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EMPLOYMENT OF INDIGENOUS PERSONNEL AS A STRATEGY FOR INCREASING IMMUNIZATION RATES IN "HARD-CORE" AREAS

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EMPLOYMENT OF INDIGENOUS PERSONNEL AS A

STRATEGY FOR INCREASING IMMUNIZATION RATES

IN "HARD-CORE" AREAS

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EMPLOYMENT OF INDIGENOUS PERSONNEL AS A STRATEGY FOR INCREASING IMMUNIZATION RATES IN "HARD CORE" AREAS

CHAPTER I

INTRODUCTION

The objective of this study was to determine whether indigenous personnel, i.e., persons living and working in low socioeconomic areas, could be utilized effectively in raising immunization levels in selected areas. Public Health literature has recently indicated that personnel using traditional public health approaches have generally encountered considerable difficulty in attempting to raise immunization levels in low socioeconomic areas throughout the nation. Since these areas constitute primary public health problems, it was felt that different approaches might prove to be promising in attacking this problem.

The utilization of "indigenous personnel" has been attempted in a number of projects dealing with "hard core" area problems. One would think that the pioneering work of Shaw (1929), Thrasher (1927), and others, and the more recent work of Pearl (1965), Pearl and Riessman (1965), Alinsky (1965a; 1965b), and others should have favorably resolved

the issue concerning the effectiveness of "indigenous personnel," but such is not the case.

Some General Problems in Public Health Programs

Public health literature is filled with statements and articles pertaining to the problems of reaching various segments of the population. A review and description of some of the studies in this general area will perhaps provide some insight into the nature and scope of some of these problems.

Foster (1952) described a cross-cultural situation which clearly revealed some problems of communications in public health programs which perhaps have implications for the domestic scene as well. Foster described a situation in which a group of cultural anthropologists observed a number of clinics in the Health and Sanitation Division of the Institute of Inter-American Affairs which were operated in seventeen Latin American countries through cooperative agreements with the governments. The anthropologists observed doctors and nurses in action at the centers as they received and administered to patients. Also home visiting nurses were accompanied on their rounds where pregnant women were given instructions in the care of infants and where the nurses had volunteer aides training sessions. The anthropologists performed a random sampling of the populations within the area of the health centers on a door-to-door basis to obtain a cross-section of public opinion concerning the projects. They concluded that the majority

of the programs worked quite well and that many of the doctors and nurses manifested a high degree of sense of duty. They further noted, however, that in some areas patient criticism of health services was frequently quite sharp. There were three general criticisms which were leveled at the health centers which varied somewhat from country to country and center to center but was present in some degree in all the places studied. These criticisms were: (a) a frequent lack of tact and diplomacy on the part of doctors, nurses, and other health personnel toward the patients, (b) the time lost in going to and from the centers, and (c) the failure of many centers to treat sick children who were not previously enrolled or who had not kept routine appointments. The most frequently mentioned complaint concerned the loss of time and the most bitter of the criticisms of the health center services was the failure to treat sick children.

These criticisms of the health services are by no means confined to cross-cultural examples, being some of the most pervasive criticisms of Public Health Service programs today in this country. The anthropologists concluded their study by making a number of recommendations which also perhaps have some relevance for Public Health Service activities universally. They noted that in Chile some of the center doctors prescribed for infant diarrhea, in addition to other remedies, the herbal teas in which they knew the people had confidence. They noted that drinking quantities of liquids is part of the treatment for diarrhea, and by the device of utilizing the teas it was possible to insure that water

was boiled and therefore safe, and that the mothers would be much more likely to follow instructions because the treatment was interpreted in terms of their local beliefs and this convinced them that the doctors knew what they were talking about and the child was therefore well taken care of.

They described another clinic situation in Mexico where in one large urban health center, 43 per cent of the registered women deserted prenatal treatment before delivery with the majority of them dropping out after the gynecological examination, while in a nearby rural health center the loss was only 21 per cent. It was noted that the first prenatal examination came as a great shock to most women. The intimate examination itself was embarrassing, and it was doubly so because it was made by a man. They noted that in the small center the woman was carefully prepared for the experience, the nurse explained just what would be done, why it must be done, and that it probably would happen only once during the course of the pregnancy and that the nurse would be present when the examination was made. In the large clinic the patients had little idea what to expect and the doctors attitude there was that it was best just to take them by surprise. The anthropologists concluded that in all prenatal cases a thorough and sympathetic explanation should be made to each woman and that ideally women doctors should make gynecological examinations whenever possible. The anthropologists also noted that in many parts of Latin America the government hours were from 8:00 a.m. to 2:00 p.m. in the afternoon and that many of the

consumers of these health services were not "time" oriented and hence did not understand them.

Foster concluded "The satisfaction of the patient in receiving a public health service which he or she wants, and the satisfaction of the doctor and nurse in offering a service the public desires, seem to promote an atmosphere in which suspicion and tension are reduced to a minimum, and in which, as a consequence, really good preventative measures can be effected. In the Cero Baron Center, Valparaiso, Chile, where there is frank recognition that curative is just as important as preventative medicine, and where no sick child is ever turned away, more than half of the visits are "well-baby" visits, where the mother has brought the child for a routine check-up" (1952, p. 14).

It seems to this writer that Foster's study sets the stage quite well in regard to several focal concerns in the field of public health, both domestically and cross-culturally. Much of the rest of the present study is an attempt to illustrate the scope and importance of social psychological variables in attempting to reach low socioeconomic status populations.

Griffiths and Knutson (1960) described a study of the role of the mass media in public health. They noted that in the past decade there have been strong disagreements among public health people regarding the effectiveness of the mass medium in conveying correct health information, the changing of health attitudes and ways, and the establishment of new behavior. They noted that one segment in public health believes that the mass media are highly effective and deserve recognition as the

primary means of public health information. The other segment strongly questions such a point of view, and argues that health education must use more dynamic methods and some even go so far as to assign the mass media a relatively limited role. This segment in public health work feels that even the best of the mass media will not reach the members of those groups which most need the services which public health has to offer and that some more personalized approach is necessary to reach such groups.

Griffiths and Knutson reviewed some of the studies in which the mass media attempted to reach certain select audiences. They described a study in World War II of a bond drive where every household in Baltimore, Maryland received a pamphlet urging the occupants to buy bonds. They noted that after a short period of time a large number of people were interviewed, 83 per cent of whom did not recall receiving a pamphlet. They discussed several of these studies and noted that many health workers have been enthusiastic about the importance of using mass media techniques because of the success of the mass media in the advertising field. They quote Lazarsfeld and Merton as showing the fallacy of this deduction, "Prevailing beliefs in the enormous power of mass communications appear to stem from successful cases of monopolistic propaganda or from advertising. But the leap from the efficacy of propaganda aimed at deep-rooted attitudes and ego-involved behavior is as unwarranted as it is dangerous. Advertising is typically directed toward the canalizing of preexisting behavior patterns or attitudes. It

seldom seeks to instill new attitudes or to create significantly new behavior patterns" (Griffiths & Knutson, 1960, p. 519).

Griffiths and Knutson noted that the mass media cannot generally be expected to move people to action if the action is in opposition to strong beliefs and attitudes, although they indicated that they can be effective in moving people to action if the desired course of action is in the direction of basic personal and social motives and particularly if the action is supported by a leader holding acceptance and prestige in the eyes of laymen. They indicated that it was particularly significant that these leaders have the capacity to translate the action meaningfully into the behavior patterns of those concerned. They indicated that research evidence exists that achieving long-term attitude and behavior change requires communications of the most personal type to assure full understanding of the meaning of the change and to help in translating the change into the personal behavior of the person concerned. They indicated that other things being equal, communication is more likely to be effective if the person who is communicating it can be perceived as one who can be trusted, who is an expert, or who holds prestige in our eyes. They also noted that the recognized leader in a local group may be more effective in such communication than various prestige or scientific figures.

Griffiths and Knutson quote Katz and Lazarsfeld as having identified certain individuals". . . whom they call 'opinion leaders' who are more influential than other members of the population in their local settings. The opinion leaders they have identified are not status people in

any formal way, rather they are the every-day type of person found in all socioeconomic groups, to whom people ask questions and to whom people listen" (Griffiths & Knutson, 1960, p. 522). They concluded, "Research is needed to learn what different types of informal leaders exist in areas of concern to public health. Are there opinion leaders who are key communication gate keepers in child health, in chronic diseases, in alcoholism? If so, how can the mass media be employed in such a way that the opinion leaders are more effectively utilized in the communication networks that they informally serve" (Griffith & Knutson, 1960, p. 522)?

Holler, et al (1960) described patients' reactions to a program in public mental health. A questionnaire was designed which included 25 questions about a clinic which provided psychodiagnostic and psychotherapeutic services to residents of a southern county on a non-fee basis. Public health nurses were utilized as interviewers and instructed in methods of collecting the data with a minimum of bias. All individuals who had been admitted to the mental hygiene service from the county and whose case folders had been closed were interviewed if they were at home. One hundred twenty-one cases were interviewed which represented approximately 49 per cent of the total number of the patients admitted to the service, 83 per cent of whom were children. The study concluded that in their community only 31 per cent of those individuals seen stated that they had profited from the services. They concluded, "The program as constituted at the present time, does not appear to satisfy the

community needs either from a treatment or prevention standpoint. From a purely clinical viewpoint the results suggest a possibility that in many cases the service may have promoted frustration, indifference, and confusion, because of lack of transmission of the information to the patients or their families, or as a result of an inability to communicate the results to them" (Holler, et al, 1960, p. 446).

Shannon (1963) described the public's perceptions of social welfare agencies and organizations in an industrial community, utilizing a Negro and a white study group, which perhaps has implications for public health service programs. He noted that the study was done in a Northern industrial city with a population of approximately 90,000 in 1960 and that in the city whites comprised approximately 90 per cent of the population. He indicated that for all practical purposes what the whites think of an agency tends to become what the community thinks of an agency--at least from one viewpoint. He further noted that if we are concerned about what the people who are serviced by these agencies think of them, the opinions of Negroes increases in importance in evaluating such agencies. The proportion of respondents having had contact with various agencies exceeded 20 per cent only in the case of the Red Cross, the Salvation Army, and the county welfare for both Negroes and whites and that a greater proportion of the predominantly lower class Negro sample has had contact with the welfare agencies than has had the white sample.

He noted also that persons who have had contact with the various social agencies have generally favorable impressions, in most cases,

of the personnel with whom they have had contact. He also raised the question of how much of the difference between Negro and white images is based on lack of information by Negroes or misconceptions held by Negroes who have been neither absorbed into the economy nor integrated into the community to such an extent that they have real knowledge of the operation of its institutions. He indicated that it is possible that members of the larger white society obtain their information about agencies and organizations from a variety of secondary group sources and that Negroes, being less integrated into the formal communication system, are more likely to have knowledge of, or a favorable attitude towards personnel of agencies and organizations only if they or their friends have had contact with them. Differences between whites and Negroes tended to disappear among those who had actual contact with the existing agencies and community organizations. He concluded that the social service and welfare agencies were quite differentially known and contacted by the sample from the larger white community as contrasted to the sample from the Negro community. He noted that it is also very evident that there are considerable differences in the extent to which people are favorably oriented toward activities and personnel of social service agencies and organizations and that whites are distributed on the continuum of favorable orientations quite differently than are Negroes. He concluded that these data might be useful to any group planning social welfare services or considering the introduction of new organizations into the community and that existing agencies might well

find that the data were useful to them as a guide to revision or modifications of their own operations.

Paynich (1964) described an attempt to teach members of another culture general health concepts and some of the problems which existed because of unfamiliar beliefs and differences in language patterns. The overall objective of the research project was to increase the effectiveness and efficiency of communication between public health nurses and patients as a means of improving health attitudes and practices. The project sought to shed light on the following questions: What does the patient hear or understand? What does the patient do about it or what action does he take? What changes in nurse communications could be made to increase the patient's understanding and cooperation? The sources of data for this study were home visits, chest clinics, and nursing conferences. The information to be transmitted was in the general area of tuberculosis treatment and these interviews were mechanically recorded and transcribed verbatum.

Paynich (1964) described two important findings emerging from the initial research. The first she noted was an almost complete lack of understanding of the germ theory on the part of many Spanish-American village patients. The second concerned the utilization of interpreters. They found that the nurses often spoke long passages which the interpreter could not possibly translate in their entirety and as a result, only an occasional idea was all that was translated. They also found that the lay interpreters whose services the English-speaking nurses frequently

utilized, often failed to translate correctly from English to Spanish, and that from time to time nurses failed to give an explanation for some of their prescriptions. Their results indicated that cooperation was significantly less frequent when no reason was given to fulfill the prescription. Paynich stated "Thus, it would appear important for the nurse to state why the patient should do something that she has requested him to do" (Paynich, 1964, p. 89).

Paynich also noted that the need for the nurse to use simple terms in speaking to patients was well demonstrated. Patient understanding and cooperative behavior was considerably greater when no technical concepts or professional jargon were used in nurse-patient discussions. A vocabulary test including 14 technical concepts frequently used by nurses in the study was administered to 104 patient participants and 38 per cent of those tested did not understand the concept, "germs," while 59 per cent did not understand "exposed." Paynich indicated that the lack of understanding of technical health concepts which was found among the Spanish-American villagers was consistent with the findings of a study done in 1938. She concluded that the implication of this finding might be stated in the form of a prescription, "Nurses ought to use simple terms when communicating with patients, so that they will have a clear understanding of their message. If it is necessary to employ such technical terms as "positive reaction," and "phlegm," these obviously should be explained in terms familiar to patients" (Paynich, 1964, p. 90). Paynich also noted that when written material was given

to the patient the degree of cooperation was higher than when none was given and she listed some of the examples such as an appointment card, ringing a calendar date in a home visit, or a pamphlet explaining the tuberculin test. She also indicated that those in higher occupational ranks had greater understanding of the nurses' statements, but that occupation and cooperation were not significantly related.

Hochbaum (1960) in a study of modern theories of communication pointed out several implications for public health service organizations. She noted that communications tend to be perceived and interpreted by a person in terms of his own stereotyped perceptions, his own needs, and his own desires. She indicated that public health service organizations should adapt their messages to the existing beliefs and attitudes of the people with which they wish to communicate and that if they succeeded in this they were likely to discover a readiness to accept and to learn from their communications. Modern communicational theories have found that a close temporal link between educational effort and opportunity for related action makes repetition of the action more probable and also is likely to lead to more profound and more lasting motivation and learning. She also discussed mass media techniques such as radio, television, newspapers and magazines, and indicated that these media are undoubtedly very effective in spreading information to large numbers of people. They are also undoubtedly very effective in stimulating persons already interested and motivated to translate their motivations into actions, but they tend to be more successful in channeling already existing motivations

into specific modes of actions than in creating new motivations. Hochbaum concluded that in attempting to educate the public we should utilize all kinds of available facilities to communicate effectively and we should use all theoretical and practical knowledge available about communications and the learning processes. We should at the same time allow every individual and every group to whom we address ourselves to adapt our messages and our teachings to their own needs, motives, and customary ways of dealing with the problems of life.

Wagner and Patno (1956) described a public health service organization's attempt to use a series of television programs to educate parents in child care. They sent a questionnaire asking whether the family owned a television set, whether the mother saw any of the programs, and, if so, which of the programs they found helpful. The sample included 2,476 mothers. They noted that some of these could not be reached through the mail and that, as in most surveys of this kind, the relative number of persons not reached through the mail was greater for the non-whites, 4.8 per cent of the letters to white mothers being returned and 10.0 per cent of the letters to the non-white mothers being returned. Wagner and Patno received a better than 70 per cent response but only 20 per cent of the respondents reported that they had watched the series. This study is somewhat dated as to the possible utilization of television but present studies indicate that the use of educational television as a media for reaching large numbers of people leaves a great deal to be desired.

Stadt et al (1963) described a report on the effects of mailing dental health birthday greetings to 2,662 families of pre-school children. They were concerned with improving communications with parents of pre-school children and with the problems of how to motivate them to provide early and regular dental care for their children and how the dental health of pre-school children could be improved. In 1958 the health department of Contra Costa County in California sent out 2,662 pieces of direct mail, of which 20 per cent was considered undelivered and around 30 per cent was estimated to have moved out of the study area. Of these, 22 per cent was acknowledged. They noted that there were two approaches to evaluating the effectiveness of the dental health birthday greetings in motivating dental visits. Using one method they noted that 143 families attributed their visit to the greetings, and, in terms of the total of the 2,662 greetings mailed, the 143 people would represent 5.4% who were motivated. They described the second approach as evaluating the effectiveness of the greetings by comparing visits to the dentist made by the study group and the control group. They noted that if the study and control groups are alike in all other relevant respects, and if the study group exceeded the control group by substantial numbers of visits to the dentists, then it could be stated that the difference was due to the dental health greeting. Comparison of the behavior of the study and control groups made it readily apparent that the two groups were highly comparable in all categories except in visits to the dentist. Forty-five per cent of the study group and 38 per cent of the control group

had visited the dentist, the study group having visited the dentist approximately 19 per cent more frequently than the control group. They noted that this difference was highly significant, with a probability less than .01. They concluded that the cost per family motivated was $3.57 and also noted that undoubtedly different types of communications were needed for different segments of the population.

In a 1960 Eastern states Health Education Conference at the New York Academy of Medicine, various techniques for reaching public health populations were discussed. One participant suggested that the personal aspect of communication, the bridge between the mass message and specific action, was the most difficult to effect. This was also the most crucial, and most in need of evaluation during an operation, so that the word-of-mouth response might be effectively observed. Another participant felt that the essential ingredient to the success of a message was a set of common values, and that no communication would succeed if the audience and the source had no common ground to stand on. This theme was discussed throughout the conference and one participant even suggested that a profession that was concerned wholly with the presence of pathogens in water, for example, was not congruent with the public which was concerned with the recreational and aesthetic values of the open stream. "Even a common language employed by both the professional and the public does not guarantee a common purpose" (Eastern States Health Education Conference, 1960, p. 931). This participant contended that the relevance of a program was indicated by its consistency with the

prevailing mode of possibilities. For example, in the case of a heart patient who lived on the third floor of a walk-up tenement it would be congruent to advise against climbing stairs, but it was not relevant. He further noted that even if the need was understood the implication of a prescribed action might be irrelevant and gave the example of the urban environment which he said was ill suited to the usual recommendations for the wise use of leisure time.

Larimore (1960) described the objective of any good health program as having a favorable effect on the health status of the citizens of a community, whether that community was a municipality, a state, a nation, or for that matter, the world. He noted that such an objective, by its nature, implied change except in rare circumstances when perfection was achieved. Almost without exception accomplishing this change required some intended change of attitude and behavior among those affected. He indicated that it was a truism that public information was meant not for a single audience but for a mosaic of all audiences. "There is really not a 'general' public, but many smaller 'individual' publics" (Larimore, 1960, p. 934). Such a communications process has its origins in the joint planning that accompanies the development of any public health program. "Properly carried out, such joint planning brings to the conference table representation from all the groups who will have an active role in the program, as well as those who will be reached by the program. These conferences are in themselves a phase of communication, which is by definition a two-way flow of information"

(p. 934). Larimore concluded that the role of the mass media is important but also the involvement of the individuals in the community through the medium of the many social units which make up the general public is of vital importance.

Janis and Feshbach (1953) described an experiment which was designed to study the effects of one particular type of motivation variable in persuasive communications, namely, the arousal of fear or anxiety by depicting potential dangers to which the audience might be exposed. This type of approach is found relatively frequently in public health service programs. The experiment was designed to provide measures of the effects of three different intensities of "fear appeal" in a standard communication on dental hygiene which was presented to high school students. The influence of the fear-arousing material was investigated by the use of a series of questionnaires which provided data on the emotional reactions to the communication and on changes in dental hygiene beliefs, practices, and attitudes. The authors primary conclusion was that the overall effectiveness of a persuasive communication tended to be reduced by the use of a strong fear appeal, particularly if it evoked a high degree of emotional tension without adequately satisfying the need for reassurance. When fear was strongly aroused but was not fully relieved by reassurances contained in a mass communication, the audience was likely to become motivated to ignore or to minimize the importance of the threat.

Wishik (1958) described the goals of public health education in terms of three levels. The first level was that of transmitting information, which he stated was by no means a simple task, since it is not easy to get people even to listen, let alone to hear. The second level was a change in attitudes toward health and the third a change in practices. He described the attempt of two papers which were presented at the annual meeting of the American Public Health Association which attempted to observe the attitudes of people toward certain public health activities and to assess some of the factors that may have motivated them to accept or reject a recommended program. Wishik discussed some of the emphases that were made in the papers. He noted that a person's motivations were compounded out of his previous personal experience and the cultural background from which he derived and in which he moved. The public health worker generally found it rather easy to understand cultural influences when they were exotic. However, when a group of public health workers in a midwestern state were questioned about cultural factors that might affect their daily work one general answer was to the effect that since their clients were all 100 per cent Americans of old stock, there were no cultural factors. He indicated that cultural factors were here as well as in Bali if only we can see it around us. He noted the tremendous differences in social origin and class position between many school children and their teachers which have been pointed out in numerous studies and indicated that the same was often true in the field of Public Health and that the workers should recognize these

problems and strive to overcome the obstacles of class difference.

Some specific examples given by Wishik (1958) were that public health service people should try to recognize that their standards were not necessarily identical with the optimum merely because they were theirs. Also public health workers should not fall into the easy habit ot regarding their own group as the most advanced. The point was made that having become sensitive to the difference between clients and public health service workers there was often a tendency to place too high a premium on being liked by the people and it was not necessary, moreover, to be like the clients in order to be liked by them. He noted that the professional person does not have to use poor grammar because the client does, but because of social differences the professional worker should exercise great discipline in the use of language. The language should be at an understandable level appropriate to the educational achievement of the group which the public health worker is attempting to reach. Wishik also indicated that public health service personnel should seek out the natural leadership in the group to support public health efforts among them and in a somewhat different role than that of leader, a member of the group can be established as a go-between or intermediary between the public health worker and the group. He concluded,

> The "noncooperative" members of society are not a degraded group with inherent deficiencies, but rather are graphic evidence of our own inability as public health workers to reach and to influence them. The social scientist helps the public health worker to identify such segments of the population for whom more concentrated efforts may be indicated.

> In this and in other ways the social scientist is more and more being looked at as an important member of the public health team. Hopefully, the public health worker in turn is gaining a place in recognizing for himself a role as a member of the broader community-wide social science team (Wishik, 1958, p. 141).

