate is towards smaller LSDs. This is somewhat surprising if price is an important variable in the decision set of the suppliers of teaching services since salary, in a qualitative sense, is positively related to LSD size (i.e., $r = +0.5749$).

c. Choice variables of NETs The NETs were asked to rate the importance of a list of choice or decision variables. Based on an aggregate and ordinal rank-ordering, the teaching assignment emerged as the most important choice variable with salary ranking second. At the one percent level of significance there was no reason to conclude that the choice variables were ranked differently by the sex, age, marital status or LSD size strata of the NETs.

The choice variables were summarized in five variables and the NETs were asked to (i) rate the importance of each and (ii) rank each. Geographical location was ranked first with the rating of the importance of each variable while the school related variable ranked second. The summarized results of the NETs' rankings of the five variables resulted in the school related variable being ranked first, and geographical location

being second. For both summary methods, the economic variable ranked third, administration and supervision ranked fourth and future prospects ranked fifth and last in each case. Finally, there was no reason to believe at the five percent level that the NETs had evaluated the two summary listings differently.

The NETs submitted an average of 4.55 applications for employment, had 2.79 interviews and received 1.95 concrete offers of employment. Moreover, 67.8 percent of the 631 NETs had an employment preference and obtained the teaching position they preferred. Another 15.2 percent indicated that they had a preference but did not obtain employment there (17.0 percent had no preference). As a final dimension of choice the NETs were asked whether they had a minimum salary and 70.3 percent said they had a minimum (3.2 percent received less than their reported minimum salary).

d. Search channels and costs Another major objective investigated with respect to the supply of NETs pertained to the channels used to find teaching employment in public education. Using a five-numeral rating scale, the NETs reported college placement services to be the most valuable search channel and newspaper want ads to be the second most valuable method. As a sequel to this question the NETs were asked to identify the search channel through which they "first learned" of the teaching vacancy they were hired to fill. The results were as follows: 177 reported newspaper want ads; 127 reported blind contacts; 109 said friends and relatives; 76 were recruited; and 67 first learned of the position they were hired to fill through college placement services.

As a matter of hypothetical inquiry it seemed possible that NETs would differ in their use of job search channels according to their experience. Interestingly enough, there was no difference. Both the experienced and inexperienced NETs used the same search channels.

Part of searching for employment consists of the search channels and another part is the cost of searching (i.e., both outlay and opportunity costs). The average cost of searching for employment came to \$152.05, of which \$23.17 was for out-of-pocket expenditures and the remainder was the estimated dollar value of the opportunity costs (i.e., \$128.88).

e. Reasons for resignations Of the 631 NETs, 337 had one or more years of teaching experience. They were asked to identify the reason(s) why they had left their previous place of teaching employment. 97 resigned to be with their spouse, 92 resigned to accept a better professional position, 90 resigned to accept a better paid position, 81 mentioned dissatisfaction with their previous position, 56 wished to teacher nearer home, and 53 resigned to become full-time homemakers (incidentally, the number of reasons exceeds 337 since multiple answers were allowed).

In using non-parametric statistical tests to evaluate the ranks of the reasons for resignations, there was a highly significant association for the NETs by LSD size strata; however, there seemed to be no association when the reasons were tested by marital status (i.e., married and unmarried teachers seem to resign for different reasons).

In addition, all of the NETs were asked to rate the importance of a list of variables that would influence them to resign from a teaching

position in the future. By statistically testing these results, it was found that the ratings of these variables by age, marital status, and years of teaching experience were highly associated (i.e., NETs would tend to resign in the future for the same reasons). However, there seemed to be no association for the NETs by sex (i.e., male and female NETs project that they will most likely resign in the future for different reasons).

f. Alternative employment The NETs were asked what they would most likely have been doing had they not accepted their present position. About 64.6 percent of the multiple responses pertained to teaching, 13.7 percent said they would have been students and 12.2 percent mentioned homemaking.

The NETs were also asked if they had investigated non-educational employment rather than employment in public education. Fourteen percent said they had investigated non-educational prospects in an active way.

The NETs were asked to identify employment opportunities that would attract them from public education employment. The answers were somewhat mixed and diverse to this open-ended question. Nevertheless, 29.7 percent said homemaking, 22.8 percent mentioned professional, technical and kindred employment, and 9.7 percent said nothing would attract them from teaching.

3. Market for NETs

Although it is possible to discuss the teacher shortage in the context of demand or supply, it is not nearly as meaningful as a similar discussion in the context of the market. Hence, any meaningful state-

ments about the teacher shortage in this study were reserved for the market chapter.

a. Recruitment and search channels The Spearman rank correlation test was used to evaluate the effectiveness that LSDAs attached to their recruitment methods versus the search channels by which NETs "first learned" of the vacancy they were hired to fill. The result was that the null hypothesis of no relationship was accepted. In other words, there is, on the basis of this survey, reason to believe that the channels used by LSDAs are not the same as the ones through which NETs learn of vacancies.

This result has a clear and direct relationship to the teacher shortage. Since the two groups are not using the same channels it is possible that some vacancies may go unfilled and that some teachers will either be unemployed or seek gainful employment in non-educational employment activities due to the communication gap.

b. Cost of operating this market Since both the demanders and suppliers of teaching services were asked to identify their outlay and opportunity costs, and since the sample data for recruiting and search costs had been projected for population estimates for both demand and supply, it was very easy to find the cost of operating the teacher market once the population estimates had been made. The estimated cost of operating this market amounted to \$1.58 million for the 1968-1969 school year. It was also noted in the market chapter that this estimate excluded the costs of orientation, various psychic costs, and the costs incurred by teachers and others who participated in the market, and, for

one reason or another, did not change school districts or else found employment in non-educational employment activities.

c. Choice variables Both the LSDAs and NETs were given similar lists of choice or decision variables that would influence a teacher's choice of one LSD over another. The variables were ranked and statistically tested using the Spearman rank correlation coefficient. The computed r_s was highly significant at the one percent level. This led to the rejection of the null hypothesis and permits the inference to be made that the LSDAs perceive, in the aggregate, the choice variables of the NETs to be about the same as the NETs rate the same variables in the aggregate.

If the null hypothesis would be accepted, it would be possible to infer that the teacher shortage could be partially attributable to the failure of the LSDAs to perceive the decision set of the NETs correctly. This was not the case, however, and it does not seem possible to conclude that the teacher shortage is influenced by the misconceptions of the LSDAs with respect to the choice variables of teachers.

d. Turnover rate Since the turnover rate obtained in the survey of the LSDAs could be subject to extreme and random disturbances, the proxy variable adjusted average tenure was substituted for the dependent variable, turnover rate, in a multiple regression model analysis.

The object of this analysis was to identify the variable(s) that would best explain adjusted average tenure. In this way it might be possible to determine one or more significant variables that have an impact on the teacher shortage.

The results indicated that two variables (i.e., average LSD salary,

and average age, both for the 1967-1968 school year) provided reasonable results. The addition of other variables had a marginal effect on the coefficient of determination (i.e., R^2). Adjusted average tenure was positively associated with both average salary and average age with the impact of salary being somewhat greater.

Thus, it may be that salary is a more important decision variable than some of the earlier findings would have supported. And if this is a reasonable observation, it may be that the teacher shortage is partially attributable to low salary levels.

e. Misemployment of NETs Finally, there is the possibility that there are differential teacher shortages. The results of this study indicate that 79.7 percent of the NETs were teaching in their major field of academic preparation. If this percentage would be low it might suggest that teachers become dissatisfied when they teach outside of their major and leave public education employment to find employment where misemployment would not occur, thus causing a shortage. However, the rather high percentage of NETs teaching in their major would seem to reduce the weight of this line of reasoning; hence, it would seem that misallocations do not constitute a major force affecting the teacher shortage.

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X. ACKNOWLEDGMENTS

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The author is greatly indebted to Mr. Earl Groenendyck and Mr. Larry Blom of the Department of Public Instruction. Both of these gentlemen were valuable resource persons who provided unpublished data for use in this study.

Of course, the individuals who ultimately determined the success of this study were the superintendents, principals, other administrators, plus the hundreds of teachers who answered the many questions posed to them. Without the cooperation of these individuals, this study would not have been possible.

Many other individuals also contributed in some way. The other members of the author's graduate committee (Dr. Edward Jakubauskas, Dr. Ronald C. Powers, Dr. Trevor Howe and Dr. George Beal), fellow students, Professor Norman Strand and his congenial staff at the Statistical Laboratory, Iowa State University, and others too numerous to mention.

XI. APPENDIX A: DESCRIPTION OF TERMS AND ABBREVIATIONS

The following terms and abbreviations listed below have been used in this report:

Adjusted average tenure Tenure is the number of years a teacher has been continuously employed in a given LSD. Average tenure was computed from data obtained at the Department of Public Instruction (47); however, average tenure is biased by changes in the number of teaching positions in the LSD. Average tenure was adjusted to compensate for changes in the number of teaching positions. The computation of adjusted average tenure can be found in Appendix E.

Average age The average age of teachers for the 1967-1968 school year was computed from data supplied by the Department of Public Instruction (47).

Average expenditure on other instructional costs The average expenditure per pupil for instructional costs other than teachers' salaries (7).

Average experience Experience is the number of years an individual has been teaching in public education. Average experience was computed from data supplied by the Department of Public Instruction (47).

Average semester hours The average semester hours of all the teachers in a given LSD for the 1967-1968 school year was obtained from the Department of Public Instruction (47).

Distance to central city By computing the distance between each LSD and the central city in its respective functional economic area, the distance "distance to central city" is obtained (33).

LSD size The population of an LSD has been called "LSD size." The population of Iowa's LSDs can be found in one of the publications of the Department of Public Instruction (46).

LSD and LSDs These are abbreviations for local school district (LSD) and local school districts (LSDs).

LSDA and LSDAs These are abbreviations for local school district administrator (LSDA) and local school district administrators (LSDAs).

NET and NETs These are abbreviations for new teacher (NET) and new teachers (NETs). A new teacher is one who accepted employment in a given LSD for the 1968-1969 school year and was not employed in that LSD during the previous school year. Each teacher classified as a NET would have zero years of tenure.

Number of students The number of students is the estimated number of students in attendance for the 1967-1968 school year (46).

Number of units offered The number of units of instruction offered in grades 9 through 12 is the "number of units offered." The data was obtained for each of the LSDs in the sample from Mr. Earl Groenendyck of the Department of Public Instruction.

Percent of all teachers both unmarried
and under 30 years of age

The percent of all

teachers in a given LSD that were unmarried and under 30 years of age at the beginning of the 1967-1968 school year (47).

Percent of all teachers under 30 years

The percent of all

teachers in a given LSD that were under 30 years of age at the beginning of the 1967-1968 school year (47).

Percent of all teachers unmarried

The percent of all teachers

in a given LSD that were unmarried at the beginning of the 1967-1968 school year (47).

Salary index

This index is a measure of the steepness of a

given LSD's salary schedule and is based on the following formula:

$$\text{Salary index} = \frac{\text{Salary for M.A., 12 years of experience}}{\text{Base salary for B.A., no experience}}$$

The salary index was computed from salary schedules obtained in the survey of the LSDAs. Sometimes it was necessary to obtain the salary for "M.A., 12 years of experience" by interpolation since all of the LSDs in the sample did not have a salary schedule that included a salary for an M.A. with 12 years of experience.

Turnover rate

The turnover rate is the number of teachers per

100 who ceased to be employed in a given LSD at the end of the 1967-1968 school year. It was computed with the following formula:

$$\text{Turnover rate} = \frac{\text{Number of teachers ceasing employment, 1967-1968}}{\text{Number of teachers employed, 1967-1968}}$$

The data used in the computation of the turnover rate was obtained in the survey of the LSDAs.

XII. APPENDIX B: FORM LETTER SENT TO THE SCHOOL SUPERINTENDENTS
ADVISING THEM OF THE SURVEY OF THE TEACHER
MARKET IN IOWA

IOWA STATE UNIVERSITY

of Science and Technology



AMES, IOWA 50010

June 10, 1968

Department of Economics

Dear Sir:

The Department of Economics and the Statistical Laboratory of Iowa State University, Ames, Iowa are conducting a study of the recruitment and retention of elementary and secondary school teachers in the state of Iowa. The study is organized as a two-stage survey: the first-stage will investigate the employment policies and procedures used by school districts in hiring new teachers; the second-stage will seek to identify teacher goals in seeking job placement.

Your district is one of the 59 school districts selected at random from the 455 operating high school districts in Iowa. You will be contacted within a few days by an interviewer from the Statistical Laboratory and your cooperation in granting an appointment for the completion of the first-stage survey questionnaire will be greatly appreciated. In late September or early October you will again be contacted regarding the second-stage.

Your responses will be treated with strictest confidence. The resulting data will be coded and processed by computer, and published in such a way that neither your responses nor your school district will be identifiable.

By aggregating the data of both stages of this survey investigation, we hope to substantially add to the knowledge and perception of the factors influencing the recruitment and retention of public school teachers in Iowa. Again, your cooperation is of vital importance to this research project, and your assistance will certainly be appreciated.

Norman V. Strand

Norman V. Strand,
Professor of Statistics

Sincerely yours,

Arnold A. Paulsen

Arnold A. Paulsen,
Professor of Economics

XIII. APPENDIX C: FORM LETTER AND QUESTIONNAIRE SENT TO SCHOOL
SUPERINTENDENTS ASKING FOR THEIR ASSISTANCE
IN THE SURVEY OF NEW TEACHERS IN THEIR
RESPECTIVE SCHOOL DISTRICTS

IOWA STATE UNIVERSITY

of Science and Technology



AMES, IOWA 50010

July 19, 1968

Department of Economics

Dear Sir:

Your assistance in June in the first stage of a study of the teacher market in Iowa was greatly appreciated. We thank you for your time and cooperation.

As we indicated at our first contact (by letter and then in the interview) the study is in two stages. The first-stage with school district administrators has been completed. The second-stage pertains to teachers and identifies teachers' methods of search for employment, the cost of this search, and the factors influencing their job choice. The questions that we want to ask your new teachers parallel the questions that we posed to you. By comparing the answers of administrators and new teachers, we hope to estimate the relative influence of each factor upon the recruitment and retention of public school teachers in Iowa. Your cooperation is of vital importance to complete this research and your assistance will be greatly appreciated.

In the second-stage we need your help in the following ways:

1. Distribute questionnaires to all of your new teachers,
2. See that all are completed,
3. Return them to us.

We know that the cooperation and assistance of your office (and/or that of your principals) will ensure a better response and increase the reliability of the results of this study. Check the date you want to receive the questionnaire on the enclosed sheet.

We thank you again for your past and future cooperation.