Brightman, et al (1958) described a study about the knowledge and utilization of health resources by public assistance recipients in Syracuse, New York. An attempt was also made to determine whether the health education techniques employed by voluntary and official community health agencies reached public welfare recipients to the same extent as they did other population groups, or whether an intensification of, or change in, the techniques was indicated. The study group was composed of families in the Aid to Dependent Children category as well as two comparative groups. The first comparative group was also chosen at a low economic level, but with sufficient resources to make them ineligible for public assistance. This group permitted a comparison of the utilization of health resources by low-income families that had to pay for such services out of their own income with utilization by the Aid to Dependent Children families for whom medical care was provided as part of public assistance. A significantly higher economic level group was also chosen to compare their knowledge and use of health services with that of the public assistance group. Families of employees of a single large industry composed this second group. Their income ranged between $5,000 to $7,500 a year and although these employees could not be considered typical of the middle income group of the general population

they did permit a comparison of health service utilization by a middle-income group having much of its medical service paid for in part by a third party and the public assistance group which also received medical services through a third party (welfare) payments.

Information was obtained by means of personal interviews with the homemakers or other qualified respondents at their homes, using prepared schedules. All of the groups relied on physicians and nurses to a considerable extent for their health information, although there were expected variations in the types of physicians and nurses to which each group had access. There was a remarkable uniformity among the three groups regarding other persons from whom information was obtained but an obvious exception was the high frequency with which welfare case workers provided information to the Aid to Dependent Children households. The question was raised whether the welfare case workers were adequately trained to give such information. In regard to health information obtained through various mass media the authors found that the higher income group relied more on newspapers, magazines, and books and to a lesser extent on pamphlets and bulletins than did the lower income groups. Even though the former media were used less by the Aid to Dependent Children group and the low rental housing group they still constituted important sources of information for these groups and ". . . of particular interest is the considerable emphasis given by all three groups to the receipt of health information by radio and television. It appears that these are excellent media which should be further exploited"

(Brightman, et al, 1958, p. 192). The organized health services placed health literature in a significant percentage to Aid to Dependent Children households and low rental households but only in a very small proportion of the higher income households and the schools and PTA groups distributed materials to both the Aid to Dependent Children households and higher income households but for some unknown reason to a much smaller percentage of low rental housing households. Of particular significance was the failure of the welfare department to distribute health education literature, especially considering the extent to which the case workers were mentioned by ADC households as sources of health information.

The authors indicated that, in addition to in-service training of case workers regarding health problems of recipients, some orientation to health education might be provided to assist them in giving correct advice. The higher income households were the only group to receive any health literature from their employers, but the percentage was relatively small (16%) and apparently more could be done in this regard. They also indicated, "The insignificant distribution of health literature by private physicians among all three groups was particularly noteworthy" (Brightman, et al, 1958, p. 193). Knowledge of community health services seemed adequate among all three of the groups and appeared related to the expected usage by each group. However, there appeared to be a definite deficiency in the extent to which community mass X-ray programs were utilized by the lower income groups. Further, although the public assistance women infrequently failed to receive

any antepartum care, they applied for such care much later during their pregnancies and made fewer visits than the two comparison groups. They concluded that deficiencies in knowledge and use of preventative health services among public assistance recipients appeared to be primarily in the areas of (1) maternity services, (2) regular chest X-rays and (3) follow-up on defects noted during school medical examinations.

Notkin, et al (1958) in the second report on the knowledge and utilization of health resources by public assistance recipients described the experience of the same population with regard to illness and medical services. The authors concluded that approximately two-thirds of the low-rent housing and high income groups had a family physician, compared to less than one-third of the Aid to Dependent Children group. The Aid to Dependent Children clients in Syracuse generally did not consider salaried welfare physicians as their family doctors and large numbers of them sought services from other physicians, despite the fact that they presumably had to pay for such services from their carefully budgeted welfare grant. It was also found that health insurance coverage was practically non-existent in the Aid to Dependent Children group, but was present in more than 50 per cent of the low rent housing families and in a large majority of the higher income population. Finally, unattended illness was much more common in the Aid to Dependent Children group than in the others, despite the lack of a financial barrier to medical service.

Hopefully citations of these studies, although they by no means

exhaust the literature in this area, have served to illustrate some of the problems which public health services have had in attempting to reach various segments of the population in a number of broad program areas.

Problems in Immunization Programs

In attempting to narrow the focus of the background research literature somewhat, a number of studies will be discussed which reveal some of the problems which public health services have had in attempting to reach low socioeconomic and minority segments of the population in their immunization programs, utilizing traditional approaches. These approaches have generally depended upon the mass media such as newspapers, television, radio, posters and pamphlets in attempting to encourage people to come in for their immunizations. Also public health nurses making house visits have encouraged people to get their immunizations. Health educators have also been employed to some extent in immunization programs, generally speaking to school groups, civic organizations, etc. Volunteers have also been occasionally utilized to contact people in regard to immunization but the literature indicates that their use has been sporadic.

Doege, Levy, and Heath (1963) described a Diphtheria epidemic in relation to community immunization levels and the health problems of migrant workers. The study was done in the winter of 1960 after a sharp outbreak of diphtheria occurred in Plainview, Texas. Plainview was described as an agricultural town whose population was approximately

18,700, (72%) Anglo-American, 4,100 (22%) Latin-American, and 1,100 (6%) Negro. The total indigent population was variably estimated to number from 3,000 to 5,000. Fifty-six clinical cases were estimated to have occurred in Plainview from November 2, 1960, through January 1, 1961. Of these, 17 cases were confirmed bacteriologically and the remaining 39 cases representing the presumptive diagnosis of Plainview physicians in persons ill during a proven diphtheria outbreak and having symptoms clinically compatible with diphtheria. Discussing the results of an immunization survey the authors indicate that it was apparent that diphtheria immunization levels preceding the outbreak were extremely low among the Latin-American, Negro and lower socioeconomic status Anglo-American children. In these groups up to 89 per cent of school and pre-school children in the family surveys lacked any diphtheria immunization, and it was in these groups where 85 per cent of the cases of diphtheria occurred. Children of the middle and upper Anglo-American groups were better protected, 91-96 per cent of these children having had three or more innoculations preceding the outbreak, and only six cases occurred in these two groups. The authors concluded that the immunization survey clearly revealed that certain population groups were poorly immunized at the time of the diphtheria outbreak. This suggested the possibility that immunization levels of the Negro and Latin-American populations generally may be unsatisfactory.

> If this is true, these population groups, as well as the many communities in which they live, face needless hazards, including those due to certain types of communicable disease

> within mobile populations. Some possible consequences of such low immunization levels are well illustrated by the Plainview outbreak.
>
> The lesson of Plainview is clear. If future outbreaks of diphtheria are to be avoided, immunization levels of all population groups, including those of lower income groups, both stable and migrant, must be raised to and maintained at adequate levels (Doege, et al, 1963, p. 159).

Derryberry (1958) described some of the problems which the Public Health Service has had in attempting to immunize populations against various kinds of communicable diseases. Although an effective vaccine against polio was in existence in massive quantities ". . . over one-fourth of the population under 20 have not had a single injection, and less than one-half of this age group have had all three shots. It is estimated that about one-third of the population over 20 have had shots (Derryberry, 1958, p. 180).

Stickle (1964) described a study of the observed and expected poliomyelitis rates in the United States in the years 1958-1961. He indicated that the less than complete coverage of the population with the killed polio-virus vaccine had in fact limited dissemination of polio virus in the United States. However, there were exceptions to this trend which revealed that the unvaccinated population was heavily weighted by individuals of lower socioeconomic status who were most susceptible to paralytic poliomyelitis.

Page (1962) described the problem of diphtheria control in the United States where sharp localized epidemics still occur. The Communicable Disease Center of the United States Public Health Service had

undertaken an expanded program of diphtheria surveilance in all of the 50 states and the Commonwealth of Puerto Rico. The data revealed that there was a considerable difference between the diphtheria rates in certain regions of the United States. During 1958 the southern morbidity rate exceeded the northern rate by six times. In both regions considerable differences in morbidity rates among whites and non-whites were apparent but they were particularly striking in the non-white population of the south. Furthermore, despite the major racial difference in both regions, the morbidity rate of southern whites exceeded that of either population group in the north. Page concluded that diphtheria morbidity and mortality were primarily a problem among the unvaccinated. The findings also revealed that diphtheria morbidity and mortality were increasingly becoming a problem among the non-white population. The attack rate of this group was seven times greater than the attack rate of the white population and in addition, rates were higher among non-whites in both northern and southern regions. He concluded, "It seems quite clear, then, that the problem of diphtheria control remains the problem of immunization, particularly of the non-white population. Furthermore, among all populations the immunization of preschool and school age children needs reemphasis" (Page, 1962, p. 73).

Serfling, Cornell, and Sherman (1960) described a rapid survey technique designed to obtain data for comparison of polio immunization levels among sub-population groups in an urban community. They observed that studies of various poliomyelitis outbreaks throughout the

country have brought into sharp focus the attack rates by race and socio-economic status. They described several studies in this problem area and noted that in Detroit cases of polio were concentrated in the central sections of the city, and in areas where there was a large Negro population, and a high density of housing. Prior to 1956, from 10 to 20 per cent of the polio cases had occurred among the Negro population, but in 1956 and 1957 the percentage increased to approximately 40 per cent and in 1958 to 60 per cent of the total cases. They concluded from these studies that a possible explanation of the unusual character of these polio outbreaks was a relatively low rate of artificial immunization in regard to certain sub-populations in the epidemic areas. They indicated that if this hypothesis was correct, it was quite probable that conditions in many urban areas were conducive to explosive outbreaks of polio which could produce high attack rates among the unvaccinated population, particularly pre-school children. At that time, however, the authors indicated that even in areas where outbreaks were occurring there was no means to determine polio vaccination rates according to the necessary classification which was age, race, and socioeconomic status.

Serfling, et al (1960) described their attempt to design such a survey technique by classifying the city into sub-populations which provided measures of crowding, sanitation, and education by census tract. After the census tracts had been ranked by these criteria they were classified into three socioeconomic class groupings. Within these census tract areas the authors then located their primary sampling unit

by a process of randomization. The general validity of the results of the technique met the test of careful scrutiny by seasoned health officers and epidemiologists and no important biases were found in the method. The results for 26 surveys of this nature indicated that the problem of low immunization rates in young children in lower socioeconomic groups was quite widespread. The authors discussed the utility of such local surveys and faced the question of whether such a local immunization survey should be conducted at all. They pointed out that figures on immunization were available from national surveys and most of them indicated a socioeconomic gradation in the extent of immunization.

Serfling, et al (1960) also noted that a consistent pattern of immunization deficiencies has been repeatedly shown in city after city utilizing their survey techniques. They raised the question, "Cannot a health officer assume that the same pattern prevails in his own community and initiate an immunization program on this assumption" (p. 1854)? They indicated, however, that even though a health officer might suspect that his local problem was similar to that of other cities much of the evidence which he can readily obtain was likely to be confusing. If he inquired about his own child health centers his people would correctly inform him that it was standard practice to immunize all children in families availing themselves of clinic resources. Pediatricians in the community would tell him that they routinely immunize all children in their practice and parents as well, when it is indicated, and school surveys usually indicate a fairly high immunization rate. The authors indicated that health officers were usually aware of the deficiencies of these

sources of information and usually suspect quite accurately where the problems lie. The real problem was to convince other local groups and organizations to expend time and money in situations where the health officer lacks data to demonstrate the accuracy of his conclusions. They concluded,

> A local survey of the type described yields data which makes the problem apparent to all, and provides a base from which the community momentum necessary for a big research program develops rapidly. The impact of information specifying a community's particular problem greatly exceeds the force of argument based on analogy with other areas (Serfling, et al, 1960, p. 1855).

Gresham, Joseph, Farber, and Silberman (1962) reported a study of paralytic poliomyelitis in Baltimore, Maryland in 1960. The paralytic attack rates for each ward in the city were adjusted for age and revealed that the outbreak of polio was further localized to the inner-city which was characterized by crowding, poor housing, and low socioeconomic status. The rate for the inner-city was 13.9 per 100,000 population while the rate for the middle-and upper-class areas of the outer city was 2.7 per 100,000. "This picture conforms to the now well-documented shift to more underprivileged groups noted in major urban poliomyelitis epidemics in the United States during the past five years" (Gresham, et al, 1962, p. 351). Also, in the Baltimore epidemic as in most recent major epidemics the non-white population was more heavily affected, having a rate of 14.6 per 100,000 while in the white population the rate was 8.0. The authors further analyzed the data by dividing the city's population by census tracts into five equal parts representing five

socioeconomic levels which were based on median rental and home valuation figures from the 1960 census. This analysis demonstrated an inverse relationship between rising socioeconomic status and paralytic poliomyelitis attack rates with the rate decreasing from 20.2 to 0.5 per 100,000 from the lowest to the highest fifth.

Thrupp, Forester, and Brody (1959), in a study of poliomyelitis rates reported in the United States during 1957, indicated that they had reached the lowest level since 1942. They broke the data down into geographic regions and found that there was a generally low incidence of paralytic disease in all of the regions, the highest attack rates for 1957 being reported in the southeastern, south central, and southwestern regions, where the rates were 1.8, 2.9, and 2.0 per 100,000. They also broke the data down in terms of age and reported that there was a concentration of paralytic poliomyelitis in the pre-school age group which was observed throughout the nation, being particularly marked in the southern regions. Age-specific attack rates were not derived by race since national population estimates by race and age were not available beyond the 1960 census and since reporting of poliomyelitis by race was not a uniform practice. They noted, however, that in 1956 in Chicago the epidemic attack rate for paralytic polio among Negroes was almost eight times that of whites. Also in 1957 the only large city with any concentration of polio was Washington D. C. where the paralytic attack rate in non-whites was four times as high as in the white population. Relatively and absolutely increased incidence of paralytic poliomyelitis was

encountered during 1956 and 1957 among non-white racial groups in the south and in several metropolitan areas throughout the country. They concluded that particular effort would be necessary to immunize the relative high risk groups, including the pre-school ages and non-white populations.

Alberecht, Bigwood, Levy, Quinlivan, Rogers, and Westman (1963) described an oral polio virus program in central New York in 1961 which was mounted in approximately five days after a few paralytic cases had been reported in Syracuse. In Syracuse and another county the program was decentralized, with clinics being set up in schools which were easily accessible and well distributed so as to permit a broad geographic coverage with the principal factor limiting the number of schools being the availability of staff. Since publicity alone might possibly not motivate people, efforts were made to involve as many community groups as possible in the program. They also involved volunteers to assist at the clinics, transport the vaccine to the clinics, put up posters, distribute literature, and perform various office and clerical duties. Vaccine was administered to 356,000 people, practically all of the vaccine being given in the period August 29-31. At least 76 per cent of the resident population under 50 years of age took the oral vaccine.

To get a measure of the effectiveness of the publicity efforts in addition to the public response to the vaccination program, a survey by a social scientist was utilized as was an informal sampling of public

opinion by some of the program participants. These sources indicated that the public was well informed about the epidemic but that some confusion did exist about allergies and the relation between the Salk and Sabin vaccines. Also, newspapers and radio were the principal sources of information but there were indications that the effect of the mass media was less pronounced among certain population groups. Further, the "talking" engendered by the publicity even reached and motivated many who had not read the papers or listened to the radio and newspapers and radio seemed to have a greater impact than did television.

Belcher (1958), in a study on the acceptance of the Salk polio vaccine, reported some findings which were somewhat different from the patterns established in other immunization studies. The data for the study were secured from a representative sample of 701 households in the Piedmont section of Georgia, a rural environment. Several studies were discussed which have attempted to correlate certain characteristics with the adoption of recommended farm practices. With few exceptions these studies had found that farm ownership, education, income, size of the farm, and social participation were positively associated with the adoption of proved farm practices. "Thus it is to be anticipated that the same variables would be related to the acceptance of other innovations and that high income groups, home owners, those with more education, those with a record of high social participation, and the like would be the first to accept a new discovery in medicine, such as the Salk polio vaccine" (Belcher, 1958, p. 159-160). Analysis of the data revealed

that there was practically no association between the families accepting polio shots and education, income, and tenure. Also, the items related to communications and to contacts with those outside the home, such as taking newspapers, having television sets, and owning an automobile or truck, were not associated with the use of the Salk polio vaccine.

Belcher (1958) recognized that these findings were contrary to practically all of the previous studies which had shown that variables of this nature were highly associated with the acceptance of new farm practices. Of all the comparisons made the only one that was significant in the expected direction other than the comparison by age of family heads was the social participation score which was significant at the 1 per cent level. All the other socioeconomic status and color variables were extremely significant, but the association was opposite to the direction expected. The data revealed that those with low socioeconomic scores were immunized in greater numbers than were those with high, the rural county residents were vaccinated in greater numbers than those living in towns, and non-whites had a greater percentage receiving polio injections than did the whites. In attempting to analyze some of the possible variables in the study findings, Belcher indicated that a large percentage of the Negro families in the survey did not take newspapers, magazines, have television sets, or own automobiles or trucks. As a result, Belcher concluded that a large percentage of the Negroes were probably unfamiliar with the furor regarding the safety of the vaccine which had appeared in the mass media, and if this were true, whites

might have been more reluctant to let their children receive the vaccine than Negro parents. Of the 191 white families included in the sample 159 had heard of the polio shots for the first time through the various mass media of communication while of the 254 Negro families who were interviewed, only 99 had heard of the polio shots for the first time through these mass media. By far the most important single source of information about polio vaccine for the Negroes was through the school system via children, with nearly 40 per cent of the Negroes stating that they had heard of the polio vaccine for the first time from this source.

Belcher (1958) conducted interviews in an attempt to answer the question of why poorly educated, isolated, low-income Negroes accepted the Salk polio vaccine so readily and discussed several possibly relevant factors. One of these was that all the immunizations tended to be made in the public health clinics and that the Negro people through the years had made much more use of public health facilities than had the whites, there apparently being a general feeling among many whites in the state of Georgia that the public health service provided only for Negroes and the lowest income white groups. He concluded that consequently there might be some reluctance on the part of many whites to accept vaccine at the health department. Also, in both study areas provision was made for school buses to bring the Negro children to the health department for their immunizations while among the white students provision for bus transportation was much less complete. Furthermore, among the individuals he interviewed (both whites and Negroes) to ascertain why the

Negroes so readily accepted the polio vaccine, the responses from the whites were almost totally different from those given by the Negroes.

The whites felt that the success of the polio immunization program was largely attributed to the interest of the county school superintendents in the program who had made it possible for school bus transportation to be provided for the Negro students. Also the whites felt that the public health nurses and visiting teachers had worked with the Negro people for a number of years and therefore received their cooperation on this program. Among the Negroes interviewed, no individual effort seemed to stand out. The Negroes felt that the program was successful because many of their people had seen the effects of polio and that they knew that a small child could be crippled for life or even die of the disease. They pointed out that during an annual March of Dimes campaign a Negro teacher had taken a carload of women, each from a different section of the study area, to a hospital where children were suffering from polio. These ladies returned to their own communities and described the disasterous effects of the disease to numerous people. The Negroes interviewed said that the Negro teachers had told the parents about the new vaccine and attempted to convince them that the children should be immunized and they also made considerable attempts to "sell" the vaccine. There was also considerable rivalry among school classes and between schools in attempting to obtain 100 per cent immunization levels while no such reports of this interest in the polio immunization campaign occurred in the white school systems.

Belcher (1958) also reported that Negro ministers had provided considerable assistance to the immunization project by making individual contacts, and in making appeals from the pulpit, while no such widespread efforts seemed to be evident among the white ministers. He noted that public health authorities had through the years tended to work through the Negro ministers and it was only through the church that many Negro families had any contacts with the outside world. Belcher concluded, "Without doubt this paper does demonstrate how certain groups ordinarily considered out of reach of an action program can nevertheless be reached" (Belcher, 1958, p. 165-166).

Youmans (1958) attempted to evaluate communications to parents about the 1954 polio vaccine tests in a suburban and rural area and to assess these reactions to the communications and to the vaccine program itself. He also attempted to examine the hypothesis that socioeconomic status was a significant factor in determining how persons receive, evaluate, and respond to communications on public health measures. The communication materials which were examined were mass media communications such as magazines, newspapers, radio, and television. Also examined were formal presentations of information at orientation meetings for parents and printed materials prepared by the National Foundation for Infantile Paralysis. Families interviewed were divided into two groups, one of "high" and one of "low" socioeconomic level utilizing a socioeconomic level index. The "high" group included professionals and skilled workmen who had a high school education or more

and who were married to women who had similar backgrounds.

Youmans (1958) found that printed materials constituted the most common source of overall information for parents of both high and low social status and that difference at the .05 level were found between the two status groups in receiving overall information from newspapers and magazines. Nine-tenths of the high-status mothers reported that they had received overall information from the newspapers while only three-fifths of the low-status mothers reported receiving information from this source. One-third of the high-status group indicated they had learned about polio vaccine from magazines while only one-twelfth of the low-status mothers acknowledged this as a source. Although radio and television networks were not systematically utilized to broadcast news on the polio vaccine program, almost one-half of both high- and low-status parents indicated that they had obtained information from this source. In regard to the sources of initial information received on the participation of their local county in the vaccine test seven-tenths of the high-status mothers obtained this information from newspapers while only one-fourth of the low-status mothers indicated this as a source. Three-fifths of the low-status mothers first learned of the local participation from their schools, but only one-fifth of the high-status group reported the school as a first source. Also four-fifths of the high-status group but only two-fifths of the low-status group indicated that they had heard or read unfavorable public statements about the Salk polio vaccine.

Youmans (1958) also employed an instrument designed by Flesch

which utilized a statistical formula for the objective measurement of readability. Utilizing this instrument in analyzing the National Foundation for Infantile Paralysis printed materials he found that they were placed in the "difficult" reading category which was comparable to textbook materials used in colleges and the "human interest" score placed the printed materials in the "mildly interesting" category similar to that of trade journals. Since over one-third of the mothers in this study had less than a high school education it seemed safe to infer that many of them probably had a great deal of difficulty in reading and understanding the printed materials sent to them from the schools. Youmans (1958) concluded:

> This paper contributes evidence that the media for communicating information about science and medicine tend to be middle-class oriented and middle-class received. It is questionable whether pouring additional funds into these media will facilitate reaching and influencing more people of lower socioeconomic status. Effective communications to these persons must be geared to the value orientations and social structure of their own class. Precisely, how do they get and accept information? What are their significant reference groups? If these groups can be organized as agents for communicating with lower-status persons, probably more of them can be reached and influenced by public health programs (p. 384).

Clausen, Seidenfeld, and Deasy (1954) described a study of parent attitudes toward participation of their children in polio vaccine trials drawn primarily from interviews with mothers of second grade children in five schools in a single county in Virginia which was partially suburban and partially rural. Interviewers used a previously pre-tested questionnaire and averaged from 20 minutes to half an hour in length.