Sincerely,

Arnold Paulsen

Arnold Paulsen,
Professor of Economics

Enclosure

IOWA STATE UNIVERSITY

of Science and Technology



AMES, IOWA 50010

Department of Economics

July 19, 1968

Professor Arnold A. Paulsen
Department of Economics
408 East Hall
Iowa State University
Ames, Iowa 50010

Dear Sir:

We have received your letter on the subject of your research project on elementary and secondary school teachers. We need _____ questionnaires for our new teachers (i.e., the teachers who are new to our district for the forthcoming academic year). We need the questionnaires by:

- (1) _____ August 12, 1968
- (2) _____ August 19, 1968
- (3) _____ August 26, 1968

Sincerely yours,

Superintendent of Schools

XIV. APPENDIX D: A COPY OF THE PERSONAL LETTER ENCLOSED WITH
THE QUESTIONNAIRES FOR THE NEW TEACHERS IN
THE PARTICIPATING SCHOOLS AND SCHOOL DISTRICTS

IOWA STATE UNIVERSITY

of Science and Technology



AMES, IOWA 50010

Department of Economics

August 19, 1968

Mr. John Doe, Superintendent
Deer Park Community School District
Deer Park, Iowa

Dear Mr. Doe:

We are pleased to have your continued cooperation in the study of the teacher market in Iowa.

We have enclosed four (4) questionnaires for the new teachers in your district for the forthcoming school year (and we have defined new teachers very broadly to include librarians, counsellors, etc.). Envelopes have been provided for the individual new teachers and they have been instructed in the letter on page one of the questionnaire to enclose the questionnaire in the envelope and return it to their principal unless otherwise instructed. Your assistance in distributing, collecting and returning the completed questionnaires to us is greatly appreciated. We have enclosed an addressed and postage paid envelope for your convenience in returning the completed questionnaires to us.

We would like to thank you for your assistance in this study.

Sincerely yours,

Arnold Paulsen,
Professor of Economics

Enclosure

XV. APPENDIX E: PROCEDURE USED TO ADJUST AVERAGE TENURE

The multiple regression model in Chapter VII used the dependent variable "adjusted average tenure" as a proxy variable for the turnover rate for each of the LSDs in the random sample. This substitution of adjusted average tenure for turnover was prompted by two considerations:

- a. the turnover rate was available for only the one year of the field survey and could be high or low for that year due to unusual circumstances; and,
- b. average tenure reflects the turnover rate (and is negatively correlated with it, $r = -0.4205$) and is likely to have a smaller variance.

The second consideration requires some further explanation. The negative correlation between turnover and average tenure is easily seen in the case of zero turnover and complete turnover. If no teacher in a given LSD resigns in year t , then, average tenure rises by one year since all of the teachers gain one year of tenure. On the other hand, if all of the teachers resign, average tenure falls to zero (i.e., all of the teachers are new and a new teacher has zero tenure).

1. Reason for adjusting average tenure: an example

In this section an example is used to illustrate a specific problem that arises when average tenure is used as a proxy variable for the turnover rate.

For some LSD let the number of teachers be n_t ($t = 0, 1, 2, \dots, m$ years), let the number of years of tenure for teacher i at time t be E_{it} ($i = 1, 2, \dots, n_t$), and let the average tenure for the LSD be \bar{E}_t

(where $\bar{E}_t = \sum_i E_{it} / n_t$).

The following assumptions have been used in this simple example with a five-year horizon ($t = 0, 1, 2, 3, 4$):

$$(a) \quad n_0 = n_1 = n_2 = n_3 = 20$$

$$(b) \quad n_4 = 21$$

$$(c) \quad \sum_i E_{i0} = \sum_i E_{i1} = \sum_i E_{i2} = \sum_i E_{i3} = \sum_i E_{i4} = 160$$

(d) two teachers cease to be employed in each of the five years.

For each year from $t = 0$ to $t = 3$, average tenure is the same,

$$(1) \quad \bar{E}_0 = \bar{E}_1 = \bar{E}_2 = \bar{E}_3 = 160/20 = 8$$

However, in year $t = 4$, the addition of one new teaching position adds nothing to the total years of tenure, but average tenure declines since the denominator is larger,

$$(2) \quad \bar{E}_4 = 160/21 = 7.619$$

Moreover, the rate of turnover is the same for all of the years in this example (i.e., turnover rate = $(2/20)100 = 10$ percent). Therefore, the decline in average tenure is not due to a change in turnover but due to a change in the number of teaching positions.

This simple example demonstrates that if the total years of tenure is constant, average tenure can vary due to changes in the number of teaching positions even when the turnover rate is constant. Hence, average tenure must be adjusted so that it will not reflect changes in the number of teaching positions.

This example can be generalized. Assume a horizon of T years in which:

$$(a') \quad n_0 = n_1 = \dots = n_T = N$$

$$(b') \quad n_{T+1} = n_T + \Delta n \text{ (where } \Delta n \neq 0 \text{)}$$

$$(c') \quad \sum_i E_{i0} = \sum_i E_{i1} = \dots = \sum_i E_{iT} = \dots = \sum_i E_{im} = \lambda$$

$$(d') \quad \text{turnover rate is constant for all } t$$

The assumptions (a'), (b') and (c') are equivalent to assuming that average tenure is constant for $t = 0$ to $t = T$. That is,

$$(3) \quad \bar{E}_0 = \bar{E}_1 = \dots = \bar{E}_T = \lambda/N$$

If one or more teaching positions are added at time $T+1$ ($\Delta n > 0$), then, $\bar{E}_{T+1} < \bar{E}_T$ since the numerator continues to be λ but the denominator rises to n_{T+1} (i.e., $n_{T+1} = N + \Delta n$).

This generalized example also demonstrates that if the total years of tenure is constant, and if there are changes in the number of teaching positions, average tenure will vary even when the turnover rate is constant. Therefore, if average tenure is used as a proxy variable for the turnover rate, it must be adjusted for changes in the number of teaching positions.

2. Derivation of the adjustment factor

If a new term, k , is defined as follows:

$$(4) \quad k = \bar{E}_T - \bar{E}_{T+1} \text{ (where, } k \begin{matrix} > \\ < \end{matrix} 0 \text{)}$$

and if assumptions (a'), (b'), (c') and (d') are assumed to hold, then,

$$(5) \quad k = \bar{E}_T - \bar{E}_{T+1} = \frac{\lambda}{n_T} - \frac{\lambda}{n_T + \Delta n}$$

and simplifying,

$$(6) \quad k = \frac{\Delta n \bar{E}_T}{n_{T+1}}$$

Thus, if k is added to the average tenure computed for year $T+1$, average tenure is adjusted for changes in the number of teaching positions be-

tween T and T+1.

Returning to the numerical example, k can be computed as follows:

$$(7) \quad k = \frac{1(8.0)}{21} = 0.381$$

Hence, the adjusted average tenure is 8.0 (i.e., $8.0 = 7.619 + 0.381$) for this example.

3. Empirical formulation

The application of the factor k to average tenure requires two further considerations. First, if a school district experiences a constant Δn over time, then, Δn can be computed for n_T and n_{T+1} without any qualifications. However, many school districts do not change the number of teaching positions every year (i.e., Δn is not constant). For example, a school district with 20 teachers probably would not add new teaching positions very frequently. For this reason it seemed necessary to compute an average Δn that would smooth out the incremental changes in the number of teaching positions in all school districts, but particularly in the smaller LSDs. Moreover, Δn was computed over the three year period 1964 through 1967. The latest data available at the time was for 1967, and for years prior to 1964 it would have been necessary to contend with the problems of school consolidation. Thus, these two years were used to compute k.

Secondly, if there is a need to adjust average tenure at T+1 for the change in the number of teaching positions for the most recent year, then, there is also a need to adjust for changes in the number of teaching positions in preceding years. Moreover, it would seem reasonable to expect that previous changes in the number of teaching positions would have a decreasing impact in average tenure at T+1 as one moves further back in time.

For example, the addition of five new teachers in 1967 (where $T+1$ and 1967 are the same), requires an adjustment in average tenure for 1967. Also, if five new teachers were added in 1966 (i.e., year T), some of the effect of this increase in the number of teaching positions would still have an effect in 1967, although the impact would be expected to be lessened. And similarly for preceding years. Therefore, a k^* was defined as follows to adjust for changes in the number of teaching positions over time:

$$(8) \quad k^* = k_{T+1} + k_T^2 + k_{T-1}^3 + \dots + k_{T-x}^{x+1} \quad (x \text{ is some previous year})$$

The value of x was determined by computing the average tenure for all of the school districts in the sample. The average unadjusted tenure was five years (47); hence, a value of five was used for x .

**XVI. APPENDIX F: COPY OF THE SURVEY INSTRUMENT USED FOR
THE SURVEY OF SCHOOL ADMINISTRATORS**

IOWA STATE UNIVERSITY
Department of Economics
and
Statistical Laboratory

SCHOOL DISTRICT SURVEY: ADMINISTRATORS

CONFIDENTIAL: The information reported on this form is strictly confidential. Neither the contents of this survey schedule nor the published results will permit the identification of you, your responses, or your school district.

DESCRIPTION OF SCHOOL DISTRICT: 1967-68

Number of full-time teachers:

- (20) _____ Male
(21) _____ Female
(22) _____ TOTAL

Type of Organization:

- (23) _____ K-6-2-4
(24) _____ K-6-3-3
(25) _____ K-6-6
(26) _____ K-8-4
(27) _____ Other

Number of students:

- (28) _____ Elementary (K-6)
(29) _____ Jr. High (7-9)
(30) _____ Sr. High (10-12)

Academic Preparation of Teachers:

- (31) _____ Number with temporary certificates
(32) _____ Number with less than B.A. or B.S.
(33) _____ Number with B.A., B.S., or more, but not advanced degree
(34) _____ Number with degree beyond the bachelor's degree

Interviewer

Appointment: Date and Time

TIME INTERVIEW BEGAN: _____

TIME INTERVIEW ENDED: _____

1.	Name of School District	
2.	Address	
3.	City	
4.	Phone	
5.	Superintendent	
6.	Years of Tenure	7. <u>Remain/Move</u> Next Year?
8.	Person Interviewed	
9.	Title	
10.	Years of Tenure	11. <u>Remain/Move</u> Next Year?
12.	Person Interviewed	
13.	Title	
14.	Years of Tenure	15. <u>Remain/Move</u> Next Year?
16.	Person Interviewed	
17.	Title	
18.	Years of Tenure	19. <u>Remain/Move</u> Next Year?

CONFIDENTIAL

The information reported on this form is strictly confidential. Neither the contents of this survey schedule nor the published results will permit the identification of you, your responses, or your school district.

QUESTION #1 CARD #1

Approximately how many new teachers do you expect to join your teaching staff to fill vacancies for September, 1968, by grade level?

K	(1) _____	7-9	(5) _____
1-3	(2) _____	10-12	(6) _____
4-6	(3) _____	Other: Jr. & Sr. H.	(7) _____
Other: El.	(4) _____		

TOTAL: El. + Jr. H. + Sr. H. = _____

QUESTION #2 CARD #2

Of the total vacancies you have filled or probably will have to fill by September, 1968, approximately how many of these vacancies can be attributed to each of the following reasons?

- (1) _____ Increased enrollment
- (2) _____ Replace teachers who left
- (3) _____ Increase quality (e.g., smaller classes, enlarged curriculum, special teachers, etc.)
- (4) _____ Other. Please specify: _____

() _____ TOTAL (INTERVIEWER: THIS TOTAL SHOULD BE THE SAME AS FOR QUESTION #1).

QUESTION #3 CARD #3

In your opinion, what are the three most frequent causes of teacher resignations in your district? Please rank the reasons. (INTERVIEWER: MOST FREQUENT = 1; ETC....)

- (1) _____ Retirement
- (2) _____ Marriage
- (3) _____ Maternity
- (4) _____ Spouse moved
- (5) _____ Preferred different geographical location
- (6) _____ Further education
- (7) _____ Enter non-educational employment
- (8) _____ Move closer to friends and relatives
- (9) _____ Move to what they think is a better school district
- (10) _____ Other. Please specify: _____
- (11) _____
- (12) _____

QUESTION #4

On the average, approximately how many applicants do you have for each vacancy? (INTERVIEWER: READ NO FURTHER. PLACE A CHECK (X) IN THE APPROPRIATE SPACE).

- (1) _____ Less than one applicant per vacancy.
- (2) _____ About 1 applicant per vacancy.
- (3) _____ About 2 applicants per vacancy.
- (4) _____ About 3 applicants per vacancy.
- (5) _____ About 4 applicants per vacancy.
- (6) _____ About 5-7 applicants per vacancy.
- (7) _____ About 8-10 applicants per vacancy.
- (8) _____ Other. Please specify by writing a number in the space.

(INTERVIEWER: PLEASE READ THE FOLLOWING INTRODUCTION TO QUESTIONS 5 AND 6).

The next two questions pertain to the ease or difficulty you encounter in filling different types of vacancies. Question 5 deals with vacancies by grade levels while question 6 deals with vacancies by subject areas in Jr. and Sr. High School.

QUESTION #5 CARD #4

(INTERVIEWER: THIS QUESTION IS IN TWO PARTS. ASK PARTS A & B SEPARATELY. IF, FOR EACH PART, RESPONDENTS SELECT MORE THAN ONE ALTERNATIVE, ASK FOR A RANKING. COLUMN A, EASIEST = 1; ... AND IN COLUMN B, HARDEST = 1; ...)

A. For which grade levels is it easiest to find teachers to fill vacancies?

B. For which grade levels is it hardest to find teachers to fill vacancies?

<u>"A" - EASIEST</u>	<u>GRADE LEVEL</u>	<u>"B" - HARDEST</u>
_____	K	_____
_____	1-3	_____
_____	4-6	_____
_____	7-9	_____
_____	10-12	_____

QUESTION #6 CARD #5

(INTERVIEWER: THIS QUESTION IS IN TWO PARTS. ASK PARTS A & B SEPARATELY. IF, FOR EACH PART, RESPONDENTS SELECT MORE THAN ONE ALTERNATIVE, ASK FOR A RANKING AS IN QUESTION #5).

A. Which specialties in Jr. High and/or Sr. High are easiest to fill?

B. Which specialties in Jr. High and/or Sr. High are hardest to fill?

	<u>"A"-EASIEST</u>	<u>"B"-HARDEST</u>
(1) Agriculture	_____	_____
(2) Art	_____	_____
(3) Biology	_____	_____
(4) Business Education	_____	_____
(5) Chemistry	_____	_____
(6) Driver Education	_____	_____
(7) Earth Sciences	_____	_____
(8) English	_____	_____
(9) Foreign Languages	_____	_____
(10) Guidance and Counseling	_____	_____
(11) History	_____	_____
(12) Home Economics	_____	_____
(13) Industrial Arts	_____	_____
(14) Library Science	_____	_____
(15) Mathematics	_____	_____
(16) Music	_____	_____
(17) Physical and Health Education	_____	_____
(18) Physics	_____	_____
(19) Speech and Dramatics	_____	_____
(20) Other. Please specify:	_____	_____

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QUESTION #7 CARD #6

In general, which of the following best describes the ease with which you are able to fill teaching vacancies with qualified teachers?