The total sample interviewed comprised 175 mothers, of whom 101 had given consent for their children to participate in the polio vaccine trials and 74 who had withheld consent. The mothers who gave consent for their children to receive the vaccine tended to have a higher educational level and to be better informed about the vaccine than were those who had withheld consent. More of the mothers who gave consent derived their information from printed sources while more of those who withheld consent heard some information over the radio and television. However, the medium of television had not been systemmatically used for presenting information about the program.

Clausen, et al (1958) found that the differences between the consent groups in initial source of information about local participation in the program were striking. Of the mothers who gave consent, two-thirds first heard about the participation of their county through newspapers. Of those who did not give consent, only one-third derived their initial information from this source. Those who had read about the program seemed to have been better prepared to analyze favorably the materials brought home from the schools and also these people were more likely to have talked with their family physician, as well as their friends, relatives, neighbors and school personnel. The authors listed the most frequent reasons as to why the one group did not give consent to the trials as being "some physical condition of the child makes it unsafe for him to take the shot" (35%) "controversy over the program" (19%); and "general fears about the safety of the vaccine (15%)" (Clausen, et al,

1958, p. 1535). They concluded "Using the technics of social science research, it would seem fruitful to investigate further the methods of reaching and influencing those segments of the population which tend to be non-participants in such public health programs" (p. 1536).

Glasser (1958) discussed some of the factors which influenced the way in which people react to a health program based on a nation-wide survey conducted by the American Institute of Public Opinion for the National Foundation for Infantile Paralysis. A total of 3,590 interviews were conducted on a nation-wide basis, each interview lasting approximately 45 minutes, with a sample of adults under 40 years of age, a sample of mothers of teen-age children, and a sample of mothers with children of all ages under 21. The reason for the study was that 18 months after the introduction of the Salk vaccine in the fall of 1956 better than 50 per cent of the people in the age groups most vulnerable to paralytic polio had not even begun to be vaccinated. Glasser discussed the question of whether lack of funds was holding up polio vaccinations and indicated that nearly three out of every ten adults in the target groups said "Cost would be a reason." One out of every five young adults in the $7,000 and over income group had had one or more shots, but only one in 16 of those in the under $3,000 income group had begun their inoculations. However, another analysis of the same data indicated that the cost of vaccination was not a major deterrent. Glasser compared the role of social relationships in vaccination and nonvaccination and concluded that people tend to behave in public health matters as they do

in other aspects of their lives, "the way their friends do," provided that they know what their friends have done. He stated:

> Those already vaccinated are the most effective protagonists for further vaccinations. . . .
>
> The problem of the unvaccinated was primarily, though not entirely, with lower socioeconomic groups. . . .
>
> Informal communication--getting people to talk about vaccine--would appear to be the most direct method of accelerating the vaccination program. . . there are still 45 million Americans in the under 40-year group who have yet to start their polio immunization and 30 million who require one or more injections to complete their vaccination. Until this entire group is reached, none of us can rest (Glasser, 1958, p. 145-146).

Merrill, Holister, Gibbens, and Haynes, (1958) studied the attitudes of Californians toward polio vaccination utilizing a representative sample of the non-institutional population of California comprising 3,628 households. They found that 81 per cent of the mothers questioned were classified as being favorable to the polio vaccination, 11 per cent were described as unfavorable and the remaining eight per cent as neutral. The unfavorable mothers constituted one aspect of the problem population but a second problem group was comprised of mothers whose attitudes were favorable, but who did not have their children vaccinated. Four out of every ten favorable mothers were classified in this group. Low socioeconomic status was one of the most important factors in identifying mothers who were unfavorable to the program, and the most frequent response of the favorable mothers was "I just neglected it," this response being given by 25 per cent of the respondents. The next most common reason given was fear of the vaccine. The primary deterrent

of the unfavorable mothers was fear of the vaccine.

Merrill, et al (1958) concluded that one of the problems which was associated with the lack of participation in the polio vaccination program was that the early program priorities limited vaccination to children age 5 to 9. This caused some misunderstanding among mothers, and seven months after the age group had been expanded from birth to age 14 the mothers who had children in this category, and many others, did not know the priority had been expanded. The authors also indicated that there was evidence that public attitudes were favorably influenced when an aggressive, consistent program, cooperatively planned and carried out by local health departments, medical societies, and other community agencies was implemented. On the other hand, where some of the local programs started slowly without basic agreements among the various agencies and where public statements critical of the program and the vaccine were made, the authors found a high proportion of respondents who doubted the safety and effectiveness of the vaccine. Also these areas had the lowest percentage of vaccinated children. The authors also indicated that there was an apparent lack of public understanding of the effect of poliomyelitis upon adults and that this was possibly because of emphasis on children and the words which had been associated with the disease for many years "infantile paralysis."

Rosenstock, Derryberry, and Carriger (1959), in a study of some of the social and psychological factors of why people fail to seek poliomyleitis vaccination, indicated that the major portion of cases,

particularly the paralytic, have occurred in the past few years among incompletely vaccinated individuals. They contended that the prevention of such epidemics as these does not depend primarily upon technical development of preventatives. A number of studies were directly concerned with the question of why people accept or fail to accept vaccination for themselves and their families, and findings were reported which have implications for planning future vaccination programs. Several revealed that many people regarded poliomyelitis as a disease affecting only children and that such beliefs might be reinforced by the public health service's establishment of priority groups which possibly tended to reinforce the perception among many people that those included in the first priority group were the only ones who needed vaccination. Another factor which was mentioned in several of the studies was the concern among some people that the poliomyelitis vaccine was unsafe or ineffective, but such fears have largely been dispelled in recent years and no longer seem to be an important factor limiting acceptance of vaccination. The authors noted that some of the studies suggest that there is a social class influence on behavior and discussed another study which reported that generally people seemed to be failing to take advantage of the vaccine for themselves and their children not because of specific resistance to the vaccine but rather because of lack of a definite, positive influence which might direct them to a clinic or a doctor's office for immunizations.

Other factors discussed were related to the convenience in

obtaining immunizations such as the distance in which one had to travel to obtain vaccination, the hours at which it was available, the cost of the vaccination, and the acceptability of the facilities in which vaccination clinics were held. The authors suggested that readiness and social factors may operate with a degree of independence of each other or that they might interact. They indicated that when the personal readiness to seek immunization was relatively weak it would not be expected that the individual would act unless the social and situational forces impinging on him were quite strong, and on the other hand, when relevant social factors were weak or absent, immunization would be sought only by persons with considerable personal readiness.

Rosenstock, et al (1959) reported data suggesting that among the unimmunized, personal readiness to obtain polio vaccination was so weak that rather strong social supports would probably be needed to modify their behavior in the short run and that education for increased personal readiness could probably be effective only in the long run. "Obviously, the usual social forces in urging poliomyelitis vaccination entails working with local groups, often in face-to-face contacts" (Rosenstock, et al, 1959, p. 101). Further, "The majority of the studies reviewed here offer evidence that the group's hardest to reach (the poorly educated and the non-white) will have to be approached personally rather than through mass means of communication. This conclusion is supported by research on communications performed on other subjects" (p. 101). A number of studies were discussed indicating the

general ineffectiveness of the mass media in reaching lower socioeconomic status groups in regard to health education and some of the data reported in the polio studies also supported this position. One of the studies revealed that non-white, lower socioeconomic status individuals who came in to an immunization clinic obtained their information concerning vaccination from personal sources such as teachers, children, and public health officials while the whites tended to get their information through impersonal mass media sources.

Siedler, Kalter, Thrupp, Utz, Finucane, and Parrott (1960), in a study of a paralytic polio outbreak in Washington, D. C. in 1957, reported that 69 clinically confirmed cases of paralytic poliomyelitis occurred, giving it an attack rate of 8.3 per 100,000 population. This was only a moderately high attack rate by prior experience with paralytic polio, however, it was the highest rate observed in a large metropolitan area in the United States in 1957. The epidemic showed a marked selectivity for pre-school aged children from large, low-income Negro families. The outbreak flared up in a crowded slum area of the city and nine of the first eighteen cases occurred in this area where the population was predominantly Negro. The 1957 outbreak differed from prior patterns of paralytic polio epidemics in Washington in two respects and these were the higher percentage of pre-school age cases and of Negro cases. In the areas which had the concentration of polio cases, a vaccination survey of the residents revealed that they were predominantly lower socioeconomic status Negro areas and their immunization levels were

considerably lower than estimates for the entire Washington, D. C. and county populations. They felt that this suggested that the poor vaccination status of the epidemic area population was at least to some degree characteristic of their lower socioeconomic and racial group memberships.

Alexander (1961), in a study of the extent of the polio problem, reported that a pattern of change in the disease has occurred in the United States. He noted that the disease is now concentrated among the unimmunized population, ". . . which we have failed to reach while we have all shared in the most intensive campaign of vaccination in the history of the United States. The residual pattern of disease represents a measure of our failure to apply vaccine completely enough" (Alexander, 1961, p. 837). In the United States during 1960 there were three major polio epidemics and in all there was a striking repetition of a basic epidemiologic pattern. This pattern revealed a concentration among pre-school children of lower socioeconomic status in crowded urban areas and selected rural localizations. The pattern was first seen in 1956, after widespread use of the polio vaccine, and the epidemics in Rhode Island and in Baltimore occurred in pockets of susceptible persons in an otherwise well protected community. He also noted that this pattern persisted in other urban areas where Negroes and Puerto Ricans lived, as well as concentrations in poor farming areas, among Indians, and isolated religious sects. In all instances the pattern of polio was the pattern of the unvaccinated.

Alexander (1961) summarized a national survey of immunization status conducted under the direction of the National Office of Vital Statistics which revealed some very valuable measures of the residual unimmunized population. Approximately one-half of school age children from five to fifteen years of age had not received four innoculations and approximately two-thirds of children aged one to four years were similarly inadequately protected. This latter age was the most important, accounting for the greatest proportion of polio cases in recent years. Analysis of the data also revealed that during the previous year most of the vaccine that was distributed had been used in further innoculation of those already partially immunized and very little had been used to reduce further the number of persons who had not yet received a single injection. He concluded:

> In 1960, although the annual total of poliomyelitis cases will be lower than in any recent years and paralytic cases will be closely comparable to the low of 1957, the disease continues to occur in a repetitive pattern. This pattern is predominantly of pre-school children of lower socioeconomic background, often in crowded urban centers, in all cases reflecting the distribution of the residual unimmunized population. Surveys of immunization status continue to reveal that significant proportions of the population are inadequately protected. Comparative surveys in successive years show that although great proportions of the population have attained adequate levels of immunization, we have been less successful in reducing the number of completely unvaccinated persons (Alexander, 1961, p. 840).

Nathanson, et al (1959) reported on a polio epidemic during 1956 in Chicago and Cook County, Illinois. During the year 1,112 cases of polio were reported in the city of Chicago and 232 from suburban Cook

County. This total represented a rate of 28 per 100,000 and was the third highest annual rate ever experienced by Cook County and comprised almost 10 per cent of the total national incidence in 1956. Also, it was the first major outbreak of polio to occur in a population where large numbers of children had already been vaccinated. Early in the epidemic several unusual features quickly became apparent. These were an early seasonal rise of the incidence of polio, a heavy attack rate among non-whites, a shift of age distribution toward the pre-school age group, and a concentration of cases in the central city. The authors discussed a number of previous studies of urban epidemics both in this country and in other cities throughout the world, concluding that the pattern of the Chicago epidemic was quite different from earlier study findings of urban epidemics. The usual pattern of polio incidence in the United States prior to 1956 had been a predominance of white over non-white attacks of polio. They stated ". . . in marked contrast, during 1956 the non-white rate was over seven times as high as that for whites" (Nathanson, et al, 1959, p. 130).

They also noted that in Chicago in 1956 both white and non-white cases showed a marked shift toward younger age groups in contrast with the age distribution during 1943 through 1955. From the spring of 1955 through June, 1956 over 1,300,000 doses of polio vaccine had been distributed in Cook County with essentially all the vaccine being used to inoculate persons under 20 years of age and pregnant women. It was estimated that this group's population totaled about 1,700,000 and that

at least one-third had received one or more doses of polio vaccine by the end of June, 1956. Of the 1,300,000 doses given through June, 1956, over 900,000 had been administered by private physicians in areas of higher socioeconomic status. There was undoubtedly a correlation between socioeconomic status and the proportion of eligible children vaccinated. This was confirmed by a survey which was conducted during the height of the epidemic which indicated that a low proportion of children in the high incidence areas of the city had been vaccinated even after an intensive program had been initiated.

Speers, Chin, Marine, Hall, and Gravelle (1960) reported on a polio epidemic in Des Moines, Iowa in 1959 which contained many features similar to those in the 1956 Chicago outbreak and the 1958 Detroit outbreak. The overall incidence for the county was 71.5 per 100,000 population which was the third highest rate ever recorded, being exceeded only by the epidemics in 1952 and 1954. The 1959 cases were concentrated in a relatively small area in the central city which was an area of low socioeconomic status population and included a large proportion of the city's Negro population. The polio rates were highest in this lower economic group, the overall rate being eight times higher than that in the upper economic groups, and the paralytic attack rates between the upper and lower economic groups showed nearly a 20-fold difference. In terms of age, the highest rate was in the 0-4 year group whereas in the previous epidemic years the highest age-specific rate had been in the 5-9 year age group.

Mass media coverage of the early stage of the epidemic was quite comprehensive and resulted in a sharp increase in the demand for immunization, affecting both public and private sources. The Health Department immunization clinic, which was ordinarily operated one morning a week, was expanded to full time operation, including evening hours. Also, many private physicians made special arrangements to provide immunizations for their patients. After one week of this expanded operation, a sample of the immunization records at the Health Department was analyzed by place of residence and attendance was felt to be adequate, with one surprising exception, the central area, which was then experiencing the largest number of cases. The Health Department officials then set up a special clinic which will be discussed in more detail later. The authors indicated that before the epidemic there had been a definite socioeconomic and racial gradient in the proportion of unimmunized persons in all age groups, with the upper-income white group having the highest level of vaccinations and the Negro group the lowest. After the epidemic a survey revealed that the difference in the percentage of unvaccinated had been in great part eliminated. However, no specific statistics were cited. The authors concluded:

> Effective control of poliomyelitis will be achieved only when the vaccinated portion of the population approaches 100 per cent of susceptible individuals. It is the responsibility of the medical and public-health professions to work toward this goal. Its achievement will require more than mere identification of the unvaccinated groups, although this is the necessary first step. We must also determine the factors responsible for failure of these groups to obtain vaccination, whether they be psychological, economic,

> education, or otherwise, and take the necessary steps to correct them (Speers, et al, 1960, p. 868).

Ravenholt (1961) studied a polio epidemic in the Seattle-King County, Washington area in 1959. A survey of the vaccination status of school children in May, 1959, had revealed that about 93 per cent of all elementary school children had received at least three doses of Salk vaccine. However in the poorest school districts, only about 46 per cent of kindergarten children were so protected on entry to school, despite the availability of free vaccination through well-child clinics. Ravenholt indicated that as a result of this knowledge, more publicity was generated concerning the routine availability of free vaccination from a daily central clinic and in outlying weekly well-child clinics. Additionally a mobile, door-to-door vaccination program was conducted in a public housing project, but even after this campaign many residents of the housing project remained unimmunized because of fear of immunization or absence from the area during the program. Several spot surveys revealed that the least immunized members of the community were residents of low-income housing areas, including Negroes, pre-school children and adults, especially adult males, and firm believers in Christian Science. The epidemic attack rate figures revealed that the Negro attack rate was approximately two and one-half times that of the white population while in earlier years the attack rate for Negroes was consistently lower than was the rate for the white population. Ravenholt (1961) concluded:

> Improvements in existing vaccination programs should be designed particularly to achieve early vaccination of pre-school children in the lowest socioeconomic groups, who are currently the prime propagators of polio virus (and many other infectious agents). Adequate immunization of this high priority group, without resorting to legal compulsion, can probably be achieved by persuasion, by making vaccination maximally available, and by a cooperative arrangement between the health department and public housing authorities which would facilitate vaccination of virtually all families moving into public housing projects (Ravenholt, 1961, p. 177).

Chin and Marine (1961) studied the changing pattern of poliomyelitis in two urban epidemics, one in Des Moines, Iowa, and the other in Kansas City, Missouri. The patterns of the two epidemics were quite similar, being characterized by a distinct geographic localization of cases, high attack rates in the lower socioeconomic segments of the population, and a preponderance of cases in unvaccinated children of pre-school age. They found that the polio rate for whites was 52.9 per 100,000 and 320.4 per 100,000 for Negroes in Des Moines. The polio rate for whites in Kansas City was 16.8 per 100,000 and 123.5 per 100,000 for Negroes. The authors indicated that in the past several years the pattern of epidemic poliomyelitis in the United States has differed from that usually observed. Their data on the two urban areas revealed that Negroes were the most susceptible group in the population and that the attack rate for Negroes in Des Moines was 20 times that for the upper whites and in Kansas City, it was 32 times higher. Also a comparison of the rates for the lower and upper whites revealed more than an 8-fold difference in the Des Moines epidemic and a 12-fold

difference in the Kansas City epidemic. This difference in attack rates correlated well with the low vaccination status of the Negroes and lower whites in both of these areas.

Bundesen, Graning, Goldberg, and Gaueer (1957), in a preliminary report on the 1956 polio epidemic in Chicago, discussed factors pertaining to the use of Salk vaccine and problems in stimulating lagging acceptance in high incidence populations. The Chicago Board of Health had established large numbers of special clinics in the low socioeconomic areas which were having a high incidence of polio at that time. These clinics operated throughout the epidemic on a daily and sometimes hourly basis in areas which had a critically high incidence of polio. Mass media of communication were heavily utilized during the epidemic period and, "All of our releases urged parents to take their children to their family doctors and, if they could not afford private medical services, to take them to a clinic established for free innoculations" (Bundesen, 1957, p. 1610, emphasis added). Sound trucks were also utilized to acquaint the public with the exact location of clinics and the hours of operation. Clinics were extended to provide services on Saturdays, Sundays, and during evening hours for the convenience of parents who were not able to take their children for innoculations during the work day. Mobile innoculation units were also employed to a considerable degree in the high incidence areas. The authors also indicated that personal contacts were utilized by the Public Health Department, and this aspect of the study will be further discussed later.

Bundesen, et al (1957) found that the highest incidence rate for polio was in four sub-areas of the city which totaled only 5.2 square miles and represented only 2.3 per cent of the entire area of the city. These four sub-areas which contained only 4.7 per cent of the city's total population ultimately contributed 31 per cent of the total number of polio cases which were reported. As a result of their experience in the polio epidemic they concluded that an informed public was essential in order to achieve the greatest possible degree of participation in an all-effort to combat an outbreak of polio. They felt that great emphasis should be placed on public health education particularly in the lower socioeconomic areas where it was most needed and where it was found by the authors, and others, that a definite lack of interest in environmental health programs as well as acceptance of vaccine had usually occurred. They state:

> When a communicable disease that presents a major public health problem occurs direct personal contact by means of home visits should be instituted by the Board of Health especially in the areas where cases are occurring and, in addition, in the surrounding contiguous areas into which there may be a dispersion of the disease. This personal contact will act as a supplement to the mass communication mediums and will aid in the dissemination of public health information and program promotion where it is most needed (Bundesen, et al, 1957, pp. 1616-1617).

Timothee, Morris, Feliberti, Mainarti (1963) reported on an epidemic of polio in Puerto Rico in 1960 which revealed that the highest attack rates were in the lower socioeconomic segments of the population. They indicated that Puerto Rico may be the first tropical area

where a higher attack rate has been demonstrated in the less well-vaccinated lower socioeconomic population and that the artificial immunity induced by Salk vaccination in the upper socioeconomic classes seems to have protected these groups to a greater extent than the natural immunity which has protected the lower socioeconomic segment of the population.

Morris (1964) in a further analysis of national participation in the inactivated poliomyelitis vaccination program in the years 1955 through 1961 indicated that the data revealed several consistent patterns. He reported that 55 per cent of the white population under 60 years of age had received three or more doses of Salk vaccine compared with 43 per cent of the non-white population, this race differential having occurred throughout recent years. The proportion of persons under 60 years of age who had received three or more doses of Salk vaccine was 52 per cent for urban residents and 51 per cent for those residing in rural areas. In regard to income statistics Morris noted that this data was tabulated only in the 1957 national polio survey which revealed that participation in the vaccination program was strongly associated with family income. He cited several surveys which measured levels of vaccination by socioeconomic status revealing that the highest levels of vaccination status had been associated with the upper socioeconomic groups. The data clearly revealed well-defined segments of the population which had not participated in the poliomyelitis (inactivated) vaccination program. These included adult males, pre-school children, and the non-white population.

He concluded that the response of pre-school children, adult males, and lower socioeconomic groups had been well below that of the participation of school-age children, adult females and higher socioeconomic groups respectively. He noted that since the advent of the inactivated poliomyelitis vaccine in 1955, the disease had attacked these poorly immunized groups with greater frequency. "Therefore, outbreaks of poliomyelitis will continue unless more extensive vaccination is carried out in pre-school children, adult males, and lower socioeconomic groups" (Morris, 1964, p. 479).

Pond, (1961), in a study of the interrelationship of poverty and disease, indicated that prior to the introduction of the Salk vaccine epidemic polio cases tended to be scattered widely and relatively uniformly throughout the population without preference for any socioeconomic group, but that recently an inverse correlation between income and the incidence of polio had developed. He noted that the direct correlation between income and frequency of vaccination was much more marked for the white than for the non-white population, and also that mass polio vaccination programs had failed to reach more than one-third of the target population.

Ianni, Albrecht, Boek, and Polan (1960) reported on the influence of social and demographic factors involved in the acceptance of polio vaccination. The New York State Department of Health was interested in obtaining data on the social and psychological factors influencing the decision to accept or refuse polio vaccination, and a study was done in

two areas of New York state which contained both rural and urban populations. The basic methodology was a home interview utilizing probability samples for each county. The interviews covered 930 households with 3,095 persons in one county and 904 households with 3,305 persons in the other county.

After the age of 15, the level of immunization dropped sharply and decreased consistently through life so that after 50 virtually no one had been immunized. In the age groups between 15 and 40, where vaccination against polio was still a necessary precaution and was so publicized, between 60 and 80 per cent of the population in each county had not obtained vaccination. The authors found that the reasons which were most commonly given for not obtaining vaccination were similar to those reported in other studies, being advanced age, neglect, forgetfulness, and procrastination. The most frequent reason given was, "too old," which when combined with the response that vaccination was not necessary for adults accounted for approximately 45 per cent of all reasons given in both counties. They also found that economic and educational differences between the two counties were reflected in some of the reasons given for non-vaccination. "Too expensive" was given as a reason three times more frequently in the less economically developed county and this county also had a much higher rate of response for "didn't know they were available" in regard to the vaccine.