- (1) _____ Excellent. We rarely have trouble finding ample teachers.
- (2) _____ Good. Qualified teachers can be found with some effort.
- (3) _____ Poor. It is difficult to find qualified teachers.
- (4) _____ Very poor. It is extremely difficult to find qualified teachers and frequently we accept teachers with temporary certificates.

QUESTION #8 CARD #7

(INTERVIEWER: THIS QUESTION IS IN TWO PARTS. ASK PARTS A & B SEPARATELY. PLACE A CHECK MARK (X) IN THE FIRST SPACE. IN THE SECOND SPACE INSERT THE RANK FOR THE SECOND PART OF THIS QUESTION).

A. Which methods do you use to find applicants for teaching vacancies in your district?

- (1) _____ Do nothing. Most new teachers we hire come to us.
(Walk ins.)
- (2) _____ Newspaper want ads.
- (3) _____ Want ads in professional journals, magazines, etc.
- (4) _____ Advise my staff members, friends, and relatives
(grape-vine approach).
- (5) _____ ISEA placement service.
- (6) _____ University placement services (inc. on-campus recruiting).
- (7) _____ Public placement services (e.g., U.S., Iowa, etc.)
- (8) _____ Commercial placement services.
- (9) _____ Recruiting at conventions.
- (10) _____ Other. Please specify: _____
- (11) _____

B. In your opinion, which four methods are the most effective in finding teachers to fill vacancies? Please rank them. (Most effective = 1;) (INTERVIEWER: IF FEWER THAN FOUR METHODS ARE USED, ASK FOR THE RANKING OF THAT NUMBER).

QUESTION #9

Suppose you are two weeks away from the time school opens in September, 1968, and you have a vacancy that must be filled. What steps would you take to try and fill this vacancy? _____

QUESTION #10 CARD #8

Approximately how many vacancies have you filled or probably will fill in each of the following months of this year for September, 1968?

- (1) _____ Before April, 1968
- (2) _____ April, 1968
- (3) _____ May, 1968
- (4) _____ June, 1968
- (5) _____ July, 1968
- (6) _____ August, 1968
- (7) _____ September, 1968
- (8) _____ Vacancies that probably will not be filled.

INTERVIEWER: DID YOU RECORD NUMBERS
OR PERCENTAGES?

NUMBERS _____

PERCENTAGES _____

(INTERVIEWER: PLEASE READ THE FOLLOWING INTRODUCTION TO THE NEXT THREE QUESTIONS).

The next three questions are concerned with the cost of recruiting and orienting new teachers to your district. The first question requests a dollar estimate of your expenditures. The second requests an estimate of the man-hours spent recruiting by yourself and members of your staff. The third requests information on the man-hours spent by yourself and members of your staff orienting new teachers to your school district.

QUESTION #11

(INTERVIEWER: READ THE PART IN PARENTHESES FOLLOWING THE STATEMENT OF THE QUESTION).

How much money have you budgeted for recruiting new teachers for the coming school year--1968-69? (e.g., telephone, postage, printing costs, advertising, travel expenses, etc.)

\$ _____

QUESTION #12

(INTERVIEWER: READ THE PART IN PARENTHESES FOLLOWING THE STATEMENT OF THE QUESTION).

Approximately how many man-months would you estimate have been and will be devoted to the recruitment of new teachers for the coming school year? (The recruitment process would include the time of secretaries in handling correspondence, the time required to determine which candidates would be interviewed; the time devoted to interviewing; and so on up to the decision to hire all of the new teachers that will join your staff this year).

_____ Man-months

QUESTION #13

Approximately how many man-months would you estimate have been and will be devoted to the orientation of new teachers for the coming school year?

_____ Man-months

(INTERVIEWER: ASK FOR A YES OR NO ANSWER).

(2) _____ No

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

(INTERVIEWER: ASK FOR A YES OR NO ANSWER).

(2) No

This image shows a single page of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

QUESTION #16

How are new teachers assigned to a given school building and to a particular grade level in your district?

(INTERVIEWER: DO NOT READ FURTHER.)

- (1) _____ Principals hire to fill their own needs.
- (2) _____ New teachers are assigned to older, rundown, problem, and improvised schools.
- (3) _____ New teachers fill vacancies caused by intra-district personnel movements.
- (4) _____ The central office assigns them to vacancies according to need.
- (5) _____ Experienced teachers are assigned to most difficult areas and classes.
- (6) _____ Teachers choose from the available vacancies.
- (7) _____ Random assignment by the central office.
- (8) _____ We hire new teachers into specific vacancies.
- (9) _____ Other. Please specify: _____
- (10) _____

QUESTION #17 CARD #9

What is the median salary you expect to pay in 1968-69? (This applies to all teachers, not just to new teachers).

- (1) _____ Under \$6,000
- (2) _____ \$6,000 - 6,499
- (3) _____ \$6,500 - 6,999
- (4) _____ \$7,000 - 7,499
- (5) _____ \$7,500 - 7,999
- (6) _____ \$8,000 - 8,499
- (7) _____ \$8,500 - 8,999
- (8) _____ \$9,000 - 9,499
- (9) _____ \$9,500 - 9,999
- (10) _____ \$10,000 - 10,499
- (11) _____ \$10,500 - 10,999
- (12) _____ \$11,000 or more

QUESTION #18

Do you base your salary schedules on any or all of the following items?

- (1) _____ Education
- (2) _____ Experience
- (3) _____ Extra duties (e.g., basketball coach, debate coach, etc.)
- (4) _____ Merit
- (5) _____ Other. Please specify: _____

→ QUESTION #19

If your district were to move to a salary schedule based partly on merit, in your opinion, who should rate the teachers?

→ QUESTION #20

If you were to use a merit system, what things would you look for in establishing a rating system? (INTERVIEWER: GO TO QUESTION #23).

→ QUESTION #21

Who rates the teachers in your merit system? _____

→ QUESTION #22

What variables are you using to rate your teachers? _____

QUESTION #23 CARD #10

How important are each of the following in formulating salary policy in your district?

0	1	2	3
Not		Very	
Important		Important	

(INTERVIEWER: PLACE A SMALL CHECK (X) ON THE CORRECT NUMBER).

- (1) 0 1 2 3 Maintain staff morale
- (2) 0 1 2 3 Retain the good teachers
- (3) 0 1 2 3 Attract better-than-average teachers
- (4) 0 1 2 3 Keep up with salary scales in adjacent districts
- (5) 0 1 2 3 Keep up with average salary (and salary increase) in the state
- (6) 0 1 2 3 Other. Please specify: _____
- (7) 0 1 2 3 _____

QUESTION #24 CARD #11

In general, which of the following attracts teachers to a district?
(i.e., to school districts in general).

0	1	2	3
Not			Very
Important			Important

(INTERVIEWER: PLACE A SMALL CHECK (X) ON THE CORRECT NUMBER).

- (1) 0 1 2 3 Fringe benefits
- (2) 0 1 2 3 Low cost of living
- (3) 0 1 2 3 Low work-load
- (4) 0 1 2 3 Quality of students
- (5) 0 1 2 3 Availability of teaching materials and teaching facilities
- (6) 0 1 2 3 Competence and friendliness of colleagues
- (7) 0 1 2 3 Salary
- (8) 0 1 2 3 Nearness to graduate school
- (9) 0 1 2 3 Democratic organization (teachers play a role in policy-making)
- (10) 0 1 2 3 Quality of school (range of curriculum, school building, etc.)
- (11) 0 1 2 3 Geographical location
- (12) 0 1 2 3 Good opportunities for outside income (summer, evenings, etc.)
- (13) 0 1 2 3 Courses and/or class assignments
- (14) 0 1 2 3 Community size
- (15) 0 1 2 3 Good promotional opportunities
- (16) 0 1 2 3 Good recreational and cultural opportunities
- (17) 0 1 2 3 Administrators have a good reputation
- (18) 0 1 2 3 Low pupil-teacher ratio
- (19) 0 1 2 3 Size of school and/or school district
- (20) 0 1 2 3 Daily planning periods
- (21) 0 1 2 3 Other. Please specify: _____
- (22) 0 1 2 3 _____
- (23) 0 1 2 3 _____

QUESTION #25 CARD #12

For each of the following is your district much worse off, somewhat worse off, somewhat better off, or much better off than the districts with whom you compete for new teachers?

0	1	2	3
Much Worse Off	Somewhat Worse Off	Somewhat Better Off	Much Better Off

(INTERVIEWER: PLACE A SMALL CHECK (X) ON THE CORRECT NUMBER).

- (1) 0 1 2 3 Fringe benefits
- (2) 0 1 2 3 Cost of living
- (3) 0 1 2 3 Work-load
- (4) 0 1 2 3 Quality of students
- (5) 0 1 2 3 Availability of teaching materials and teaching facilities
- (6) 0 1 2 3 Competence and friendliness of colleagues
- (7) 0 1 2 3 Salary
- (8) 0 1 2 3 Nearness to graduate school
- (9) 0 1 2 3 Democratic organization (teachers play a role in policy-making)
- (10) 0 1 2 3 Quality of school (range of curriculum, school building, etc.)
- (11) 0 1 2 3 Geographical location
- (12) 0 1 2 3 Opportunities for outside income (summer, evenings, etc.)
- (13) 0 1 2 3 Courses and/or class assignments
- (14) 0 1 2 3 Community size
- (15) 0 1 2 3 Promotional opportunities
- (16) 0 1 2 3 Recreational and cultural opportunities
- (17) 0 1 2 3 Reputation of administrators
- (18) 0 1 2 3 Pupil-teacher ratio
- (19) 0 1 2 3 Size of school and/or school district
- (20) 0 1 2 3 Other. Please specify: _____
- (21) 0 1 2 3 _____
- (22) 0 1 2 3 _____

225

We would like copies of the following items if they are available?

(INTERVIEWER: PLEASE CHECK THE RELEVANT ALTERNATIVE).

OBTAINED NOT AVAILABLE DID NOT HAVE

QUESTION #26

Standard application form?

QUESTION #27

Standard interview form?

QUESTION #28

1968-69 salary schedule?

QUESTION #29

Your staffing policies (for attracting, holding, and effectively using your professional personnel) for both your elementary and secondary schools?

QUESTION #30

Your standard teacher contract form?

QUESTION #31

Standard terminal interview form?

XVII. APPENDIX G: COPY OF THE SURVEY QUESTIONNAIRE USED
FOR THE SURVEY OF NEW TEACHERS

SCHOOL DISTRICT SURVEY: TEACHERS

Department of Economics
and
Statistical Laboratory
Iowa State University

August 1968

Please complete the following:

Name of School District: _____

Name of School in which you teach: _____

THE INFORMATION REPORTED ON THIS FORM IS STRICTLY CONFIDENTIAL. WE HAVE NOT ASKED FOR YOUR NAME AND WE SHALL NOT PUBLISH THE RESULTS IN A WAY THAT WILL PERMIT YOU TO BE IDENTIFIED.

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY
Ames, Iowa 50010

DEPARTMENT OF ECONOMICS AND SOCIOLOGY

August 7, 1968

Dear Newly Appointed Professional Employee:

How did you learn of the employment position you now hold? What influenced your decision to accept this position? What might cause you to change positions or leave public education employment altogether?

These and similar questions are the subject of the enclosed questionnaire. Your answers will permit the Department of Economics at Iowa State University to study the market for teachers in Iowa. At least 4,500 educators find new positions in public education each year. We wish to identify the channels used to find employment; the variables that influence the selection of one position and the rejection of another; and, the factors that cause some educators to change positions (or leave altogether) within the educational profession. Finally, we need some personal and background information from you to assist us in the descriptive classification of your answers.

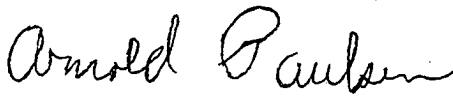
How have you become involved in this study? Your school district was one of the Iowa school districts randomly selected to represent the state in a statistical sample. Will this study benefit you? We cannot promise that you will benefit directly; however, we can assure you that our findings will be published and that the results of our analysis and evaluation of the Iowa market for teachers will give you a better understanding of this market, thus, permitting you and your colleagues to participate in this market in a more informed manner in the future. Of course, the benefit of this study will also assist administrators and other teachers.

You should have no trouble completing the questionnaire in less than 30 minutes (the teachers who aided in constructing and testing the questionnaire averaged about 20 to 25 minutes).

"Public education" is to be interpreted quite broadly to include teachers, counsellors, librarians, psychologists, and social workers alike. Furthermore, you will note that your questionnaire does not ask for your name nor is it numbered nor identifiable in any way. Hence, you can see that your responses will be completely anonymous and only reported as part of a group response. So be honest! When you have completed the questionnaire, please enclose it in the envelope provided, seal it, and return it to your principal unless otherwise instructed.

We thank you in advance for the time and accuracy of your responses and feel quite confident that the data obtained will reward you and your colleagues when published.

Sincerely yours,



Arnold Paulsen
Professor

PART I -- THE SEARCH FOR YOUR PRESENT EMPLOYMENT

1. How important was each of the following in your decision to choose your current employment position? Circle the relevant number. Rate each independently.

0 - Not important
 1 - Slightly important
 2 - Moderately important
 3 - Very important

- (1) 0 1 2 3 Administrators have a good reputation
 (2) 0 1 2 3 Courses and/or class assignments
 (3) 0 1 2 3 Size of community
 (4) 0 1 2 3 Competent and friendly colleagues
 (5) 0 1 2 3 Good entertainment and recreational facilities in community
 (6) 0 1 2 3 Good opportunities for jobs outside of public education in the future
 (7) 0 1 2 3 Good opportunities for outside income (summer, evenings, etc.)
 (8) 0 1 2 3 Friends, relatives and/or spouse nearby
 (9) 0 1 2 3 Size of school and/or school district
 (10) 0 1 2 3 Salary
 (11) 0 1 2 3 Good opportunities for outside income (summer, evenings, etc.)
 (12) 0 1 2 3 Low pupil-teacher ratio
 (13) 0 1 2 3 Geographical location of community
 (14) 0 1 2 3 Marriage prospects
 (15) 0 1 2 3 Reputation of school district
 (16) 0 1 2 3 Nearness to graduate school
 (17) 0 1 2 3 School administrators showed an interest in me and my field of work in the contacts I had with them
 (18) 0 1 2 3 Good opportunities for future employment in nearby schools
 (19) 0 1 2 3 Quality of students
 (20) 0 1 2 3 Fringe benefits
 (21) 0 1 2 3 Future salary prospects
 (22) 0 1 2 3 Availability of teaching materials and teaching facilities
 (23) 0 1 2 3 Low work load
 (24) 0 1 2 3 Teachers in this school play an active role in policy-making
 (25) 0 1 2 3 Daily planning periods
 (26) 0 1 2 3 Other. Please specify: _____
 (27) 0 1 2 3 Other. Please specify: _____

2. To summarize, how important was each of the following in influencing your choice of the school district in which you are employed? Circle the relevant number for all five and rate each factor independently.