It is hoped that the citation of these studies and reports will at least partially reveal the nature and scope of the problem which public

health services have had in attempting to reach low income, minority populations with immunization programs utilizing traditional methods and techniques. These problems have become focal issues in the field of public health in recent years as the following statements, drawn primarily from the 1964 and 1965 National Immunization Conference Reports, will indicate.

Rasmussen (1964) discussed problems involved in maintenance immunization programs, contending that "crash programs" utilizing mass media techniques have not been effective with low socioeconomic status people. He also indicated that ". . . the neighborhood approach to communicable disease control will be necessary for truly effective control in the hard core disease foci of any community" (p. 57).

Polk pointed to problems of reaching the ". . . socially disorganized group who don't get immunized" (1964, p. 59). Gray discussed problems of immunization and noted that ". . . public health workers for example who come largely from middle class backgrounds have a difficult time in communicating with people from the lower social classes who perceive their world quite differently" (1964, p. 75).

Mayer made essentially the same contention when he stated ". . . the poor and the lowly on the social scale feel that other people don't care about them. The way to get response from this group is to pay attention to them, speak their language, and bring them your goods or services" (1964, p. 82). Martin again raised the same issue in discussing immunization in low socioeconomic areas when he cited the

impression that ". . . staff people working in clinics are for some reason fairly indifferent toward what is going on about them as they work in clinics" (1964, p. 85).

Reed discussed the utilization of "natural leaders" in immunization programs and suggested that the primary problem area often lies within the public health staff. She stated, "We are products of authoritarian institutions and are used to 'telling' people what to do. We find it difficult to believe that this lower class group has something to offer, too" (1964, p. 89).

Speers discussed immunization programming for children and noted that certain groups, particularly in low socioeconomic areas, were "hard to reach" and such a classification indicated that ". . . we have not, as yet, developed any very effective means of reaching them" (1965, p. 22). Sanford (1965) discussed problems of immunization with "hard-to-reach" or "hard core" groups and contended that "captive" groups such as hospital personnel should be involved in immunization programming. Kimes discussed communication problems in immunization programs and indicated that the largest problem in communications were the "hard-to-reach" groups. He stated, "We must talk to them in their own language and at their own level" (1965, p. 43).

Glass discussed immunization problems with "hard-to-reach" groups and suggested that, ". . . one of the first 'hard-to-reach' groups to consider is the professional staff" (1965, p. 45), raising again the issue of staff capability in working with people in low socioeconomic

areas. Henderson reinterated the same point by stating "There is a real need to get out from behind desks, from sequestered health centers and to go door-to-door selling immunizations and actually immunizing people" (1965, p. 52). James discussed poverty and public health and indicated that citizens at low income levels ". . . have a world of their own, and often a vocabulary of their own" (1965, p. 1765). He further noted that there is a "hard-core" ". . .a rather large one, of people who have not yet had polio vaccinations" (1965, p. 1767), and indicated that we need to know why it is that we cannot get some large groups of people to use these vaccines, even when they are free.

Ravenholt, et al reported similar findings in a study of immunization levels in Seattle, Washington. They found that in the lowest socioeconomic districts only about 46 per cent of kindergarten children were protected against polio on entry to school, ". . . despite the general availability of free immunizations at neighborhood clinics" (1965, p. 990). They concluded it is only by adequate immunization of these low socioeconomic groups ". . . that eradication of disease or complete prevention by immunization can be achieved" (1965, p. 992). The above statements give at least a partial picture of the problems involved in immunization programs in low socioeconomic areas.

The literature also reveals that public health programs in other countries have had problems in some of their immunization programs. Perhaps a description of some of these studies will serve to further illustrate some of the problems in this area and also possibly suggest

some ways of improving immunization programs in this country.

Kelis (1961) described a mass polio vaccination program in Czechoslovakia utilizing the live Sabin vaccine. He indicated that there was some concern about how the population would accept the new vaccination and stated, "We knew that even in countries with an advanced system of protection and a fairly high level of understanding, such as Czechoslovakia, the reaction of the population to vaccination was not uniform." (p. 10) Although public health officials felt that the danger of an epidemic was imminent, they did not wish to take legislative action, but wanted to persuade the public of the usefulness of the program. The fact that the vaccine was free was not likely to be a decisive factor, since at that time 80 per cent of the Czechoslovakian adult population and the entire child population enjoyed free preventative and curative care. They felt that it was necessary to interest the public, primarily the parent, in the principle of vaccination and talks and discussions by doctors explaining how vaccination worked and the new opportunity it offered for fighting polio were extensively utilized. Also the mass media were employed, primarily newspaper articles and radio messages.

Kelis (1961) noted that although vaccination against polio was made compulsory at the end of 1958, in the year following the vaccinations, 40 per cent of the children below the age of 10 still were without vaccinations. Public health officials decided to utilize the Sabin vaccine in an attempt to immunize all children from two months to 14 years of age. Each province organized its own campaign and in Usti nad Labem in

Northern Bohemia 180,000 children were eligible to be vaccinated. The province officials organized their campaign to last not more than seven to ten days because of the danger of a change in the diluted live vaccine.

Despite the intensive preparation of their medical staff they felt that immunization could not be achieved on such a scale and in such a short period of time without the cooperation of the public. They therefore arranged for articles to appear in the regional newspapers, explaining the general principles and usefulness of immunization, and during the month hundreds of talks were given by doctors in towns and villages. A printed letter was sent out at the beginning of the month addressed personally to all of the headmasters and school teachers and to the teachers in charge of kindergartens asking that explanations be given to parents on the importance of immunization against polio. Also slides were shown in the movie theaters, giving the dates for vaccination and using for the first time the slogan "Polio protection without a jab," emphasizing that this was an oral vaccine. The immunization team in the Usti nad Labem area, consisting of one doctor, two to three nurses, and two to three members of the Czechoslovakian Red Cross, immunized in six days more than 170,000 children which was 92 per cent of the two months to 14 year old age group.

Smith (1961) reported on a Sabin oral live polio vaccine program in the city of Prince Albert, Saskatchewan which was estimated to have reached 94.5 to 97 per cent of the eligible population of the city. The public health officials there primarily utilized the mass media in their

program but they utilized them to a greater extent than is often found in public health service programs in this country. For instance the public health officials published pictures of department officials, their wives and children taking the Sabin vaccine, and they also telecast the feeding of the vaccine to important individuals. They also injected a suggestion of scarcity by having the mayor express hope that there would be enough vaccine for everyone in the city. Civic pride was also brought in by having the mayor and others express the gratification that the city had been chosen for this demonstration. They indicated that there was also some reliance on fear as references were made to the fact that Prince Albert and its suburbs had been a relatively high incidence area of paralytic polio in 1960.

It was also assumed that adults were needle-shy, therefore they utilized the phrase "no needles, no fuss." Smith also noted that semantics entered the picture in regard to the choice of language to be utilized in describing the project and that words such as "experiment," "test," and "trial" were strictly avoided.

Public health officials also employed two direct mailings to the householders and business firms of Prince Albert, the first being sent out early, and the second was mailed to reach the public on the Saturday preceding the Monday start of the program. The radio and television industries exhibited a large amount of personal involvement and enthusiasm among its personnel on behalf of the program. The program also utilized a huge bell in the tower of the city hall which had not been rung

for five years by obtaining permission from the mayor to ring the bell at 2:00 p.m. on each of the three scheduled days of the program. The bell was tolled 16 times on each day, once for each of the 16 paralytic polio cases reported in Prince Albert and its district in 1960. This technique also received a great deal of publicity in the mass media.

The involvement of the clergy not only created news but by implication put the churches' blessing on the project and indeed the Roman Catholic bishop agreed that the priests in the city should make special reference to the polio program from their pulpits. Also a great deal of involvement of many people was obtained by having volunteers to help keep the immunization stations supplied with vaccine and women in the neighborhoods contributed coffee and doughnuts for the station teams. Selected filling station owners distributed bumper stickers to car owners and members of the Chamber of Commerce persuaded large numbers of downtown business men to put similar strips in their windows bearing the words, "Don't miss out on oral polio vaccine."

Theater owners accepted large posters to be placed in their lobbies and additionally agreed to advertise the oral vaccine project on their marquees where titles to current films were usually shown. At the immunization centers persons who had received their doses were given tags reading "I have taken my oral polio vaccine, 1961, Prince Albert Health Region" and also large signs were posted urging the residents to wear their tags through the week. This type of program is not radically different from numerous immunization programs in this country which

utilize many of the same techniques. However, as will be recalled from the previous discussion of immunization programs in this country, no urban regions in the United States have approached such completion rates as were reported in the city of Prince Albert. Perhaps future research will reveal some possible explanation for such differences.

Taylor (1963) described an oral polio vaccine program in New Zealand conducted by the public health service in which it was estimated that 80 per cent of the total population and 97 per cent of the children up to 16 years of age had received the Sabin vaccine, the entire cost being covered by the state. The methods utilized in the program also were not greatly different than those often utilized in this country, but there were a few interesting variations. For instance, in New Zealand the school children received their vaccine at the schools with the parents being asked to sign a consent form. Administering immunizations in the schools in this country is certainly not a routine matter, particularly in the southwest, and if it appears elsewhere in this country, it is not evident in the literature.

Taylor (1963) also noted that the program attempted to avoid confusion with the Salk vaccine and it was decided to use the words "oral vaccine" but that progress evaluation established that the word "oral" was not nearly as well understood as the officials had imagined and the words "by mouth" were substituted early in the campaign. Again progress evaluation of this sort does not seem to be a common component of public health service programs in this country as previously cited

literature hopefully reveals. Taylor also indicated that many incipient fears were allayed because doctors, nurses, health inspectors, and health education officers utilized an individual approach in attempting to explain the program to the general public. Also various volunteer organizations publicized the campaign and when the time came for the vaccine to be administered a number of the voluntary organizations took an active part in the actual giving of the vaccine to the children and helped in the arranging of some of the clinics. Again, if the utilization of volunteers to administer vaccine occurs to any extent in this country, the evidence is well hidden in the literature.

Taylor (1963) also related that the doctors' support was particularly needed in the program because all the polio vaccine was being given by health department staff voluntary helpers, and the family doctor who was responsible for most immunization procedures, was not otherwise involved. He reported that the response was excellent. Again, this sort of response from organized medicine in this country may exist in scattered parts of the country, but its widespread existence is not evident in the literature. The public health officials also made the provision of clinic sites a community effort by involving voluntary organizations and department stores in providing space where the vaccine could be given. The amount of space bought for advertisements in the newspapers and journals was trivial compared with the free space provided. Furthermore, the cooperation of the broadcasting corporation was excellent at both the national and local level.

An extensive campaign included film slides shown at movie theaters throughout the country and posters and bumper stickers. Numbered paper slips were issued to each person which gave the public health officials a simple but reliable check on the number of doses given and also the slips carried this message: "The Department of Health thanks you for assisting in the campaign to eradicate poliomyelitis. You should have a second dose in November. Similar arrangements will be available. You can help us further by encouraging your friends to have this vaccine." Again, this is a seemingly simple technique but one to which to this writer's knowledge is not extensively utilized in this country. Also a postmark franking slogan was printed for two weeks on all mail handled by the post office which contained this slogan, "Don't miss your polio vaccine." Again, if such a technique is utilized extensively in regard to immunization programs in this country, it is well hidden in the literature.

In summary, the utilization of a number of these techniques is by no means uncommon in this society. However, the overall polio immunization rate of 80 per cent and of 97 per cent for children in New Zealand is, as far as this writer's survey of the literature indicates, non-existent in any area of this country. Perhaps future research will give further indications as to why this is so.

Davies, Marberg, Goldblum, Levine, and Yekutiel (1960) described the incidence of poliomyelitis in Israel in the years 1952 to 1959. In discussing the 1957 campaign on polio the authors indicated that all vaccine used was supplied by the government and the campaign was organized

within the framework of the public health services which involved the Ministry of Health, district health offices, municipalities, and voluntary organizations. Special immunization teams consisted of one inoculator who was a doctor or nurse, two medical aides who were nurses and two registrar-clerks. These teams operated partially in mobile units, visiting every village in the country and partly in stationary clinics in the towns and larger villages. An intensive effort was carried out in numerous lectures and meetings, as well as announcements in the press and radio preceeding the campaign. The immunizations were carried out on a voluntary basis and special permission was not demanded from parents bringing their children for a vaccination. The authors reported that the total number in the population group that they were trying to reach, six months to three years of age, was about 126,000. They indicated that about 95 per cent of the eligible Jewish population responded, although only 65 per cent of the non-Jewish (mainly Arab) population came in for their immunizations, indicating perhaps some of the same sorts of problems in reaching certain populations which have previously been discussed in this study.

Witte, Page, and Gelfand (1965) described an oral polio vaccine program in British Guiana in 1962-63. An attempt was made to immunize all children from the age of three months through five years with the oral polio vaccine. The vaccine was administered at clinics established in health centers, churches and schools by organized teams of professional personnel from the public health services with assistance

from volunteers in several areas. Only physicians or registered nurses administered the vaccine and the number of teams was limited because of the relative scarcity of qualified personnel which limited the teams to the administration of between 1,000 and 1,500 doses of vaccine each day. The program resulted in the vaccine being administered to 85 per cent of the children in the target population. The authors noted however, that the epidemic might have been more impressively terminated had the program been more rapidly administered. They concluded that it would seem worthwhile to deviate from the more traditional ways of conducting an immunization campaign in order to achieve greater speed of vaccine administration and suggested the following ways of accelerating such a vaccination program:

> (1) Non-professional persons should be utilized to the greatest possible extent. Since it is not essential for a physician or nurse to administer oral vaccine, properly instructed lay-volunteers can perform almost any function in such a campaign. The resulting increase in personnel will make possible more rapid vaccination at established centres and will also permit additional clinics to operate concurrently.
>
> (2) Records should be simplified to a mere tally by age and district. Should more detailed information be desired on the persons vaccinated, this can be obtained simply, accurately and inexpensively by a sample survey after completion of the vaccination campaign. This will obviate the time-consuming process of a detailed registration of each vaccinated person and accelerate vaccination at existing clinics or permit the establishment of additional clinics.
>
> (3) When immunization programmes are conducted in areas where transportation is difficult, vaccine storage should be decentralized so that vaccine can be distributed more rapidly and more efficiently. (p. 10)

These studies indicate that the United States Public Health Service

is not alone in regard to problems in immunization programs. Perhaps they also reveal some methods and techniques which could be utilized by the United States Public Health Service to raise the immunization levels in the heretofore unimmunized populations.

Cross-cultural Experiences in the Use of Indigineous Personnel

Although the need for utilizing "indigenous personnel" in immunization programs seems to be acutely evident from the materials just cited, very few published studies of a quantitative nature are in the literature. These studies and some of the related materials which have begun to appear in the past few years on the utilization of indigenous and non-professional personnel in this country will be discussed in some detail later. As has been stated previously, with a few notable exceptions stemming from the work in the 1930's of Shaw and others and rapidly expanding in some areas during the last few years, the utilization of indigenous personnel has not been widely applied in this society. Such programs have been utilized to even a lesser degree by the public health services in this society for various reasons, which are beyond the scope of the present study. It should perhaps be pointed out, however, that the utilization of indigenous personnel is not a particularly radical idea, and indeed it is often a basic part of the foundation of many public health service programs in other countries. Perhaps at this time a discussion of the scope and nature of the utilization of indigenous personnel in some of these programs will serve to provide additional background

and perhaps suggest some implications and possible solutions to the problems which the public health service has had in this country in reaching certain segments of the population with their programs.

Martens (1962) described a program to train Indians in Canada as community health workers. The author noted that special attention was paid to three phases of the program, that of selection of the candidates, the training, and the supervision and encouragement of the workers on their return to the reserve. Thirteen candidates were selected for the program, of which the chiefs and councillors assisted in the selection of 11 for whom no set academic standard was required. All the candidates were chosen because of their leadership qualities, their average age was approximately 40 years, and their academic backgrounds ranged from the first grade through the eighth grade.

The first two months of the program were spent in field orientation on the reserves where the field nurses gave the students an opportunity to collect some basic facts about their reserves, learn of the work of the governmental and non-governmental people in the area, learn what help was available for their people, and to learn about the health conditions and some of their peoples attitudes toward them. In their formal training these students spent the first five weeks on a course which emphasized the health education aspect. They learned and practiced such skills as preparing and presenting a talk, leading group discussions, setting up committees, planning meetings, methods of advertising a meeting, face-to-face teaching, running movie projectors and

preparing and using visual aids. Upon graduating the health workers returned to their communities where they were employed by the medical services working in close liasion with the chief and council, the Indian Affairs Superintendent and a health committee composed of members of the band. When the people in the community were asked what they thought of this program ". . . they were unanimous in their approval of having one of their own people teaching health" (Martens, 1962, p. 175).

Bogolepova (1958) described a system of voluntary committees attached to district health centers which acted as instruments in the promotion of health consisting of a membership of local working men and women under the chairmanship of the district physician. He noted that in some instances the committees organized competitions between cities, with prizes up to one hundred thousand rubles being awarded to the town with the best results. Eighty per cent of this sum was utilized for further improvement of urban living conditions while 20 per cent of the prize was awarded as a bonus to the best workers in the competition. Another voluntary committee was attached to a childrens' clinic and helped the health personnel in conducting medical examinations and persuading parents to have their children innoculated against diphtheria and tuberculosis. Another committee collected data on the morbidity rate among workers and presented the results of their analysis to the directors and engineers of industrial enterprises. The author also noted that graduates of health education centers were attached to factory shops,

canteens, etc. where they carried out extensive work. Health knowledge and training and health habits were promoted daily among school pupils and health instruction was given to adult workers with knowledge of industrial health being considered a way of improving professional qualifications with industrial enterprises reserving special hours for the study of personal and industrial health and with lessons given by specialized doctors. The utilization of some of these techniques may appear to be somewhat radical to certain segments of the population in this country who operate from different value systems. However, the principle of broadly based involvement of people seems to be utilized increasingly by a number of public health authorities in various countries.

Janus (1960) described a program in Ceylon which used Buddhist priests to teach health education to the people in the villages. The rationale behind the program was that three quarters of Ceylon's population was Buddhist and that in village life especially, the priests were accepted leaders and took an active part in community development. The department of Health Services trained the priests in the areas of community organization, mental hygiene, child health, nutrition, dental health, environmental sanitation, etc. They encouraged the priests to undertake health education work in the villages and to help organize the people for health and health related programs in attempting to find solutions to community health problems. They also attempted to teach the priests to coordinate their health promotion work with that of the country's health workers and encouraged them to carry out their health

education work in the temples by means of talks and discussions with the villagers.

The Department of Health Services reported that the response to the program had produced gratifying results and had produced an increasing reservoir of health consciousness among the village people. They concluded that:

> . . . the results of this experiment have demonstrated that great strides forward can be made by incorporating in a health education drive persons in whom the public have unswerving and unquestioned faith. The integration of the Buddhist clergy of this country in our anti-disease campaign is paying dividends hitherto unknown and never foreseen (Janus, 1960, p. 15).

Garland and Honey (1960) described a health education program in Great Britain utilizing industrial shop foremen. The rationale behind such an approach was that if public health medicine was going to have much impact on industrial life it needed allies on the shop floor and that possibly the most important one to have would be the shop foreman. Fourteen firms accepted the invitation to send one of their foremen to a series of monthly health discussions which lasted ten months. Using a public health discussion leader the group discussed such topics as industrial safety, the effects of fatigue in a work situation, various aspects of industiral psychology, and first aid techniques. They also discussed the importance of ventilation, the importance of eye protection in the industrial situation, the use of dangerous materials, and the care of the feet, hands and skin in industrial situations. The authors indicated that the comment from the shop foremen on the general idea of the discussions

of health matters were very favorable.

Myint (1960) described a program in Burma which trained medical students, health visitors, nurses, midwives, assistant health officers, health assistants, etc. In the training program they attempted to encourage the student to collaborate with the local leadership and to work closely with both health personnel and other technicians, especially public education personnel, in planning and carrying out programs to improve school and community health facilities. The students were also taught how to operate health education campaigns and village health centers which were used, additionally, as sites for discussions of health problems by villagers.

Rosa (1962) described a program of training health workers in Gondar, Ethiopia which revealed some of the changes which are occurring in the field of public health in various parts of the world. The public health training center's primary purpose was described as being to train health workers who were adapted to meet the needs of rural Ethiopia. A primary aspect of the program was the training of community health officers in preventative medicine, basic clinical medicine, health administration, health aspects of community development, and methods for educating and informing the public. The entrance requirements were completion of 12 years of schooling and in the training program the individual received three years of academic training and one year of internship. The author noted that physicians were not selected for this responsibility because of a shortage of candidates, the expenses

involved in obtaining a medical education, and that certain other factors were also considered. It was felt that the usual physician training was clinically oriented toward the medical conditions of individual patients and that treatment of individual illnesses would have little impact on the formidable health problems of Ethiopia.

It was also felt that a health officer with a practical education emphasizing the community approach, utilizing preventative methods directed at masses of people, and supervision of auxilaries, would have more impact and was better suited than the physician to work in rural Ethiopia. The training of community nurses and community sanitarians was oriented in the same manner. The author concluded that the problems of training such workers were formidable in that the fees for service incentives were eliminated and the problems of living and working in rural communities were considerable. He also felt that the training and employment after graduation had to be oriented toward strengthening motivation and that it was necessary to select well motivated students with backgrounds as similar as possible to the environment in which they would ultimately be working.

Mitrovic (1960) described a village health education program in Yugoslavia which attempted to utilize young girls in disseminating basic health information. The health education centers were set up in the villages and included a house with a kitchen, a school room, vegetable plot, poultry yard, etc. Each center was directed by a domestic science teacher who worked with an assistant. Both lived at the center and were

responsible for carrying out the program which was attended by 20 to 30 students. The local village authorities provided facilities for the centers and the regional authorities provided funds, teaching personnel, and some of the center's equipment. The program included personal hygiene and basic notions of general hygiene, nutrition and the art of cooking, communicable diseases and their prevention, first aid and home nursing, the care and feeding of infants and young children, etc.

Theory was taught during practical work sessions undertaken by small groups of students in the kitchen, the classroom, the vegetable plot, etc. The teachers visited their pupils in the homes once or twice a week and assisted them in their domestic chores. This procedure enabled the teachers to check on the students grasp of what was taught in class and to see whether they managed to improve the family menu and maintain the house better. Mitrović also noted that the centers did not restrict their operations to school hours and they often housed the village libraries and served as the local reading rooms and as local meeting places. The aim of the program through time was for the centers to become health, cultural and social centers for the entire rural population.

Alvarez (1960) described the role of the schools in the betterment of health through improved education programs in the Philippines. The school curriculum was geared to the study of real health problems and actual life situations which served as the core for classroom health teaching. Community health aspects and conditions such as those related to environmental hygiene, control of communicable disease, sanitary

water supply, nutrition, safety, etc., were considered as outstanding health problems which called for first hand analysis, careful study, and appropriate solutions. Teachers, teacher-nurses, and students undertook various community surveys for the purpose of discovering community health needs and problems and utilized these as a basis for classroom instruction on health. Resources and teaching units were based on these community needs and conditions and were prepared by the teachers in the form of workshops and work-conferences to supplement, enrich, and reinforce the available teaching materials. Techniques such as surveys, field trips, resource visitors, demonstrations, visual aids, documentary materials and work experience were utilized to bridge the span between the school and the community in an effort to draw classroom activities closer to the peoples' health needs. The schools were described as attempting to reach out into the community, utilizing it as a functional laboratory, and to draw the various community groups into an integrated health program dedicated to the general welfare.

Chraibi (1958) described a mass campaign for the detection of venereal disease among the population in Morocco. Project personnel used films on health preceeded by a documentary on the King and followed by a comedy in attempting to get their health messages to large groups of people. At the end of the films they announced where the health center on venereal disease was to be set up for the next day. The response to the films was excellent, however the response at the clinics the next day was not. Chraibi felt that there was a need to speak to the people but

that he did not feel qualified to do so as his accent was different from that of the people that he wished to speak to. He felt that someone was needed who could speak the language of the local people and to capture their imagination and that by chance he met such a man who was a plumber, and in his spare time, an actor.

Chraibi (1958) explained to the man what the work involved and on the next evening the man introduced the films and explained to the people what the program was all about. He explained that the program would not cost anything and that it was financed by the government of the people and assisted by international organizations. The clinics began to increase in size but the author indicated that all of the problems were still not solved. Apparently in Morocco there was a widely held belief that blood was the substance of the soul and six highly respected men of the community appeared to ask what became of the blood which the project personnel were taking from the people. Instead of attempting to explain, he took them into the laboratory where they could see what was being done with the blood. From that moment on, the success of the campaign was assured as the men suggested that the project personnel get in touch with the people whom the population trusted most: teachers, preachers, heads of welfare societies, etc. and invite them to give their blood first and then everyone would follow. The men began by using themselves as examples and also accompanied the local leaders in their rounds to canvas the population. Little by little the community began taking a hand in the direction of the campaign and the program rapidly reached the

maximum number of people to be served. He concluded:

> In this spontaneous way, we put into practice that important principle stressed by WHO, according to which "Health Education must begin with the interest of people in improving their conditions of living, and aims at developing a sense of responsibility for their own health betterment" (Chraibi, 1958, p. 148).

Milman (1959) has reported a health education program which was a part of the school curriculum in Russia. The author indicated that extra-curricular school health education was an indespensable factor in teaching health concepts because the process completed and strengthened the pupils knowledge, while taking into account individual interests. The author also indicated that it went side by side with official measures concerned with the prevention of tuberculosis, flu, vaccination campaigns, and dental health. This approach covered numerous fields ranging from basic ideas about personal hygiene to great achievements in medicine, progress in surgery, atomic energy, as well as problems of the aging, etc.

Various methods to get the material across were utilized: talks by teachers and doctors, lecture cycles, quiz sessions, special evening sessions with higher grade pupils reading reports on various problem areas, etc. Other methods of health education were also utilized where competitors were given a set of questions in the health field and the winners received a prize. Exhibitions were employed as well as poster displays, the showing of films and film strips, and the students were often taken to view health exhibitions at organized health education

centers. On the initiative of the Red Cross and Red Crescent Societies health posts were organized in the schools where the students made sure that all pupils observed health rules and kept the school building clean. The students also were concerned with the improvement of health conditions in their local town or village and in every school the members of the parents board took special courses to enlarge their knowledge in the area of health. The author concluded that the pupils of elementary classes with rare exceptions absorbed health ideas very well and picked up basic health habits quite easily. The children evidenced a deep interest and active participation when rational health education methods were used and also the level of knowledge of the parents in regard to health was rising as well as that of the teachers.

Gonzales (1959) described a health education program in Latin America and commented that up until 15 years ago, Latin America, as well as most other areas of the world, believed that health education was to be accomplished entirely on the basis of the mass media. It has however gradually become recognized by public health personnel that people were more apt to change health habits and utilize health services if there was a way of having direct communication with them. For some time the responsibility for this direct communication became the exclusive province of the health educator, but the trend was toward more health education utilizing public health teams.

Gonzales (1959) described one program in a Latin American country where a group of physicians were assigned to various towns and cities

in the interior of the country where they were to serve simultaneously as private medical practitioners and as part-time public health officers. They were offered a brief in-service training program on health education methods and the program was so successful that the physicians asked the Ministry of Health for additional seminars on health education in different parts of the country so that they might better learn how to educate the people in accordance with local needs, interests, and problems. Nurses also asked for similar health education training and expressed a desire for further opportunities to learn more about team work and how they could work most effectively with physicians.

The author also described a malaria eradication campaign in several Latin American countries and noted that in order to eradicate malaria millions of people in millions of homes had to be contacted many times over a period of several years in order to control the disease. This task would have been impossible employing only available health educators, so the solution has been to prepare all workers in the field of controlling malaria to also function in health education. An attempt was made to train them to do the kind of health education work which their personal resources permitted and their individual task required. The author felt that this approach reached many more people than would have been effectively reached by mass communications.

There was an increasing recognition that health education was not merely a means of communication of information about health but ". . . the creation of situations in which people themselves identify their health

problems, seek and select a solution best adapted to their needs and resources, and incorporate self-created habits and attitudes into their own way of life" (Gonzales, 1959, pp. 196-197). He indicated that the health education specialist had also begun to concern himself with the training in health education of technical personnel and also administrative personnel as well.

> We have learned that even with well prepared technical personnel there is little to be gained if the receptionist, the janitor, the warehouseman or the driver speak or act in such a way as to create a negative emotional climate on the part of those who experienced their first contacts with the public health center. We have learned that we cannot educate the expectant mother coming to the pre-natal clinic if her visit begins with a cold and impersonal contact with a receptionist who sees her only as one of a series of cards to be annotated and filed. We know now that a sanitarian accomplishes nothing if he deals with the humble food handler with the same warmth and insight as an automobile chassis travelling through an assembly line (Gonzales, 1959, p. 197).

Khalil (1960) described a health project in two villages in Libya. Both village groups included sanitarian students whose task was to organize a general cleanliness campaign, to work out a refuse collection and disposal system suitable to village conditions and to demonstrate the construction of a pit privy to stimulate people to build privies inside their houses. The two groups employed two different approaches; one group ignored the peoples' interests and culture while the other considered the people, their interests and their culture. The first group did not succeed in carrying out any of its functions and after failing to secure the cooperation of the residents the group hired trucks and laborers to do the cleaning job but it was evident that this cleaning procedure was

impractical because the villages could not afford it. The other group was very successful because they incorporated their general cleanliness campaign into a large fly-control program in which the people were very much interested. The team members arranged to spray the homes which were clean enough to merit spraying and 97 per cent of them were eligible.

There were numerous factors which combined to achieve success in one community and failure in the other but culture played a special role. The successful team approached the problems of constructing a model pit privy by linking the question of defecation in the open field with a religious prohibition. The religious leader tactfully brought this prohibition to the attention of the people and urged them to comply with the advice and to build privies in their homes utilizing the services of the health team. The religious leader also allowed the team to construct a pit privy within the compounds of the Mosque and personally helped in digging the pit which all the people in the village worked together to accomplish.

The group which failed ignored cultural factors at the outset when the team brought its equipment and walked through the village trying to choose the best location in which to dig the latrine. As a result, the village people refused to allow the team to dig in their village and hostile relations resulted. This team also failed to discuss their program with the people and attempted only to explain it to people who did not represent the community leadership. The team leader sent out an

invitation to all of the older people in the community concerning a meeting in which the program would be explained. He did not realize that in these villages the most important person in the family was the eldest son, as well as the school teachers, and the religious leaders. Since these people were not invited the whole program failed. The other team did not make such mistakes.

Khalil (1960) concluded that a number of things were learned from the two groups' attempts in the two villages. A lot of time was spent on various aspects of the two programs but practically no time was spent on studying the people who were to be affected by the programs. He felt that if they had spent as much time on studying the people themselves as they had on program policy the whole situation would likely have been changed and the programs would have been much more successful. He stated:

> Our scientific knowledge about health--no matter how great it might be--will not always help to solve the health problems of the people. When we speak in terms of public health we realize that we know too much about health! In fact, there is a wide gap between our knowledge of health and our knowledge of the public, and this wide gap accounts for most of our failures in modern public health practice. If we want to be more successful we should bridge this gap (Khalil, 1960, p. 140).

He indicated that it was encouraging to note that in the training of public health workers today the study of psychology and social anthropology has been considered as being as necessary as the study of many of the technological aspects of health. He noted that public health today no longer depended on what health specialists could do for the people but

it depended on what the people could do for themselves and therefore in the expression public health the people, or the public, was the most important part.

> Some health workers think that it is their job to solve the people's health problems. In fact we only say this for reasons of convenience, because it is the people who solve their own problems. In order to solve their problems, however, they must be made aware of them and must be motivated to work on them. In this, they need help, direction and technical assistance. We are there to give this technical assistance. In other words we are there to help the people solve their problems but we are not there to act on their behalf and solve their problems for them. It should come through their own efforts. Therefore, in any public health programme, people are the more important factor. It is not the physician, nor the nurse, nor the health inspector, nor the health educator, nor even all the health specialists combined. It is the people. And because the people are the more important, a study of the people, their conditions, their interests, their resources, their modes of living, their culture, must claim much of our attention when we plan for public health (Khalil, 1960, p. 140).

Zalduondo (1964) reported on a family planning program in Puerto Rico utilizing volunteers as health educators. A combination of a high birth rate and a rapid drop in the death rate have given Puerto Rico a population density close to 15 times that of the United States. The number of work opportunities have remained substantially the same as 20 years ago and the rate of unemployment ranges from 10 to 15 per cent. These conditions led the legislature of Puerto Rico to pass laws in 1937 which lifted the ban on contraception and authorized the Secretary of Health to provide contraceptive services in public health units and maternity hospitals on the island.

The author indicated that there has been, and is, strong opposition

to contraceptive programs on the island, the foremost of which has been the Catholic Church. Also, the public health service programs have been generally weak and non-aggressive. This situation led a group of demographers, university professors, a few heads of public agencies, a few physicians, and other interested individuals to initiate a planned parenthood program. The program settled on an approach employing an area supervisor for each of 19 areas on the island and a corps of 1,400 volunteer "leaders" who carried the family planning message and contraceptive materials directed to the users in slums, housing projects, and other locations throughout the island. The supply of professional personnel available was limited because of the lack of equal salary and tenure offers which existed in other agencies and also the fact that the work was disapproved by the Catholic Church. The constant travelling required and the hardships connected with it brought additional limitations to the selection and the job required skills in dealing with people and physical as well as moral stamina. The employees had to undergo attacks by the Catholic Church and by Catholic community leaders, making it very difficult to withstand such pressures in small communities where contact was so close.

Most of their supervisors came from the fields of teaching, nursing, and public welfare as well as salesmen, insurance agents, and two civic leaders. The project included both men and women and the primary criterion was that the candidates have the ability to deal with people, strong convictions on the importance of birth control, and the ability to

stand up under attacks by the opposition. The area supervisors task was to identify key people in each community and attempt to enlist their interest in the program, to hold meetings and carry on activities, to recruit, to train, and supervise volunteer leaders, to supply contraceptives to volunteer leaders and directly to persons who applied at their offices. The area supervisors were described as attempting to interview people in key categories such as the mayor, superintendent of schools, directors of health and welfare agencies, presidents of civic organizations, P. T. A. associations, agricultural extension agents, labor leaders, farmers, merchants, etc. and after acquainting them with the program the area supervisors asked for suggestions of people suitable to become volunteer leaders. These candidates, if they accepted, and proved acceptable, were then given specific instructions on the details of the program.

Some leaders were recruited from among those who came to local offices to seek contraceptive methods, others came to the attention of the area supervisors in the course of their educational meetings, and volunteer leaders themselves referred good candidates to the area supervisors. An attempt was made to secure leaders who were known to the members of their community and had their respect, who believed in the program, and had a spirit of service. It was felt that this approach was necessary to reach the prospective users of contraception because both slum and country people with large families who had the greatest need for such a service were the ones who found it most difficult to get to the

clinics. Zalduondo (1964) also felt that the plain simple talk of a friend or acquaintance had a greater likelihood of being listened to than would professional clinic employees. Leaders attempted to have their formal meetings in their homes to explain contraceptives and they also visited prospective cases judged to have a need for family planning. Also, users referred friends and acquaintances to the leaders and many people finding out by word of mouth came in to the leaders and requested the contraceptives for themselves. Some leaders, by the very nature of their work, were constantly in contact with many people. Among these were nutritionists, physicians, nurses, seamstresses, public car chauffeurs, and the like.

The leaders were visited monthly by their area supervisors unless they lived in very remote areas and the author noted that there was an attempt to make the visits a source of satisfaction and not a threat to the leaders and this point was stressed in the training of the area supervisors. An attempt was made by the supervisors to be a positive source of identification for the leaders and to provide them with a feeling of importance for the job being done. Each leader kept very simple records, having a notebook in which the name of each case and the date on which the contraception was given was recorded and the reason for closing of a case. The author concluded in regard to the approach:

> It makes ordinary people in a society active participants in the cause and increases their commitment to that cause. It increases community acceptance as others know these people and know that through them many others in the community are practicing birth control. It lessens the effect

> of attacks on the use of contraceptives as such attacks cannot avoid being attacks against the respected people who are distributing the contraceptives. The attacks are opposed by the personal respect in which the volunteer "leaders" are held by their neighbors (Zalduondo, 1964, p. 307).

Unfortunately the author does not include quantitative data on the numbers of people reached by the volunteer leaders (although it was stated that such data was in existence) and the absence of such data makes it more difficult to determine the impact which such a program could have.

Towle (1960) described a mass immunization program in Pakistan utilizing a Hypospray Multidose Jet Injector gun. The instrument is relatively light, compact, and functions by forcing the vaccine through a minute opening under high pressure so that the vaccine penetrates the skin and enters the subcutaneous tissue. The entire process of loading the discharge chamber and innoculating the patient requires only a few seconds. The author discussed a number of problems in regard to immunization in Pakistan and indicated that the psychological aspect of the use of the syringe and needle was a considerable obstacle to immunization anywhere in any population of any country and many people actually objected not only to the sight but the idea of the needle.

He noted that this was especially true in East Pakistan where so many of the population were relatively uneducated villagers. The project team consisted of the author, a doctor, and two sanitary inspectors who set out to employ the gun in immunizing against cholera which attacked over 15,000 persons a year in East Pakistan and resulted in 10,000

deaths yearly. The mass innoculation program was highly successful, the two jet injector guns immunizing thousands of persons daily, with the highest figure for one day totaling 6,759. In the urban areas it was clear that one injector gun could do the work of 25 or 30 men. The jet injector guns were also used in the rural situations where immunizations were given on a village-to-village basis throughout the rural area of East Pakistan. The villagers were informed of the expected time of the arrival of the mobile clinic by village officials who served as registrars, night guards and tax collectors, and the arrangements and selection of clinic sites were left in the hands of the village leaders. Only one machine was used in this operation and the average rate of innoculation was 1,340 per day. Despite the smaller figures for the rural area when compared to urban areas, the jet injector gun was still doing the job of 13 men compared to innoculation rates of people who had previously worked in this area.

In discussing the results Towle (1960) reported that the cooperation and interest of the village leaders was a key element in the success of the program. In two of the villages the leaders were energetic persons who completely believed in the program and went personally from house to house before the arrival of the clinic urging the people to come forward. These efforts resulted in the innoculation of 95 per cent of the population of these two villages and the percentage of innoculation in the other villages seemed to vary proportionately with the interest and effort of the leaders. The author noted one other important cultural point in

regard to immunization programs when he described one village where a disproportionate number of males were immunized. The site which was selected by the officials was on the police station grounds in the center of a large open area and there was no way in which the women could approach the clinic with protection from the eyes of many men gathered there. Consequently few women came forward and this indicated that the site for immunization clinics must be selected with careful consideration of local customs.

It should perhaps be pointed out that these cross-cultural studies, though enlightening, are not generally of a quantitative nature. Consequently, their impact is somewhat difficult to evaluate.

Utilization of Indigenous Personnel in Health and Social Service Programs

The utilization of indigenous personnel in various social service programs as noted earlier is not a particularly new, radical, or unique idea even in this country. Kobrin (1959), in what he called a 25-year assessment of the Chicago area project which was initiated by Clifford Shaw for the prevention of delinquency stated, "In all probability the Area Project was the first organized program in the United States to use workers to establish direct and personal contact with the 'unreached' boys to help them find their way back to acceptable norms of conduct" (p. 27). The philosophy of the Area Project was based on the assumption that young people were responsive principally to the expectations of

their intimate groups such as the family, peers, and neighbors. The major activity of the Area Project program was the development of youth welfare organizations among residents of delinquency areas, and neighborhood groups were encouraged to employ qualified local residents to carry on the work.

Kobrin (1959) discussed the problems of the Chicago Area Project in measuring its success in a simple and direct manner, and commented that many other social service programs had similar difficulties. He cited two reasons for these difficulties which have implications for the present study.

> For two reasons the simple and satisfying laboratory method of the control experiment is difficult to achieve in measuring the effects of the program. First, it is virtually impossible to find groups which are identical in all major respects save that of participation in a given program. Second, there exists a widespread and understandable reluctance to deny to systemmatically selected segments of homogeneous groups the putative benefits of programs, a procedure which does produce an approximation to a control group (Kobrin, 1959, p. 20).

The assessment of the Chicago Area Project had to rest therefore on an appraisal of its experience in carrying out procedures which its founders and supporters assumed to be relevant to the reduction of delinquency. One of the primary postulations of the Area Project was concerned with the problem of developing collective action toward delinquency. A commonplace sociological observation suggests that people support and participate only in those enterprises in which they have a meaningful role and that organized activity of people everywhere flows

in the channels of institutions and organizations indigenous to their cultural traditions and to the system of social relationships which defines their social groups. "Consequently one could not expect people to devote their energies to enterprises which form part of the social systems of groups in which they have no membership" (Kobrin, 1959, p. 23).

It is this writer's contention that empirical evidence in the last 30 years has consistently reinforced this position. It seems equally evident from this writer's review of public health literature that public health personnel generally are either ignorant of, or choose to ignore, existing social science evidence. Kobrin indicated that the Area Project program regarded as indispensible to the success of the program the participation of those who formed a significant part of the social world of the recipients of help and it was further felt that no solution of a basic and lasting character was possible in the absence of such participation. He described some of the advantages of employing qualified local residents in social service programs which seem to this writer to be just as valid and just as relevant today as they were 30-plus years ago. He stated that the indigenous worker usually possessed a natural knowledge of the local society and he was hampered by none of the barriers to communication with residents which non-residents, especially those identified with "welfare" organizations tended to have. Also his employment indicated that the Area Project had confidence in the capacity of the area residents for work of this nature. The indigenous worker was also more likely than the non-resident to have access to the delinquent boys in the

neighborhood and therefore to be more effective in redirecting their conduct. Also his employment represented a means of educating the local population in regard to the mysteries of conducting the welfare enterprise.

The Area Project also utilized other techniques in attempting to involve neighborhood residents which were quite successful but which 30 years later have been little tried generally by social service organizations. The 1960's have seen some of these approaches attempted by various social service organizations in a somewhat sporadic manner, but as a general approach they have never been utilized by social service organizations. In the Area Project neighborhood groups either exercised the power of veto in the assignment of staff to function as their executives, or more frequently they nominated a qualified local resident as their executive who was then employed as an Area Project staff member. Also staff members were required to function as representatives and spokesmen of local groups rather than as representatives of the Area Project central office which it was felt fostered an identification of the worker with the point of view and the needs of the local group.

Kobrin (1959) concluded that the two and one-half decade operation of the Chicago Area Project had above all ". . . justified the assumption made by Clifford Shaw and his associates that persons residing in these localities have the capacity to take hold of such problems and contribute to their solution" (p. 27). An explanation of why indigenous personnel have not generally been employed in social service

organizations in this society until quite recently is extremely complex and is outside the scope of this study. In recent years the literature in public health and related areas has increasingly pointed out the health manpower needs in this society and suggested that indigenous workers could be highly effective in meeting some of these needs.

Riessman (1964a) has reported that in recent years there has been an increasing trend toward using non-professionals in work with low income people because professionals, with middle class backgrounds and college training, often find it much more difficult to make contact with the poor than do indigenous non-professionals. Such indigenous non-professionals serve a mediating role between classes and such a role has been found to be a very useful one. They are being used, for example, as workers with delinquents, interviewing, and as parent education aides in school. He briefly described the "Mobilization For Youth" program in New York which acted as a bridge between low income groups and the community resources which were available to provide support and help for such groups. They were involved in providing information about the school system and public transportation, in teaching skills such as budgeting, home management, and child care. They acted as intermediaries in dealings with governmental and other bureaucracies which poor people have generally felt inadequate to deal with. They also offered the direct services of nurses, baby sitters, home makers and escorts to ease the burdens of low income people and to allow available vocational, medical and other community services to be utilized more fully. They have also

served to offer immediate help in time of trouble or emotional distress of low income people.

Riessman (1964b), in another article, indicated that schools throughout the country were employing increasing numbers of "team mothers" and parent education coordinators for such things as vision and hearing screening, escorting students on field trips, and in operation of movie projectors and other equipment. He also indicated that Arthur Pearl had used former juvenile offenders as interviewers and to help conduct research on delinquency. Riessman felt the utilization of indigenous non-professionals would be considerably expanded in the coming years because the expanded servicing of the poor produced many new jobs and also many middle class professionals, social workers and teachers were reluctant to work with the poor so that the supply of professionals was shrinking at precisely the time the demand was increasing. Also these non-professional jobs themselves functioned as opportunities for a larger number of people from lower socioeconomic backgrounds and thus directly served to reduce poverty by transforming dependent welfare cases into home makers, delinquents into researchers, and students into tutors. He also felt that the new non-professional provided an excellent model for the low income community.

Riessman (1964b) suggested that probably the most important function of the non-professional was in serving as a bridge between the poor and the larger community, especially the schools and social service agencies. Most social service agencies have emphasized one-way

communication, that is, they wanted people to be receptive to doing what the agencies considered was good for them. However, a real bridge means two-way traffic, and across that bridge the social service network was learning who the disadvantaged were and what they needed and the poor were learning that help was available and by what means and efforts that help could be made most effective. Riessman emphasized that merely coming from the same class as a client was not in itself enough to make a good worker and that native non-professionals must be carefully chosen and trained. He quoted Herbert J. Gans' description of this problem in his book The Urban Villagers.