0 - Not important
1 - Slightly important
2 - Moderately important
3 - Very important

- (a) 0 1 2 3 The school (students, building, class size, courses or grade level taught, teaching aids, reputation of the school, etc.)
- (b) 0 1 2 3 Administration and supervision of the school (progressive school board, pleasant and congenial supervisors, etc.)
- (c) 0 1 2 3 Salary, fringe benefits and advancement prospects
- (d) 0 1 2 3 Geographical location (nearness to graduate school, friends, relatives and/or spouse; climate; recreational and cultural facilities; etc.)
- (e) 0 1 2 3 Future employment prospects (in public education and/or other occupations in this locale)

Using the alphabetical code above (i.e., a, b, c, d, e) rank the five items in their order of importance to you in making your decision to accept your present position.

_____ Most important item

_____ Second most important item

_____ Third most important item

_____ Fourth most important item

_____ Least important item

3. If you had not accepted your present position, what would you most likely be doing in the 1968-69 academic year? (e.g., teaching in the same school as last year, teaching somewhere else, going to graduate school, farming, home-making, selling, etc.)

4. In your estimation and based on personal experience, how valuable is each of the following methods of seeking employment opportunities in public education?

Circle the number that "best" represents the value of each to you.

- 0 - Method was not used
- 1 - Method of little or no value
- 2 - Method of some value
- 3 - Method of moderate value
- 4 - A most valuable method

- (a) 0 1 2 3 4 Your former teachers or college professors
- (b) 0 1 2 3 4 College placement services (including on-campus recruiting)
- (c) 0 1 2 3 4 Iowa State Education Association employment service
- (d) 0 1 2 3 4 Commercial placement services
- (e) 0 1 2 3 4 Public placement services (e.g., U.S. Employment Service, etc.)
- (f) 0 1 2 3 4 Answered advertisements in newspapers
- (g) 0 1 2 3 4 Answered advertisements in professional journals, magazines, etc.
- (h) 0 1 2 3 4 Wrote letters and asked if any positions were open
- (i) 0 1 2 3 4 Advertised my availability in newspapers, journals, etc.
- (j) 0 1 2 3 4 Friends and relatives (i.e., grape-vine approach)
- (k) 0 1 2 3 4 Was recruited (i.e., "Someone looked for me specifically and made a firm offer.")
- (l) 0 1 2 3 4 Other. Please specify: _____

Using the alphabetical code above, by which method did you first learn of the vacancy that you were hired to fill for the 1968-69 academic year? _____

5. Which of the following "best" describes the availability of information on job vacancies in your specialty in public education? Check (X) the best alternative.

- (1) ____ Excellent. Vacancies are well known.
- (2) ____ Good. Vacancies can be determined with some effort.
- (3) ____ Poor. Even if qualified, it is difficult to learn of vacancies.
- (4) ____ Very poor. It is necessary to be in the right place at the right time or know the right people to learn of vacancies.

6. How many positions in public education did you consider? (Write the total number for each in the space provided.)

_____ For how many different positions did you submit an application?
(Include both letters of application and formal application forms that you completed; however, do not count any school district more than once.)

_____ With how many different school districts did you have a personal interview? (Include face-to-face interviews, telephone interviews, etc.)

_____ From how many different school districts did you receive a concrete offer? (By concrete offer we mean: "I was told the job was mine if I wanted it.")

7. (a) Did you have a personal interview before accepting your present position?
Please check (X) one.

_____ Yes
_____ No (If NO, go to question 8.)

- (b) If YES, at whose expense? Check (X) one.

_____ Personal expense
_____ Their expense
_____ Shared expense (I paid part and the school district paid part.)
_____ Other. Please specify: _____

- (c) Where was the interview held? (You may check one or more if applicable, but circle the check (X) representing the main interview, if more than one.)

_____ On campus where I was attending college.
_____ At school where I was previously employed.
_____ In school district where I am currently employed.
_____ Telephone interview.
_____ Other. Please specify: _____

8. In securing your present position, approximately how many times were you in contact with each of the following? (Contact could be by letter, telephone, interview, visits, etc.) Write the total number of times for each in the space provided.

_____ Board of Education
 _____ Superintendent
 _____ Principal of building where I am assigned
 _____ Other principal(s)
 _____ Department chairman
 _____ Director of personnel and/or his office
 _____ Curriculum director
 _____ Other. Please specify: _____

9. Now think back to all the school districts where you applied for a position. Did you definitely prefer one vacancy, location, etc. over all others? (Check (X)).

_____ Yes
 _____ No (If NO, go to question 10.)

If YES, are you employed in the position that you preferred?

_____ Yes
 _____ No

10. When did you sign your current (1968-69) contract?

_____ Month
 _____ Year

11. How many employment positions did you consider outside of public education before accepting your present position? Write the total number in space provided.

- (a) _____ Did not consider any. (If none, check (X) and go to question 12.)
- (b) _____ For how many different employment positions did you submit an application? (Include both letters of application and formal application forms you completed; however, do not count any non-school employer more than once.)
- (c) _____ With how many non-school employers did you have a personal interview? (Include face-to-face interviews, telephone interviews, etc.)
- (d) _____ From how many non-school employers did you receive a concrete offer? (By concrete offer we mean: "I was told the job was mine if I wanted it.")
- (e) _____ Which occupations did you consider outside of public education? (e.g., salesman, farmer, military service, etc.)
-
-

12. Approximately how many manhours did you devote to the search for all types of employment for September 1968? (Include the time spent reading want ads, talking to persons to find out where suitable jobs were available, the time spent writing letters, traveling, interviewing, completing application forms, etc. The manhours are for the entire search -- i.e., the search for your present position and all others that you investigated. This may be difficult, but please give us your "best" estimate.)

_____ Manhours

13. Approximately how much money did you spend out of your own pocket seeking employment for September 1968? (Include travel expenses, telephone toll charges, cost of postage, printing costs and other expenses that you may have incurred. This too may be difficult, but please give us your "best" estimate.)

\$ _____

14. Did you have a minimum salary below which you would not sign a contract in your search for your present position?

_____ Yes

_____ No (If NO, go to question 15.)

If YES, what was the minimum salary? (Check one.)

- | | |
|-------------------------|------------------------------|
| (1) _____ Under \$5000 | (9) _____ \$8500 - 8999 |
| (2) _____ \$5000 - 5499 | (10) _____ \$9000 - 9499 |
| (3) _____ \$5500 - 5999 | (11) _____ \$9500 - 9999 |
| (4) _____ \$6000 - 6499 | (12) _____ \$10,000 - 10,999 |
| (5) _____ \$6500 - 6999 | (13) _____ \$11,000 - 11,999 |
| (6) _____ \$7000 - 7499 | (14) _____ \$12,000 - 12,999 |
| (7) _____ \$7500 - 7999 | (15) _____ \$13,000 - 13,999 |
| (8) _____ \$8000 - 8499 | (16) _____ \$14,000 or more |

PART II -- WHAT IS YOUR FUTURE IN PUBLIC EDUCATION

15. How many years do you expect to remain in your present school district in some capacity? (e.g., until retirement, until married, this year only, two years, etc.)