> These non-professionals should be people who have themselves come out of lower-class culture, and have successfully moved into a more stable way of life. . . but have not rejected their past. Many mobile people tend to turn their backs on the culture from which they have come, and become more hostile toward it than anyone else. Yet. . . some people, in making the change, have developed a considerable amount of empathy toward both old and new culture. . . While these empathetic people exist in large numbers, they are hard to find. . . Most of them never use their talent--for it is a talent--to mediate between the classes. They must be sought out. They seldom know the value of what they have. They often still carry the psychological marks of the lower class on them and are very conscious of the great gap in training between themselves and professionals (Riessman, 1964b, 1. 13).

Riessman discussed several problem areas in regard to utilizing non-professionals which have particular implications for the present study. He discussed the problem of over-optimism of the non-professional turning into defeatism and indicated that probably the best approach to avoid this was to set up a plan of operation, including a time table

which included setbacks, and against which a worker might realistically measure his progress. He also indicated another problem was that the worker must not only relate to his clients but that he somehow had to work out a satisfactory relationship with his professional colleagues and supervisors. He noted that it was no secret that friction existed between the two and that many professionals had difficulty accepting the idea of the worker who did not have the appropriate initials after his name.

Non-professionals were often unsure of themselves and sensitive to slight and sometimes small, apparently incidental things led to friction such as frequent changes of roles or the lack of proper working quarters, the uncertainty of the non-professional in regard to his status and position, his frequent non-acceptance at the initial stage of a program by the professionals and other agency personnel. Reissman concluded that the non-professional should have careful training and preparation before coming into contact with professionals and that they should know their roles, rights, responsibilities, and the regulations and directives that were relevant to them, and that their skills and confidence should be developed before they have much professional contact.

Grant (1965) discussed several ideas and problems which have implications for the present study. In demonstration programs the statement of program assumptions and goals and the framing of testable hypotheses was difficult and time consuming. Also, the staff on demonstration programs quickly became caught up in getting the multifaceted

program underway and planning for research evaluation was often relegated to the last when it was too late to plan properly. There was often a good deal of impatience on the part of the people involved in social action with researchers generally, particularly when research was seen as a way of delaying the implementation of a new program and even well-intentioned staff found that research and program goals were at times in conflict.

Grant also discussed the role of the non-professional person in regard to research done by universities, suggesting that as they are presently structured, they offer no scope for the non-professional. She found that their use was in temporary interviewing or coding positions on projects run by university institutes or departments and that even here graduate students generally had first call on employment. Grant suggested that perhaps universities could alter the way they did research and the way they trained researchers and that the collaboration of university faculty and graduate students with non-professionals who were part of specific social problems--the delinquent, the school dropout, the mentally ill, the economically displaced, the minority group member--could revolutionize teaching and research approaches to such problems and might alter drastically the kind of social science data collected as well. Grant proposed that if social agencies and the governments which they serve were to proceed rationally in expenditures of funds for the public good, research must be a part of their everyday operation and that just as industries have built-in fiscal accounting and quality control

procedures, social agencies should also have built-in operations accounting and quality control. She concluded, "Not every university graduate can do research. Not every non-professional has the talent for it. But there is a sufficient shortage in the supply of professionally-trained researchers, and sufficient evidence that non-professionals can be trained to fill this gap, to suggest research as one of the most promising new careers" (Grant, 1965, p. 121).

Goldberg (1965) reported a program of untrained neighborhood workers in a social work program which revealed that one of the most important aspects of the program was the education of professional personnel by the indigenous staff. In addition to developing the professional staff's understanding of cultural poverty and of various ethnic groups and underprivileged minorities, the indigenous worker helped the professional know how he was perceived by these groups and how certain of his methods and techniques were viewed by lower class clients. She also noted that there were certain community tasks which non-professional personnel such as home makers could perform, as for example, in situations where community resources such as public clinics were underused because of poor transportation. The failure to obtain medical service was not simply a matter of self-defeating patterns of behavior; in such a situation indigenous workers could involve residents in a campaign to secure adequate transportation. Both the work of Goldberg and Grant encompasses only one segment of the book by Pearl and Riessman on New Careers for the Poor (1965). This work contains an excellent

theoretical explanation of a rationale for the employment of indigenous non-professionals and it has an excellent section on the training of non-professionals. It also contains a relatively extensive list of references of materials in this area. Unfortunately, however, a considerable amount of this material has not yet been published, and the lack of studies of a quantitative nature is strikingly evident.

Turning now to the somewhat more specific area of the utilization of indigenous personnel in public health programs, an increasing number of articles have begun appearing in the literature pointing to the need for such personnel in the various areas of public health programs. Cornely and Bigman (1963) discussed some considerations in changing health attitudes in a low income Negro area and a low income white area in Washington, D. C. Their findings were quite similar to those which have been discussed previously in regard to low income people. They concluded, however, that official and non-official health agencies could perhaps do a better job of health education if they considered utilizing some other techniques.

> Just as practical nurses have been found useful in hospitals, so what may be needed are practical health educators who come from the same environment as the families being served, talk their language, who are well acquainted with their indigenous leaders, and who can thus better communicate with them and motivate them toward better health habits. Such persons would of course have to work under the guidance of professionally trained supervision. Another method for spreading health information might be to send 'roving' health educators into neighborhoods to work in a way similar to the 'detached workers' in anti-juvenile delinquency programs. They could carry health information into barber shops, pool halls, beauty parlors, or small independent churches.

> All public health agencies need to show a great deal more imagination today in getting their message across to the public that needs it most (Cornley & Bigman, 1963, p. 28).

Rosner (1964) discussed some of the techniques for meeting personnel shortages which the New York City Health Department has recently employed.

> The use of the less well-trained or non-professional employee, to perform some of the duties and tasks traditionally assigned to the professional staff member, should be given careful consideration. An integral part of any study to determine the feasibility of assigning certain duties to non-professional personnel should be a well-planned and carefully executed audit of the job components of the professional class of positions under review (Rosner, 1964, p. 622).

Soller (1960) described a nurses aide program which attempted to train low income non-professional personnel to adequately perform the tasks which are required of them in working in nursing homes. She indicated that the 1958 Oklahoma State Inventory of Homes showed a nursing staff of only 14 graduate registered nurses, 35 licensed practical nurses and 1200 nursing aides giving care to patients in nursing homes in the state. She concluded, "It has been demonstrated that such training programs can contribute to improved patient care but that many related problems remain unsolved and require further study (Soller, 1960, p. 290).

Justiss (1960) reported a county homemaker program in southern Texas which supplied low income non-professional personnel through the county welfare department to provide light housekeeping, cooking, and child care for families needing this service which were on the county welfare roles. The author indicated that since the program had been

initiated there had not been a single instance of a mother returning home from the hospital against medical advice. The homemaker assisted the parent or parents in preparing the budget and in working on disciplinary problems with the aid and support of the case worker. The author concluded that although the homemaker program was far from perfect it was serving a definite purpose in Texas by preserving families and saving the children from having to go to foster homes.

Stanford (1959) described a homemakers service program in New Jersey. She stated, "Homemakers are mature women selected for their personality, dependability, good health, and special interest in working with families in which there is a family crisis" (p. 383). The homemakers did light housekeeping such as setting the house in order by straightening up, washing the dishes, and cleaning the house. They planned or actually did the marketing, depending on the availability of others in the family, sometimes prepared meals for the family and often prepared special meals for a member of the family who was a patient. From the standpoint of the community, the homemaker service acted to free more hospital beds for the acutely ill, possibly decreased demands for custodial facilities, and possibly reduced the cost of avoidable institutional care.

Samis and Halpryn (1965) described a television-based training program for nurses aides where there were some 2,500 nurses aides in 98 nursing homes scattered over nearly 400 square miles of New York City. There was general agreement among social service agencies that

nurses aides were responsible for about 90 per cent of the nursing care given to patients in nursing home facilities. The training program was most effective for the least well prepared student and two-thirds of the aides benefitted from the program to a significant degree.

The literature is becoming increasingly filled with studies of the nature of these just cited. To a considerable degree the utilization of indigenous non-professionals in such programs to perform high specific, low skilled, tasks does not generally challenge them and they do not begin to utilize many of their special talents. These tasks of course are necessary and essential. However, there are many other vital and important roles which indigenous non-professionals can play as is evident from some of the cross-cultural literature previously cited. This writer has found it interesting in surveying the literature that the United States Public Health Service has occasionally seen the need to employ non-traditional approaches in attempting to reach certain groups by utilizing indigenous non-professionals to perform a considerable number of services of a very challenging and important nature in trial programs.

Bundesen, et al (1957) described a program in Chicago, Illinois which attempted to stimulate the acceptance of polio vaccine in epidemic areas by use of personal contact in a door-to-door survey. Because personal contact was felt to be so important, all Chicago Board of Health personnel including the president and his entire executive staff were involved in making a survey in the epidemic area. The survey which was completed within ten days, was accomplished by special vehicles equipped

with public address systems which traveled continuously in the epidemic area urging parents to bring their children to their doctors or to the free clinics operated by the Board of Health throughout the area for the free innoculations. The results of the survey disclosed that approximately 43 per cent of the children in the epidemic area had not received one vaccine innoculation, notwithstanding the tremendous of urging in the media of mass communication. Also 46 per cent of the most susceptible children, those who were four years of age and under, had not as yet received any vaccine. They stated:

> However, the continuing close personal contact of our personnel during the survey with persons living in the high incidence areas resulted in a greatly increased acceptance of vaccine by those segments of the population. This intensified use of personal contact in conjunction with the mass mediums of communication resulted in obtaining an innoculation rate of over 18,000 eligible persons per day. Our experience has been that aggressive, persuasive, and almost daily personal contact is one of the most effective methods developed by us to arouse the public to acute public health problems, and this is especially true during acute emergencies (Bundeson, et al, 1957, p. 1611).

Speers, et al (1960) described a polio immunization project in Des Moines, Iowa which was especially directed toward a high polio incidence area which was not responding to mass media appeals. A special clinic was opened at a settlement house in the area and in addition, volunteers were recruited and trained by the local chapter of the National Foundation of Infantile Paralysis to carry on a door-to-door educational campaign. No description was given as to the characteristics of the volunteers but the authors did state:

> Each family in the area was visited, the dates and times of the clinic were explained, and all were encouraged to obtain necessary vaccinations. In all, this clinic vaccinated over 3,000 persons. It was felt that many of these would not otherwise have sought vaccination. The clinic was therefore continued until late in the epidemic, even though the cost per injection was considerably greater than in the other public clinics (Speers, et al, 1960, p. 866).

Reinstein (1953) reported a project which attempted an evaluation study of what the public notices during an X-ray drive. Information was obtained on how people first learned of the program, what media they obtained the information from, and which source of information they considered most effective in bringing them out. This method gave a fairly good indication as to what brought the people out for chest X-rays, but it gave him no clues concerning the large numbers of people who did not turn out at the X-ray clinics. He decided to conduct interviews in three Dearborn, Michigan communities and found that in one semi-slum area only 110 persons came for their X-rays at the mobile unit. Eleven interviewees said that there were no home visits, no school contacts, and only one newspaper contact was mentioned. In three of the 11 interviews the people listed caretakers as the source of information. He concluded that this section of the community had large numbers of people who were foreign born and who came from countries where janitors and caretakers apparently were quite influential and powerful people in their communities.

Reinstein (1953) reported that a concentrated selling job was done with the caretakers in the area and their support was enlisted in attempting

to get people to come in for their X-rays. They proved to be very effective in convincing the people to come in with the result that 595 chest X-rays were taken at the same location where only 110 had turned out in the same period of time two years previously. The home visitation program was also evaluated and it was learned that the home visits were made rather hurriedly and frequently not at all by volunteer interviewers. In one city, women volunteers met and worked out a plan for home visits, while in another community all the groups approached for the purpose of interviewing seemed to be tired of the multitude of home calls which they were asked to make and felt that the home drives by volunteer workers were unnecessary. In this community Boy Scouts were asked to distribute leaflets at every door. The results were striking and in the community where home calls had been organized and conducted by adult volunteers twice as many people came out for their chest X-rays as did in the other city.

Polk (1965) described the utilization of health workers in ringing doorbells to encourage people to come out and be immunized in mobile units, but no description is given of what types of health workers were employed. Denson described a program utilizing the personal contact approach to immunization but indicated "The State Merit System required that all persons filling the position of public health representative have a college degree. This assured that a capable and responsible person was employed for the position" (1965, p. 40). This would hardly seem to meet the criteria for indigenous personnel as defined by Hicks,

"Persons. . . who had demonstrated leadership ability, had shown interest in helping their neighbors, and who were typical members of their neighborhood" (1965, p. 1).

These programs represent approaches to reaching low income groups which differ from the mass media appeals, general health education programs, and public health nursing visits in attempting to get people to come in for their immunizations.

Several United States Public Health Service programs have gone considerably beyond these descriptions of immunization programs, however. For instance, Deuschle and Adair (1958), McDermott, et al (1960), and Deuschle (1963), described the need for, and the use of, indigenous personnel among the Navajo Indians. Deuschle (1963) reported a program for the training and use of Medical Auxiliaries in a Navajo community. The Navajo tribe is the largest in terms of population and in the size of their reservation of all Indian tribes. The study attempted to determine the proper concerns of a health program for a rural minority group and to develop the practical means for the delivery of necessary health services in a form which was acceptable to the people. A major element of the program was the training and employment of Navajo Medical Auxiliaries to supplement public health nurses and field physicians.

Deuschle (1963) indicated it was necessary to have some acquaintance with the Navajo reservation, its people, and its way of life in order to understand the need for indigenous Medical Auxiliaries. Many

sections of the reservation were practically inaccessible in bad weather and horses and wagons outnumbered motor vehicles but as many as one-third of the families had no means of transportation and less than one-half of the Navajo families had radios. Further, in a survey of Navajo mothers in the child bearing age, 75 per cent of them could not speak or understand English. As a result of these characteristics, communication was primarily on a person-to-person basis.

Previous to this program Navajo non-professional health personnel were mostly female nurses aides who served in the hospital and outpatient clinics and male "driver-interpreters" who were the only nurse assistants used away from the medical facilities. These personnel were not formally trained to translate health and medical information and they were not trained in more complicated nursing procedures such as tuberculin skin testing or the intramuscular or subcutaneous administration of vaccines or drugs. Both medical and social science investigators participated in teaching, research, and service work, because it was believed that medical service and research methodology could best be designed when the knowledge and techniques of both behavioral science and medicine were incorporated from the outset. It was felt that the Navajo Auxiliaries should be expected to understand the basic facts about health and disease and to be able to interpret them in the Navajo language and in terms of the Navajo culture. They were also expected to carry out selected nursing procedures under the direction of the public health nurse in the field, clinic, home, and school. They were

expected to collect demographic and health information, to keep accurate records and to recognize emergencies and administer first aid until the patients could be taken to a physician or nurse.

Eight persons were trained as Medical Auxiliaries, being composed of men and women who were selected largely for their interest in health work and willingness to undergo training. Since Navajo leaders had told the project group that their people would show the health worker more respect if he had "a few grey hairs on his head" the trainees selected were over 25 years of age, with one exception. All of the trainees except one had had an extended period of hospitalization for tuberculosis, initially because the project personnel had long term acquaintance with these people during their hospitalization and therefore could evaluate their basic interest and intelligence. They later felt that these people could testify to other Navajos that they had recovered from tuberculosis by following the doctors orders and taking drugs. This was considered to have done more to help get the program established than any amount of information on the germ theory could have done since it was thought to be beyond the level of the Navajo educational experience.

The project personnel chose Navajos from various educational levels since their ability to interpret both language and cultural differences was not felt to have a high positive correlation with the level of formal school education. "Continuity of living in Navajo communities adn ability to speak the Navajo language well have in fact proved to be of greater value to the program than formal education" (Deuschle, 1963,

p. 465). Of the eight people selected for the program, only one had graduated from high school. The training initially placed emphasis upon linguistic studies with the trainees being drilled in bilingual transmission of medical concepts by one of the few Navajo nurses with bi-lingual proficiency. Visual aids were known to be effective among the Navajos so anatomical charts with legends in both Navajo and English were constructed and the trainees revealed that although the Navajos had an extensive terminology for the skeletal system they had virtually no terminology for the circulatory and nervous systems. The curriculum also included aspects of normal growth and development, pre-natal, infant, pre-school and school health, and geriatrics. Also elementary principals of epidemiology, immunology, sanitation, nutrition, dental care, and family life were taught. Teaching was especially focussed on disease conditions resulting in infant diarrhea and tuberculosis. Some of these concepts were new to the Navajo and they required the invention of new words to make the translation into Navajo practical.

Deuschle (1963) also noted that through the necessity of revising the material for the vocabulary of the lower educational level of the Navajos, and for the cultural differences, the professional workers were able to perceive how in the past many of their explanations were complex and of little use to Navajo patients. They had not previously realized, despite their long experience on the reservation, how ridiculous many of the scientific explanations sounded when they were translated.

Training in numerous nursing procedures was another vital part of the program. The trainee learned to conduct and record initial health interviews in the clinic for the physicians' review, to direct patients in and out of examining rooms, and to obtain simple measurements of height, weight, and blood pressure. The trainees administered visual and auditory tests, operated the electrocardiograph machine and cleaned and sterilized medical instruments and equipment. They also administered, under supervision, intramuscular and subcutaneous injections of streptomycin, penicillin, and a variety of vaccines as well as administering and reading tuberculin skin tests.

Upon entering the field, the trainees were expected to visit their assigned families every three months, keep records of their visits, and to discuss problems which they encountered with the nurse in charge. In the field they also provided preventative services such as immunization, advice on the feeding and care of infants, care of the aged, and occasionally provided simple nursing service to the sick. They also assisted in the school health programs. Family heads who were interviewed generally expressed satisfaction with the performance of the Medical Auxiliaries and a number of them expressed a desire for the workers to spend more time with them on each visit and to discuss health problems more generally rather than to just perform specific tasks. The Navajo Auxiliaries were interviewed, and they all agreed that it took three or four visits before a family became friendly and at ease unless the health visitor was a relative. They also agreed that the

most difficult subjects to explain to families were immunizations and the need for X-rays.

Those trainees who had been previously hospitalized found that their own experience was a tremendous asset not only in enlarging their own understanding of sickness and medicine, but also in their reception by the Navajo patients. The nurses and doctors in the Government program were enthusiastic about the work of the Navajo Auxiliaries, especially as skilled in medical interpretation as they were. After a trial period each trainee was accepted as a permanent government employee. Deuschle stated:

> There appeared to be unanimous agreement by those participating in the evaluation process that Navajos with restricted or limited education could be trained individually or in small groups to carry out clinic and field work under supervision. The project staff also learned that a single public health nurse could effectively supervise four Navajo assistants. The radio telephones facilitate communication between the Auxiliary in the field and the nurse and the doctor in the clinic, and this technique increased the scope of professional surveillance over the trainees. The Auxiliary health workers have not gone beyond the limits of their training. They have not tried to practice medicine (Deuschle, 1963, p. 468).

The author noted that the term "Auxiliary Worker" was defined by the World Health Organization as a designated paid worker in a particular technical field with less than full professional qualifications who assists and is supervised by a professional worker. He also quoted a World Health Organization statement that "For the foreseeable future, and probably for many generations to come, the Auxiliary health worker will be an essential member of the team providing health and medical

services" (Deuschle, 1963, p. 468).

It should be emphasized that in the tuberculosis work as well as in all other therapy and immunization, patients were first seen in the clinic, with a follow up in the field by the health Auxiliaries. He also noted that there was a popular belief in development assistance programs that the professional technologists should learn the language of the people with whom he is working. He stated:

> . . . that as an ideal, this is above reproach and certainly should be realized whenever possible. In actuality however, when one considers the many countries in which several languages are in current use and the necessity for assigning highly specialized workers such as physicians from one culture to another, there are many times when it is obviously impossible for the technologists to learn the language well enough to use it in his profession. A poor native interpreter is a serious barrier to communication, but a physician's imperfect knowledge of the indigenous language can be just as disastrous. The physician's mastery of a few helpful phrases in directing or greeting persons in the clinic, however, establishes good rapport with patients.
>
> In order to utilize the full benefits of scientific training across a formidable cultural and language barrier, such as that which hinders our relations with tribal people, it is better for the physician to learn the principals of conceptual transfer and spend the necessary time training his interpreters and himself in the medical concepts of the two cultures. When he is acquainted with the cultural matters involved in the particular exchange, he is far less apt to overlook areas of importance in his interviews with patients. To some extent, this danger of inadequate probing is present in any physician-patient interview, even when both are in the same culture. The only difference is that in the cross-cultural situation, in addition to the self-discipline which the physician must maintain for himself at all times at such interviewing, he must also require that the interpreter likewise maintain such self-discipline.
>
> As for behavior and values related to health, the Navajo Medical Auxiliary was in an intermediate position

> between the physicians and the patients. They participated in Navajo curing ceremonies, while believing also in the effectiveness of modern medicine. To the acculturated individuals, both systems were essential to health. They identified with the patient and his relationship to the physician but were also sympathetic with the patients needs for and relationship to the medicine man (Deuschle, 1963, p. 469).

McDermott et al (1960) continued this same theme when they stated:

> The principle lesson already learned, however, is that for effective interchange it is necessary for both the physician and the interpreter to acquire a very considerable body of information concerning the disease concepts in the two cultures. And the educational effort necessary to train the interpreter in "western" medical concepts is very little less than that necessary to train him as an effective subprofessional technician. Consequently, at least in the specific case of cross-cultural work in medicine and health, there is no real place for a special training-school for interpreters. It is more realistic to go the whole way and train the subprofessional Auxiliaries of the physicians and nurses (McDermott, et al, 1960, p. 284).

Adair and Deuschle (1958) stated:

> All the physicians technical knowledge in explaining the nature of the illness, the plan for treatment and follow-up recommendations must be funneled through the interpreter. The extent to which the physician can communicate with the patient depends on how effective the Navajo interpreter performs his job. Eventually the interpreter who is well-used (and has been well-trained) becomes, so to speak, the instrument of the physician (p. 20).

The authors further noted that the selection of medical interpreters is a complex problem and that as yet there have been no standards set, or systematic selection methods devised. They stated: "Usually doctors are attracted to interpreters with whom they have the best rapport, who speak the best English, have the nicest 'appearance' yet whose ability in speaking their own language--which may have suffered from years away

from the Reservation while in Government boarding schools--remains untested" (Adair & Deuschle, 1958, p. 20). The authors also suggested that even in the urban clinics in this society where there was no apparent language barrier, the level of communication between the physician and the patient, and of the patients understanding of his own disease as revealed by the doctor, was far from satisfactory. They felt that the situation in doctor-patient relations on the Navajo reservation was not so different in kind from these problems but was intensified in several particulars and that physicians unsophisticated in Navajo ways could easily get into difficulty in evaluating certain situations that occurred in the clinic or hospital.

For example, they noted that Navajos were so-called "good patients" because they accepted and endured certain painful procedures stoically which could lead unwary physicians into thinking that the Navajos did not experience pain as sharply as other patients. "A notable illustration of this point had to do with an obstetrician who administered a minimum of analgesics for his Navajo patients in labor on the assumption that the Navajos felt very little pain since they probably experienced a more natural reaction to childbirth" (Adair & Deuschle, 1958, p. 21). After this obstetrician completed his tour of duty the physician who succeeded him administered much larger doses of analgesics. Very soon thereafter the obstetrical patient load at this Navajo hospital increased sharply. When some of these Navajo women were questioned as to why they were coming into the hospital they replied: "to have a baby without

pain!"

The authors made another statement which perhaps still has widespread relevance to the field of public health today:

> The job of the public health administrator on the Navajo Reservation is difficult indeed. One example of a dilemma with which the public health officer must struggle will serve to illustrate the point. The Navajos do not have the same concept of time as we have in our society. Thus the sick Navajo living in the bottom of a canyon may decide to saddle his horse and to ride to the nearest field clinic to obtain a medicine late Friday afternoon. When he finally arrives at the clinic on Friday night he finds the clinic doors locked and the doctor away for the weekend. The Navajo patient cannot understand why he does not get medical service after his arduous trip to the clinic. The problem which the public health administrator must resolve is how to keep the professional staff on a reasonable work schedule and yet be able to provide adequate medical care to the Navajos who live in a vastly different cultural framework.
>
> Thus, the degree to which the public health administrator is successful in carrying out a health program depends on his ability to evaluate these cultural differences and adapt his program accordingly. He must take cognizance of the lack of community organization as we know it and of the extended family system tied closely to the clan organization. These present a series of cultural differences to the public health administrator which are more like those encountered in the rural areas overseas than in other parts of the United States (Adair & Deuschle, 1958, pp. 22-23).

Harrison (1965) described a program for training village health aids in Alaska which was initiated by the United States Public Health Service to attempt to promote an active community health organization, to raise the general health knowledge of the villages, to provide health resource personnel on a non-professional level, and to provide adequate first aid treatment in inaccessible areas among the Eskimos. The level

of health among the Eskimo has been known to be poor for many years and tuberculosis has depopulated entire communities as has measles and other communicable diseases. The tuberculosis rate in the study area was 881 per 100,000 population and this rate was many times higher than that of the rest of the United States which was about 30 per 100,000. The establishment of a health aide in each village to act as a liaison between the village and the nearest hospital was introduced in 1947 and has grown rather informally since then out of necessity.

Harrison (1965) indicated that there have been several efforts to improve and expand the program through the years as health aides have been appointed and informally trained by physicians and public health nurses but that their abilities and effectiveness varied tremendously. The health aides had the responsibility of reporting cases of sickness or injury to the central hospital via short wave radio or letter and the physician prescribed treatment from standard village formularies developed by professional health personnel for use by the aides. Occasionally it was necessary for the health aides to use their own judgment in caring for critically ill patients and in most cases they exercised excellent judgment. Also the village aides gave medicine and injections from an official stock of drugs and did minor procedures such as soaking, heat application, and applying splints and dressings.

Some of the village aides were midwives and were primarily married women with children, having little formal education but having demonstrated a high level of ability and intelligence. All but two of the

health aides worked without pay. He concluded:

> . . . the future role of health aides in Alaska is difficult to ascertain. Bringing the health of the Eskimo to the highest possible level is a complex process that depends on the general economic progress of the people and the area. If the area progresses rapidly toward economic solvency and medical care becomes more available, the work of the health aide in the Kotzebue area should be phased out or converted into a more general category of community health service than currently proposed. However, if the present conditions of isolation and substandard health environment persist, the position of the health aide will need to be elevated with central, intensive training programs and organizations (Harrison, 1965, p. 572).

There are only a small number of studies in the literature which this writer has been able to find in which the United States Public Health Service has attempted to utilize indigenous non-professionals whose roles were so broad and whose tasks were so extensive and varied. It is interesting to note that both these programs initiated by the United States Public Health Service involved rural, isolated, minority populations. It would be interesting, but outside the scope of this study, to speculate on some possible explanations of this situation. It is entirely possible, however, that the Public Health Service program was implemented primarily because there were no competitive medical services in these areas. It should be noted, as did Adair and Deuschle (1958), that the problems of low income, minority groups in almost every major metropolitan area of this country do not differ in kind, or extreme degree, from those of the Navajo and the Eskimo.

Both of the studies just cited give some indications as to the effectiveness and flexibility of indigenous non-professionals in public health

work. Both studies however, were of a nonquantitative nature, and therefore provide only descriptive indications as to their effectiveness.

Use of Indigenous Personnel in "Hard-core" Areas

There are a few studies which have been done in the past few years which involve indigenous non-professionals which are fairly closely related to the present study. For instance D'Onofrio (1966), in an excellent monograph concerning the difficulties involving the "hard to reach" in immunization programs, listed a 235 item bibliography. She stated:

> In order to reach the unimmunized with effective person-to-person communications, a link, or more appropriately, a series of links, must be established between health services offering immunizations and the people needing the service together with whoever makes health decisions for such people. These links may be health workers, other community workers, members of organizations in the community, or informal opinion leaders. But whoever the links may be, they must be knowledgable about both the immunization program and about the target group, and they must provide a channel of two-way communications between professional people offering immunizations services and the unimmunized (D'Onofrio, 1966, p. 195).

This is a compelling statement in regard to the need for indigenous personnel. However in this entire extensive and comprehensive discussion of immunization programs there is not one reference to the actual utilization of indigenous personnel in immunization programs.

Hildebrand and Lee (1962) described a health education project among migrant agricultural workers and their families in California in which it was decided that an approach using a type of health education "aide" would be developed as a part of the project. They recognized

that the employment of this method was not new, having been used in India and on Navajo Indian reservations in the Southwest. It was planned that the aides were to be observers, interviewers, fact finders, and recorders. They were also to advise the professional project personnel on the best educational approaches, materials, and techniques to use among the migrant population. The aides made contacts with community leaders because it was felt that they would be more effective than the professional staff could be in many instances. They also visited mothers in their homes and reinforced what public health nurses were trying to teach about nutrition, personal hygeine, sanitation, child care, etc.

The authors indicated that the project personnel attempted to find persons with a working knowledge of seasonal agriculture and of the communities engaged in such pursuits, in attempting to find their health education aides. Since a large portion of the seasonal worker force in the area was Spanish speaking, bilingual knowledge was emphasized. The initial candidates met most of these criteria but they did not include any men although one man was later hired. The aides were trained by the professional project personnel in part lecture, and part discussion, sessions on the use of a number of audio-visual aids. Training in interview techniques was also given. The aides received intensive training in the fields of sanitation, nutrition, maternal and child health. The use of local health resources such as the county hospital, and the health department services was discussed as well as the use of tools such as films, pamphlets, group discussion, etc.

The aides were effective in helping the public health nurses to overcome many communication and cultural barriers between the nurses and the families in the area, and the families made much better use of the public health services, such as child health conferences. The authors concluded:

> It is not possible in this short narrative to describe fully the work of the aides. It must be noted, however, that the impact of their activity has been felt throughout the health departments' range of services, and their major project goal which was to bring the health needs of the seasonal worker and his family into effective and practical relationships with local health resources was achieved. Certainly, this method of extending health manpower merits further study and application to various aspects of public health (Hildebrand & Lee, 1962, p. 46).

This project was quite similar to the present study although its orientation was somewhat broader than the present one. Unfortunately, however, the authors listed no quantitative measures which would have been helpful in measuring the impact of such non-professional personnel.

Kent and Smith (1966) described the employment of Neighborhood Representatives in a low income urban area in Denver, Colorado which has a number of similarities to the present study. The authors began their study by discussing the concept "hard-to-reach" and indicated that the position of their paper was that the culturally and socially disadvantaged patient was not "hard-to-reach" when programs accommodated his motivational orientation. They described the area in which they worked in, in somewhat similar terms as that described in the present study. They indicated that their area was characterized by being isolated by

freeways, rivers, and industrial installations bordering on residential areas. The residents of the area also had similar social and economic problems and their interaction pattern was largely confined to a specific area. They also tended to use facilities such as stores which were very close to their residences and they were isolated in terms of being of one ethnic group.

The authors indicated that this sort of situation demanded some significant departures from traditional public health practices if these people were to be reached. Neighborhood Representatives were hired specifically to represent their disadvantaged neighborhoods as semi-in dependent workers, becoming "links" representing community life and values to the professionals and to relate health programs to the low-income client. Unlike the non-professionals, Representatives were not closely supervised nor were sub-professional tasks imposed upon them. Emphasis was placed on the development of their unique style and relationships with the population being served. The natural skills of the Representatives enabled them to interpret the nature and extent of health services in a manner appropriate to the sub-culture. Newly learned skills in terms of knowledge of other social agencies, the services they offer, and methods of contact, allowed the Neighborhood Representatives to solve other problems of a more immediate nature, which might act as barriers to the clients use of health services. In this new role, the Neighborhood Representative could, it was felt, destroy the myth of the "hard-to-reach" person.

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Critical to the ultimate success of the Neighborhood Representative were the criteria used in their selection and recruitment, the nature of their training, the style of supervision, and their specific role function. Another aspect of Kent and Smith's (1966) study of particular relevance for the present study, and future ones as well, is found in a footnote. They stated:

> Potential problems of these nonprofessional careers is that the very nature of the sub-professional position suggests the involvement of persons who seek the job as a vehicle to escape from poverty--and in so doing begin to alienate themselves from the population they propose to serve. Furthermore, the training of the non-professionals has tended to superimpose upon these persons certain professionally styled skills at the expense of the further development of natural skills. Over-supervision and the demand for loyalty to the agency further rob the indigenous worker of his potential effectiveness. He becomes, in essence, contaminated, and thereby loses his ability to be effective as an agent of accommodation (Kent & Smith, 1966, p. 4).

These points are of particular relevance for the present study and will be returned to in some detail in the discussion section. Another aspect of Kent and Smith's study which is of particular relevance to the present study is found in a footnote in regard to selection criteria for personnel. They stated:

> The decision to select women over 35 was based on several observations. Generally speaking, the mature woman tends to be more sensitive to the needs of peers than the younger woman. She is less isolated in terms of relationships with individuals and neighborhood groups; she has a greater understanding of "how to get things done," and particularly among Spanish Americans, she tends to command greater respect (Kent & Smith, 1966, p. 5).

It is also possible that older women are less likely to be distracted by

family and by outside interests than are younger individuals. Kent and Smith, also in a footnote, discussed the importance of selecting individuals who placed a high value on work and stated, "This value for work is important because much of the Neighborhood Representatives' activities must be ultimately self-directed" (1966, p. 5). Since there are no magical instruments by which to measure this attitude, selection of personnel with this characteristic is unfortunately complicated.

The authors noted that the recruitment of Neighborhood Representatives was particularly time consuming because the uniqueness of the role and the selection criteria eliminated certain traditional sources of manpower and that the social agencies which were supposedly internal to the specific neighborhood were able to provide minimal assistance. Recruiters worked through informal acquaintances with neighborhood residents, and after developing these acquaintances, they were able to proceed from friend to friend until an appropriate selection could be made. The training philosophy of the program involved the development of the Neighborhood Representatives as secure semi-agents using their natural styles and skills.

> Consistent with the action orientation of the indigenous worker, "doing" and not "talking" was the emphasis. Because of this, training is a dynamic two-way process. Formal classroom sessions and reading assignments were conspicuously absent in the training program. Essentially, the training of Neighborhood Representatives has been a continuous problem--oriented process and not a structured program terminated at a certain point (Kent & Smith, 1966, p. 6).

Furthermore, once a Neighborhood Representative was functioning, they became trainers for other Neighborhood Representatives, thus minimizing the professional trainer's role. In regard to supervision the authors stated:

> Given the unique natural skills of the Neighborhood Representative and the desire to accommodate the patient group, supervision in the traditional sense has been minimal. Since the Neighborhood Representative is in many respects, already an expert, supervision becomes a relationship of mutual respect where the Representatives work "with" the supervisor rather than "for" him. The relationship becomes one in which the Neighborhood Representative (rather than the professional) identifies the "need," while the professional merely assists in resolving this need.
>
> Supervision in the more traditional sense occurs at various times. The indigenous worker must be protected from certain middle-class tendencies and discouraged from overidentifying with the professional staff. This occurs in a positive manner by praising the Representative for taking a patient's "side" in a case conference or negatively by criticizing the Representative for communicating that subtle disdain for low-income patients so often typical of middle-class professionals. This protection is essential until Neighborhood Representatives become secure in their role and until other members of the professional team accept, and become sensitive to this role (Kent & Smith, 1966, p. 7).

These points are also quite relevant to the present study and will be returned to in the discussion section.

Kent and Smith (1966) offered some quantitative evidence on the effectiveness of indigenous personnel when they stated:

> Use of clinic services has shown 42 percent higher attendance during the same period of time in neighborhoods served by Representatives when contrasted with neighborhoods without Representatives. Four months after the establishment of a Mother and Infant Care Clinic in one neighborhood, it was determined that in excess of 60 percent of the patients had been referred by the Representative.

> Clinics served by Representatives reported an average of 20 percent more unwed mothers than in comparable neighborhoods not served by Representatives. Of further importance was their ability to recruit expectant mothers earlier in pregnancy. In neighborhoods where Representatives have been employed for six months or more, 50 percent of the patients are being seen in their first or second trimester. This contrasts with 32 percent in unserved neighborhoods. Although the numbers are small, trends appear to be meaningful (Kent & Smith, 1966, p. 9).

Although the quantification is relatively limited in the Kent and Smith study, it is quite similar to the present one in terms of philosophy and it is this writer's contention that they both represent a somewhat radical departure from traditional public health programs.

The present study has employed a social psychological approach in the selection of personnel and in the general implementation of the program. The need for such an approach has been pointed out by Freeman, et al (1963), among others. Coe and Wessen (1965) have made a very strong case for such an approach primarily emphasizing the physician's role and its social psychological implications. Other health personnel roles may be no less important, however, in terms of their social psychological implications.

The present study was an attempt to determine whether or not the utilization of indigenous personnel could effectively raise immunization levels in "hard core" areas. An attempt was made to design the study so that specific quantification measures and statistical analyses could be employed to increase confidence in results as compared with essentially qualitative reports in the literature.

Also it was felt that the sequential intervention approach of the present study perhaps overcomes some of the ethical and methodological problems which were discussed earlier in regard to Kobrins (1959) study. The study allows for the setting up of experimental and control groups but it also provides the positive benefits of the program sequentially to all of the groups within a given area.

In short, the present study attempted to utilize a social psychological implementation of a number of variables which the literature suggests might be effective in a field situation. The study is not "pure." Few, if any, field studies are. The study is not strictly "applied," as an attempt was made to obtain certain research benefits.

CHAPTER II

METHOD

Experimental Areas

In selecting experimental and control areas for the project, a number of factors were considered. Since the purpose of the project was to raise the immunization level in certain "hard core" areas, an initial attempt was made to locate two such areas which had relatively similar income, racial, health, and population characteristics and which were relatively isolated from each other and the rest of the metropolitan area in terms of topography and neighborhood communities. Areas were located which conformed to census tract boundaries and also met the other criteria. (See Appendix A - Census Tracts No. 7, No. 10 and No. 11).

Census Tract No. 10 was chosen for the initial experimental area. The area had a median family income of $2,213. It was 99+ per cent Negro and, according to 1960 United States census figures, had a population of 5,147. According to a December, 1963, Health Index Survey done by the Tulsa City-County Health Department (1963), the infant mortality rate was 57.5, which was higher than all but two other census tracts in the city. The tuberculosis rate was 68.0, which was higher than all but three other census tracts in the city. The syphilis rate was

363.0, which was almost twice as high as any other census tract in the city.

The survey indicated that the immunization rates were generally lowest among the lower socioeconomic groups. Although specific immunization rate figures were not computed for the experimental area, there seemed to be little reason to believe that its immunization level differed markedly from other lower socioeconomic areas. The experimental area was relatively isolated from surrounding areas by physical barriers. The southern section was bounded by railroad tracks and industrial installations, an undeveloped and elevated area, and Elgin Street. The next street to the west was a transitional area with both Caucasian and Negro families. The area was bounded on the north by Pine Street, which, until the past few years, served as a dividing line between Caucasian and Negro residences and businesses. The eastern section was bounded by the Midland Valley Railroad tracks which separated the experimental area from the control area (Census Tract No. 11). There were only two streets crossing the railroad tracks between the experimental and control areas along the entire eastern boundary line, a situation which tended to limit interaction between the two areas.

Census Tract No. 11 (see Appendix A) was chosen for the control area. The area had a median family income of $3,218 a year according to the 1960 United States census and a Negro population of 3,024. Although there were other census tracts which corresponded more closely to Census Tract No. 10 in terms of median family income and population,

they had the disadvantages of greater heterogeneity in terms of racial characteristics and housing conditions. They also lacked distinct physical boundary lines.

According to the Health Index Survey (1963), the infant mortality rate was 52.6, the tuberculosis rate was 15.4, and the syphilis rate was 66.1. In terms of immunization level there seemed to be little reason to believe that Census Tract No. 11's immunization levels differed markedly from other lower socioeconomic areas.

The control area (Census Tract No. 11) was relatively isolated from surrounding areas by physical barriers, although less so than the experimental area. The southern section was bounded by railroad tracks and industrial installations. The northern boundary was Pine Street, which was described earlier. The western section was bounded by the Midland Valley Railroad tracks which separated Tract No. 11 from the experimental area. As noted earlier, there were only two streets crossing the railroad tracks between the two areas. The eastern section had no clear-cut physical boundaries, but the area to the immediate east was a transitional area with both Caucasian and Negro families.

Another area which the workers moved into after the initial experimental phase of the project was Census Tract No. 7. This tract had a median family income of $3,812 a year. It was a predominantly Negro area and according to 1960 United States census figures had a population of 3,946.

According to the Health Index Survey of Tulsa County (1963), the

infant mortality rate was 65.0, which was higher than all but one other census tract in the city. The tuberculosis rate was 25.3 and the syphilis rate was 59.0. In terms of immunization level there seemed to be little reason to believe that Census Tract No. 7's immunization levels differed markedly from other low socioeconomic areas.

Census Tract No. 7 was bounded by Pine Street on the south, Apache Street on the north, Cincinatti Avenue on the west, and roughly by the Santa Fe Railroad tracks on the east. The area has in the past three to five years changed from a predominantly white area to a predominantly Negro one.

For the purposes of the project, it was decided to utilize the Variety Health Center to house the immunization clinics. The Center was located within the experimental area. The facility was built in 1945 by the Variety Clubs of Oklahoma, a movie theatre owners' group, for the purpose of housing health and welfare programs for the predominantly Negro areas of the community commonly called "North Tulsa." The facility housed public health Child Health Conferences and its immunization clinic, and it was the nearest one to both the experimental and control areas.

The facility also housed a Planned Parenthood Clinic (a privately financed operation), a county medical clinic (operated by the county commissioners and separate from the Tulsa City-County Health Department), and a county welfare worker who determined patients' eligibility for the county medical clinic. It was well located in regard to the

project's census tract areas and it had adequate parking facilities, waiting rooms, and immunization rooms.

Selection of Personnel

For the purpose of this project, an attempt was made (through personal contacts and individual acquaintances of staff members) to locate individuals who had a past record of being relatively successful in working with individuals of lower socioeconomic classes. These individuals were contacted and the project was explained to them in a general manner, and they were asked to compile a list of names of persons whom they felt could do a good job of getting others to come in for their immunizations. The importance of listing only those individuals whom they felt could do the best job was emphasized. Eight lists were obtained containing a total of 80 names.

One individual providing a list was the minister of a church in the experimental area for approximately 14 years. Another list was provided by a Public Health Department employee who had worked in the experimental area for several years. Other lists were provided by: a member of the local Office of Economic Opportunity staff, a member of CORE (Congress of Racial Equality), Public Health Department nurses who had worked in or near the experimental area, a former Aid to Dependent Children recipient and worker in various community projects, and a worker in various community projects.

Three staff members divided the list up after eliminating some

names which were suggested as possible sources of workers but not workers themselves. The remaining individuals were interviewed to see if they would be interested in the project. Persons whose names appeared more than one time were interviewed first, and those most frequently mentioned on the eight lists were selected and hired. The technique of selecting personnel on the basis of the frequency with which they are recommended by others is, of course, not a new one (Lockhart, 1965).

Reed (1964, p. 89) discussed the technique in connection with finding and utilizing natural leaders in various public health projects, particularly those concerned with lower socioeconomic areas. "Indigenous personnel" are identified below by letters.

A was 68 years old, and had lived in the experimental area since 1922. She had operated a business in the area, taught school for two years and been active in various civic organizations. She was a high school graduate and had two years of college credit.

B was 67 years old and had lived in the experimental area since 1955. She had been active in various civic organizations and was a high school graduate.

Another individual who was interviewed and hired was C. She was recommended by one of the staff members, an individual with considerable experience in working with community organizations in the experimental area and who had previously worked on several projects with her. She was 41 years old and lived just outside the experimental area and

had worked in the area in various capacities. She was also a Notary Public and was a high school and business college graduate.

D was 40 years old, lived just outside the experimental area, having lived in it for 15 years and working at a movie theatre in the area and also working as a cosmetic representative. She had been active in various civic organizations and was with the project until December 31.

E was 21 years old and had lived in the experimental area almost all her life. She had been active in various civic organizations and was a high school graduate and had one year of college credit. She was with the project until December 31.

F was also hired, but she resigned after approximately one month to take another job at a higher salary.

G was 53 years old and had lived in Census Tract No. 7 for ten years and the general area for 25 years. She and her husband had operated a business in the community for several years, and she had been active in various community organizations; she was a high school graduate and came on the project in January.

To repeat, the assumption in this project was that the eight people who provided the lists, the staff members and the project director, were able, by virtue of their observations and conversations, to select individuals who were well known in the experimental area and who were accepted by people in this area as members of their groups. Employees chosen for this project were not regarded in these lower socioeconomic neighborhoods as being "uppish," "social climbers," "Uncle Toms," etc.

If this assumption was correct, these health representatives, because they "spoke the language," had similar value systems, a desire to raise the general level of the Negro community, and had the same racial characteristics should be better able to assist in raising immunization levels than persons who did not possess these characteristics.

Personnel Orientation

The orientation phase of the project began after the project coordinator visited a number of specialists in health and health-related fields. The orientation period began on September 20, 1965. The Tulsa City-County Health Officer met with the workers and outlined the rationale of the project and discussed some of the problems of raising immunization levels. A number of topics were discussed, including the possible effect of clinic hours on the rate of immunization, and possible effect of distance from the clinic, and public relations aspects of immunization.