16. How many years do you expect to continue working in public education in some capacity? (e.g., until retirement, until married, this year only, two years, etc.)

17. In general, how important would each of the following be to you in causing you to leave one teaching position for another? Circle the relevant number.

- 0 - Item would have NO importance
- 1 - Item would have SLIGHT importance
- 2 - Item would have MODERATE importance
- 3 - Item would be VERY important

- (a) 0 1 2 3 The school (students, building, class size, courses or grade level taught, teaching aids, district size, reputation, etc.)
 - (b) 0 1 2 3 Administration and supervision of the school (principals, superintendent, members of the school board)
 - (c) 0 1 2 3 Salary, fringe benefits and advancement prospects
 - (d) 0 1 2 3 The community (parental interest, traffic, housing, unreasonable restrictions on private life, etc.)
 - (e) 0 1 2 3 Geographical location (nearness to friends and relatives, climate, recreational and cultural facilities, etc.)
 - (f) 0 1 2 3 Desire for change
 - (g) 0 1 2 3 Return to school to continue education full-time
 - (h) 0 1 2 3 Marriage
 - (i) 0 1 2 3 If married, necessary for spouse to move
 - (j) 0 1 2 3 Become full-time homemaker (female only)
 - (k) 0 1 2 3 Other. Please specify: _____
-

18. What two types of occupational employment would be most likely to attract you away from public education? (e.g., salesman, farming, homemaking, etc.)

- (a) _____
- (b) _____

 PART III -- PERSONAL AND BACKGROUND INFORMATION

19. Sex: ☐ Male
 ☐ Female

20. Age: ☐ Under 21 ☐ 35 - 39
 ☐ 21 - 22 ☐ 40 - 44
 ☐ 23 - 24 ☐ 45 - 49
 ☐ 25 - 29 ☐ 50 - 59
 ☐ 30 - 34 ☐ 60 or over

21. Marital Status:
 ☐ Never married ☐ Divorced
 ☐ Married ☐ Widowed
 ☐ Separated

22. What is the state you consider to be your "home" state?

☐ Iowa ☐ Kansas
☐ Nebraska ☐ Minnesota
☐ Missouri ☐ Illinois
☐ So. Dakota ☐ Other. Please specify: _____
☐ No. Dakota _____

23. What is the highest degree you hold?

☐ No degree ☐ Masters in education
☐ B.A. or B.S. in education ☐ Masters not in education
☐ B.A. or B.S. not in education ☐ Doctorate
☐ Other. Please specify: _____

24. How many semester hours have you earned beyond your highest degree?

_____ Semester hours

25. What is the Iowa teaching certificate(s) that you hold?

- (1) ☐ Permanent professional certificate
- (2) ☐ Professional certificate
- (3) ☐ Pre-professional certificate
- (4) ☐ Substitute certificate
- (5) ☐ Temporary certificate
- (6) ☐ Professional commitment certificate
- (7) ☐ Other. Please specify: _____

26. Are you employed full-time or part-time for the 1968-69 school year?

- ☐ Full-time ☐ Half-time
- ☐ Three-quarter time ☐ One-quarter time
- ☐ Other. Please specify: _____

27. How many years have you been employed in public education as teacher, librarian, counsellor, etc.?

- ☐ No experience. Check (X) and skip to question 30.
- ☐ Years. Please record number of years in space and continue with question 28.

28. Why did you leave your previous place of public education employment? Check (X) the one(s) that "best" applies to you. (Please do not check more than three.)

- (1) ☐ Resigned to accept a better paid position.
- (2) ☐ Resigned to accept a position that is better professionally.
- (3) ☐ Resigned to be with spouse.
- (4) ☐ Ill health.
- (5) ☐ Dissatisfied with previous position.
- (6) ☐ Resigned to further my education on a full-time basis.
- (7) ☐ Resigned to teach in a district closer to home.
- (8) ☐ Resigned because of conditions at home (illness, home duties, death in the family, and other personal reasons).
- (9) ☐ Resigned to become full-time homemaker.
- (10) ☐ Retired.
- (11) ☐ Desired a different geographical location.
- (12) ☐ Disliked my superior (i.e., principals, superintendents, etc.)
- (13) ☐ Other. Please specify: _____

29. What was the last academic year that you were employed in public education?
(Do not include 1968-69.)

_____ 1967-68. Check (X) if applicable and skip to question 31.

_____ Other. Please specify in the space, and continue with question 30.
Year _____

30. What was your occupation during the 1967-68 school year? (e.g., student, military, homemaker, etc.)

(Upon completing question 30, skip to question 35.)

31. In which school district (and state) were you employed last year (1967-68)?

a. School district _____

b. State _____

32. Approximately how many students were in the school district noted in question 31?

_____ Number of students

33. Last year, on the average, how many hours per week did you spend teaching, grading, and preparing lessons? (Counsellors, librarians, etc., regard your time as teaching time for this question and for question 34.)

(1) _____ Under 15

(6) _____ 35 - 39

(2) _____ 15 - 19

(7) _____ 40 - 44

(3) _____ 20 - 24

(8) _____ 45 - 49

(4) _____ 25 - 29

(9) _____ 50 - 54

(5) _____ 30 - 34

(10) _____ 55 or more. Please specify: _____

34. Last year, on the average how many hours per week did you devote to school-related non-teaching work that was required of you but was not included in question 33? (e.g., P.T.A. meetings, lunch duty, etc.)

(1) _____ Less than 3

(6) _____ 15 - 19

(2) _____ 3 - 5

(7) _____ 20 - 24

(3) _____ 6 - 8

(8) _____ 25 - 29

(4) _____ 9 - 11

(9) _____ 30 - 34

(5) _____ 12 - 14

(10) _____ Other. Please specify: _____

35. With which of the following grade level ranges will you be devoting the majority of your time in 1968-69? (Check (X) one.)

_____ Kindergarten	_____ 7 - 9
_____ 1 - 3	_____ 10 - 12
_____ 4 - 6	_____ Other. Please specify: _____

USE THE FOLLOWING NUMERICAL CODE TO ANSWER QUESTIONS 36 THROUGH 40.

- | | | |
|-------------------|----------------------------|---------------------------|
| 1. Elementary Ed. | 8. English | 15. Music |
| 2. Agriculture | 9. Foreign Languages | 16. Physical & Health Ed. |
| 3. Art | 10. Guidance & Counselling | 17. Physics |
| 4. Biology | 11. Home Economics | 18. Social Studies |
| 5. Business Ed. | 12. Industrial Arts | 19. Special Ed. |
| 6. Chemistry | 13. Library Sc. | 20. Speech & Dramatics |
| 7. Driver Ed. | 14. Mathematics | |

21. Other. Please specify: _____

36. _____ What is your academic major(s)?
37. _____ What is your first minor?
38. _____ What is your principal teaching or working field for 1968-69?
39. _____ What is your second field, and if none write "0"?
40. _____ What is your third field, and if none write "0"?

41. SALARY:

To the nearest one hundred dollars, what is the total income you will be receiving from the school district where you are employed for the 1968-69 academic year?

\$ _____ Income. Please specify to nearest \$100.

WE WOULD LIKE TO THANK YOU FOR YOUR COOPERATION.

A COPY OF OUR FINDINGS WILL BE SENT TO THIS
SCHOOL DISTRICT ON COMPLETION OF THE STUDY.