The acting Nursing Director of the Tulsa City-County Health Department spent several hours discussing the various communicable diseases in terms of their origin, their transmission, and their treatment. Various films concerning immunization were shown and discussed in terms of their possible utility in getting people to come in for their immunizations.

The staff decided that since the workers were going to be representing the Tulsa City-County Health Department, a broader departmental

orientation might prove helpful to them in their immunization work. It was also felt that immunization levels were possibly related to other health problems. Various department heads within the health department explained and discussed the role of their department in the overall operation of the health department. The department of minimum housing standards was discussed as was the dental department, environmental health and sanitation, and the nursing division.

The workers attended the immunization clinic in the experimental area for the purpose of receiving their own immunizations and to observe the clinic in operation. They also attended a child health conference at the Variety Health Center; a public health nurse explained the purpose of these conferences and a conference was observed. Each worker also spent one-half day's orientation with a public health nurse working in or near the experimental area.

The last day of orientation was spent in assigning particular parts of the experimental area to each worker. An attempt was made to assign the workers areas which (a) they wanted to work in, (b) they were familiar with, (c) were relatively equal in terms of population. The orientation period ended on September 28, 1965.

Project Chronology

The project began in August with the workers being assigned the task of making an immunization survey since a 1963 Health Index Survey compiled by the Tulsa City-County Health Department was not broken

down into units small enough for the purpose of the present study. Since the project director and Tulsa City-County Health officer were also interested in certain specific education and occupation information for possible future projects, it was decided to do a house-to-house survey of both areas.

The survey was done in August and September, 1965. Information was obtained for 1,915 persons in Census Tract No. 10 (1960 population-5,147). Census Tract No. 11 information was obtained for 1,442 persons (1960 population-3,024). The results were, in most instances, quite similar to the results in the 1963 survey for the lower socioeconomic segment of the sample population.

The immunization rates were generally low, being below 50 per cent for every age and disease category except for the polio series and the DPT for the 5 to 12 age category. The rates were quite low for the 40+ age category, being less than 10 per cent except for the polio series which was 48.1 per cent.

An interesting and perhaps significant finding in the survey was that there was a considerable discrepancy between the number of individuals who were reported as having had tetanus immunizations and those who were reported as having had DPT (Diphtheria, Pertussis, Tetanus) and/or DT (Diphtheria and Tetanus) immunizations. While 55.5 per cent of the 5 to 12 age category were reported to have had their DPT immunizations, only 19.2 per cent reportedly had tetanus immunizations. Such a discrepancy seemed to indicate that many of the

shown to various church, social and even apartment house groups. One of the most frequent comments from the audience was "We can't come to the clinic at those hours" (2:00-4:00 p. m.). Most of the workers spent the majority of their time in making calls house-to-house. The most effective workers in getting people in were those who worked some of the time after 5:00 p. m. in the evenings and on Saturday and Sunday.

On the third clinic in October 149 people came in and it became quite obvious that changes were going to have to be made in the clinic if the general approach of the program was going to be adhered to. It quickly became apparent that the immunization card system was inadequate. There was no system; last names were first on some cards, last on some cards, etc. Many of the cards were more than ten years old, with no booster immunizations indicated.

It also became obvious that two nurses could not adequately staff the clinic. They were able to give only a few dual immunizations because of the time factor (2:00-4:00). People were also forced to wait 45 minutes or more.

There were also certain "attitudinal" factors which were contrary to the general approach of this project, e. g., "Lock the door!" (One individual's solution to long lines waiting to get immunization cards.) "These people are used to waiting." (One individual's response to a request for more nursing staff.)

The workers also encountered negative attitudes about Variety Health Center in their attempts to get people in to be immunized, e. g.,

respondents were not certain as to what they or their children had been immunized for. This uncertainty was frequently noted by the surveyers both in regard to what immunizations the respondents had had and when they had had them.

This kind of problem continues to concern public health people. Hand (1964) noted some of the problems in this area and indicated that, "The best way to minimize response and interview errors is WELL TRAINED INTERVIEWERS" (p. 44, emphasis in original). This, of course, is an important point. However, it possibly did not take into sufficient consideration at least two variables--(1) respondent ignorance of what immunizations were received and (2) respondents forgetting which immunizations they received and when they got them.

Given such a finding, it was decided, for the purposes of this project, that the most complete and accurate records available for comparison purposes might be those at the Variety Health Center. The Health Center is located within the experimental area and contained the nearest public health immunization clinic. Although these records were not complete (private practice immunizations being left out) it seemed probable that these records, incomplete as they were, were likely to be more accurate and complete than those gained by the survey method.

Five indigenous workers began working in Census Tract No. 10 on the 29th of September, 1965. They worked in an assigned geographical area utilizing whatever techniques they thought would be most effective in getting people in to be immunized. Some immunization films were

"I wouldn't go there for anything, the Doctor there treats you like a dog." These attitudes were expressed toward the County Medical Clinic, operated in the Variety Health Center but having no connection with the Tulsa City-County Health Department.

Also in October we encountered the problem of maintaining supplies, with one clinic running out of polio vaccine.

In November, a licensed practical nurse was hired to pull all the old immunization cards out of the files, alphabetize the files and work the night clinic.

On November 17 the clinic hours were lengthened from 2:00-4:00 p.m. to 2:00-7:00 p.m. and two nurses were assigned to work from 2:00-4:00 p.m. and two assigned from 5:00-7:00 p.m. One nurse was replaced. The workers began giving small cards listing the clinic hours and location to the people they visited (see Appendix B). In an effort to make the clinic operate more efficiently the workers began to assist the nurses in (a) writing out appointment slips to remind people when to return, (b) writing immunizations received on the cards, (c) directing people into the immunization rooms.

In two of the four clinics held in November the nurses ran out of polio and smallpox vaccine. They were out of both vaccines at the main office as well. In one clinic only DPT, DT, and typhoid were given because of inadequate vaccine supplies.

In December pulling the immunization cards still was one of the most time consuming phases of the immunization process.

A nurse was added whose primary responsibility was to (a) see that the clinic was adequately supplied with vaccine, and (b) to see that the clinic was adequately staffed. Another nurse was replaced by a new one. Toys for the children to play with while in the clinic were provided by one of the worker's social organization. On December 31, two of the workers were terminated.

In January one worker was added and the workers left the experimental area (Census Tract No. 10) and entered Census Tract No. 7. The workers continued to work in assigned geographic areas and mostly made house-to-house calls. A newspaper article appeared in January in the Oklahoma Eagle, a Negro owned weekly newspaper describing the operation of the night clinic.

Another new worker was hired, making a total of four workers in the field. All the public health nurses and the clerk were transferred to the main office. A new clerk was hired and she was oriented in terms of the goals and methods of this project.

The weather was a negative factor in the last two January clinics and the first clinic in February because of snow and lower temperatures. Operation of the Variety Health Center was hampered during January-March by nurse illnesses and absences and assignment of replacement nurses who were unfamiliar with immunization procedures.

Some of the nurses began expressing opposition to the toys in the waiting room (noises, "pampering the people," etc.) They also began expressing opposition to the indigenous personnel, saying that they could

work faster without them. The indigenous personnel were taken out of the immunization rooms.

In March it was decided to utilize three immunization rooms instead of two for the evening clinic in an effort to handle the increasing numbers of people coming into it. Pre-loaded syringes also began to be used to (a) reduce the anxiety factor of having to watch the nurse load the syringe and, (b) to speed up this phase of the immunization process.

Staffing also continued to be a problem with one clinic being without a third nurse in the evening and several clinics did not have the third immunization table set up and operating until late in the evening. The nurses again utilized indigenous personnel to write out the immunization cards for them.

Vaccine problems continued with two clinics running out of vaccine and two clinics running low on typhoid vaccine (one bottle for three immunization rooms). Also in one clinic it was found that all the polio vaccine was unfrozen (the refrigerator had defrosted and the vaccine had not refrozen) and all the polio immunizations were lost for the day.

On April 1 the workers left Census Tract No. 7 and began work in Census Tract No. 11, the original control area. In April the same general problems continued. Two clinics ran out of vaccine, one ran out of syringes, and in one dates on all the smallpox vaccine had expired.

On April 20 the clinic was staffed with two new nurses, both inexperienced in clinic procedures. The evening clinic was staffed with only two nurses which usually had three and both were new and

inexperienced in clinic procedures. More than 90 people were waiting in a room designed for not more than 50 and several families left because they could not or would not wait.

On April 21 the project director met with the Health Officer and the Acting Nursing Director and recommended termination of the project in the area and that the workers be assigned to other areas having more clinic facilities. This was done because of inability to staff and operate the clinic in a manner consistent with the project's aims.

On May 6 the workers left Census Tract No. 11. On May 10 they began working in a small low income Negro community, several miles away from the original project area.

In May, 1966 smallpox immunizations were dropped for the summer months in accordance with Tulsa City-County Health Department immunization policy.

In June, 1966 Sabin polio immunizations were dropped for the summer months in accordance with Tulsa City-County Health Department immunization policy.

In August, 1966 Sabin polio immunizations were reinstituted in accordance with Tulsa City-County Health Department immunization policy.

In September, 1966 measles immunizations were initiated by the Tulsa City-County Health Department as a result of federal and state policy in this area.

In October, 1966 smallpox immunizations were reinstituted in

accordance with Tulsa City-County Health Department immunization policy.

Data Collection

Data was tabulated from standard record forms (see Appendix B) after each weekly clinic from each individual's immunization card which contained the date, number, and type of immunization received. This data for Variety Health Center was then transcribed to a monthly immunization sheet containing totals and types of immunizations received for age categories from less than one year of age through each year through 14 years, and 15-years up (see Appendix B). This data was then broken down in the same manner for the specific census tract areas. Also, following the institution of an evening clinic on November 17, a record was kept on the numbers of people coming into each clinic from 2:00-4:30 p.m. and those coming in from 4:30-7:00 p.m.

Data collection periods were (1) October, 1964 through April, 1965 (pre-intervention, comparison period), (2) October, 1965 through April, 1966 (experimental intervention period) and (3) May, 1966 through December, 1966 (post-intervention comparison period).

CHAPTER III

RESULTS

In order to examine the context within which results of the experimental intervention must be evaluated, data are initially presented combined for the Variety Health Center (ignoring residence area of persons immunized). Data were collected for the period of intervention in "hard core areas by "indigenous personnel"--October, 1965 through April, 1966. Comparable data were tabulated for the pre-intervention year--October, 1964 through April, 1965--for comparison purposes. Data were also collected for the post-intervention period--May through December, 1966 in order to evaluate the after-effects of intervention.

Table 1 contains the immunization and headcount (persons served by the Clinic) numbers. These are actual numbers, not rates for the October, 1964 through April, 1965 and October, 1965 through December, 1966.

From these data, Figure 1 was constructed for convenient visual comparison. Examination of Figure 1, comparing 1964-65 (pre-intervention year) with 1965-66 (experimental intervention year) reveals a consistently higher level of both number of persons served and number of immunizations during the latter year. The small relative increase in

Table 1

Number of Persons Served and Number of Immunizations, Variety Health Center, October through April, 1964-65 and 1965-66

Month	1964-1965		1965-1966	
	Persons Served	Number of Immunizations	Persons Served	Number of Immunizations
October	205	249	430	580
November	111	136	389	569
December	104	140	505	660
January	117	148	494	681
February	88	114	644	850
March	112	166	1223	1576
April	146	209	1311	1701
May			1485	2023
June			1312	1757
July			1157	1239
August			1056	1185
September			465	616
October			446	493
November			355	457
December			210	286

Source: Variety Health Center records - Tulsa, Oklahoma

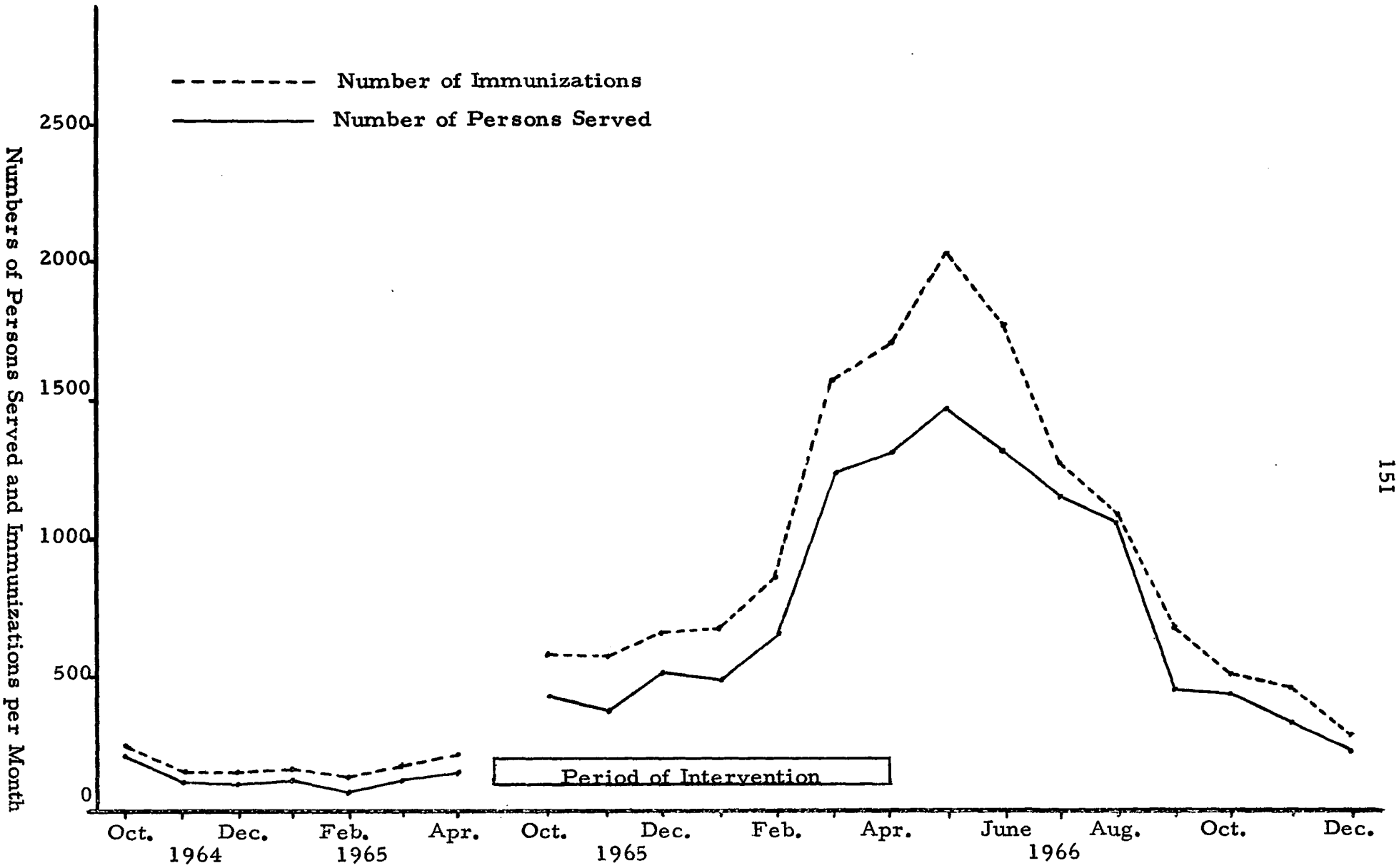

Fig. 1 Number of Persons Served and Number of Immunizations, Variety Health Center Totals, October, 1964 through April, 1965 and October, 1965 through December, 1966

Source: Table 1

both indices of effectiveness during October-December becomes increasingly striking as the intervention period continues through April, 1966, the intervention period. The increase holds through the month of May, and then shows mild decelleration in June and increasing decelleration in the following six, post-intervention months, finally reaching levels below those of the first month of intervention. It should be remembered that these are gross, absolute numbers, not rates, and they reflect the total Variety Health Center immunization picture, i.e., there is no separation by census tracts in which intervention was or was not employed.

Further examination of Table 1 and Figure 1 also reveals a consistently higher immunization rate (immunizations per person served) in 1965-66 as compared with 1964-65. Figure 1 reveals that this higher immunization rate peaked in May then shows a decelleration through December which is similar to the pre-intervention period. Chi-square tests comparing both persons served and number of immunizations for the intervention period (October, 1965-April, 1966) and the comparable months in the previous year resulted in $p < .001$ significance of improvement in both measures during intervention (chi-square, persons = 133.65; immunizations = 382.39). Inspection of Figure 1 also reveals that immunizations per person were consistently higher during the intervention period and the two months immediately following, but returned to the levels of the pre-intervention period during July-December, 1966 (post-intervention period).

Intervention by indigenous personnel, along with addition of a night clinic and other improvements in the Variety Health Center operation, obviously resulted in greatly increased immunization services. Since intervention by indigenous personnel was in only three of the census tracts served by the Center, the extent to which improved services to these "hard core" areas was due to activities of indigenous personnel can be seen only through detailed comparisons of data from these specific census tracts.

Subsequent Tables and Figures which display and compare data for specific census tracts and time periods are in population rates and in rates of immunization--per 1,000 population--in the particular area under consideration so as to control for differential sizes of target populations. The comparison initially planned between Census Tract No. 10 (Experimental Area) and Census Tract No. 11 (Control Area) for October-December, 1965, was so promising that intervention was extended to Census Tract No. 7 during January-March, 1966. Finally, intervention was employed in the original Control Area (Census Tract No. 11) during April, 1966, to be sure there were not reasons for low immunization rates in that area during the experimental comparison other than the fact of non-intervention.

Table 2 is composed of data from Census Tracts No. 7, 10 and 11 which is included in the gross figures of Table 1. Shown are actual numbers of persons residing in each of these census tracts who entered the Variety Health Center and the total number of immunizations

Table 2

Census Tracts No. 7, No. 10, and No. 11, Number of Residents Served at Variety Health Center and Immunization Totals, October through April, 1964-65 and 1965-66*

Census Tracts	October		November		December		January		February		March		April	
	1964	1965	1964	1965	1964	1965	1965	1966	1965	1966	1965	1966	1965	1966
No. 7 People	20	19	8	22	14	28	12	58	14	94	12	199	15	183
Immunizations	25	30	9	37	17	46	13	111	17	180	16	518	20	458
No. 10 People	60	238	41	239	36	276	34	170	37	153	32	179	43	174
Immunizations	72	323	51	334	49	419	44	273	47	293	48	394	60	394
No. 11 People	35	53	10	30	16	24	16	32	9	41	22	98	34	219
Immunizations	42	134	13	53	22	57	20	46	11	65	34	214	48	502

Source: Variety Health Center Records - Tulsa, Oklahoma.

*Census data for the last census in which these tracts were employed (1960) indicate populations as follows: Census Tract No. 7, 3,946; No. 10, 5,147; No. 11, 3,024.

administered to these persons for the intervention period comparable to time periods in the previous year. From the numbers in Table 2 were computed rates of persons served and rates of immunization per 1,000 residents of each Census Tract so as to permit direct comparisons between tracts uncontaminated by population differences shown in Table 3 footnotes. The temporal pattern of intervention in the three areas should be kept in mind when inspecting Table 3, October-December, 1965, in Tract No. 10, January-March, 1966, in Tract No. 7, and April, 1966 only in Tract No. 11.

As footnotes of Table 3 indicate, these rates may not be cumulated to show what portion of the total relevant population appeared at the Clinic. Each appearance of a person resident in one of the three tracts was tabulated as a "person served." The major objective of the "indigenous personnel" program was to get people into the Clinic who might not otherwise have appeared. Therefore, the simple "headcount" and rates were the best indicators of effectiveness of the program. In any event, available evidence indicates that it is at least as difficult to get people to come in to complete an immunization series as to get them to start one, probably even more difficult, in low socioeconomic areas. Also, "immunization" may not be interpreted as completion of an immunization which requires more than a single administration, and for the reasons given above.

Initial intervention in Census Tract No. 10 (October-December, 1965) can be roughly measured by its impact on the Variety Health

Table 3

Rates per 1,000 Population of Persons Served* and Immunizations**

from Census Tracts No. 7, No. 10, and No. 11 for

the Months October through April,

1964-65 and 1965-66

	October		November		December		January		February		March		April	
Census Tracts	1964	1965	1964	1965	1964	1965	1965	1966	1965	1966	1965	1966	1965	1966
No. 7 People	5.07	4.81	2.02	5.58	3.54	7.10	3.04	14.70	3.54	23.82	3.04	50.43	3.80	46.38
Immunizations	16.33	7.60	2.29	9.38	4.30	11.66	3.30	28.13	4.30	46.62	4.05	131.27	5.07	116.07
No. 10 People	11.66	46.24	7.97	46.44	7.00	53.62	6.60	33.03	7.19	29.73	6.21	34.78	8.36	33.81
Immunizations	13.99	62.75	9.90	64.89	9.52	81.41	8.54	53.04	9.13	56.93	9.32	76.55	11.66	76.55
No. 11 People	11.58	17.53	3.30	9.92	5.30	7.94	5.30	10.58	2.98	13.56	7.28	32.41	11.24	72.42
Immunizations	13.89	44.31	4.30	17.53	7.28	18.85	6.61	15.21	3.63	21.49	11.24	70.77	15.88	166.01

Source: Table 2

*"Persons Served" does not necessarily imply "different persons" if the same person appeared twice for immunization in a given month, he was counted both times.

**Each immunization, whether a "single" or one of a series was counted as one.

Census (1960) populations are: Census Tract No. 7, 3,946; Census Tract No. 10, 5,147; Census Tract No. 11, 3,024.

Center operation. Chi-square comparisons of the intervention period with comparable months for the prior and following years results in an estimate of $p < .001$ that more persons enter the clinic (chi-square = 454.71) and more immunizations were administered (chi-square = 694.26) during the period of experimental intervention (see also Table 1 and Figure 1).

Figure 2 brings into focus the experimental-control areas comparison planned as the initial phase of this project. Following the selection and training of indigenous personnel and the resurvey of immunizations in the census tracts, personnel intervened in Census Tract No. 10 only during October-December, 1965. Census Tract No. 11 in which there was no intervention during this period served as a control. Rates in both census tracts were consistently low in 1964. In 1965, rates in the experimental area were higher, and increasing, whereas rates in the control area were lower and decreasing. The relatively high rate in the control area in October, 1965, may have been due, in part, to the resurvey which raised immunization as a topic of local conversation in both census tracts. Chi-square tests of rates, comparing 1964 and 1965 for experimental versus control areas resulted in estimates of improvements to rates of persons served (chi-square = 12.83, $p < .001$) and immunizations (chi-square = 4.87, $p < .05$).

Following intervention in Census Tract No. 10, the indigenous workers were moved to Census Tract No. 7 (January-March, 1966), and finally into the original control area. Census Tract No. 11 during

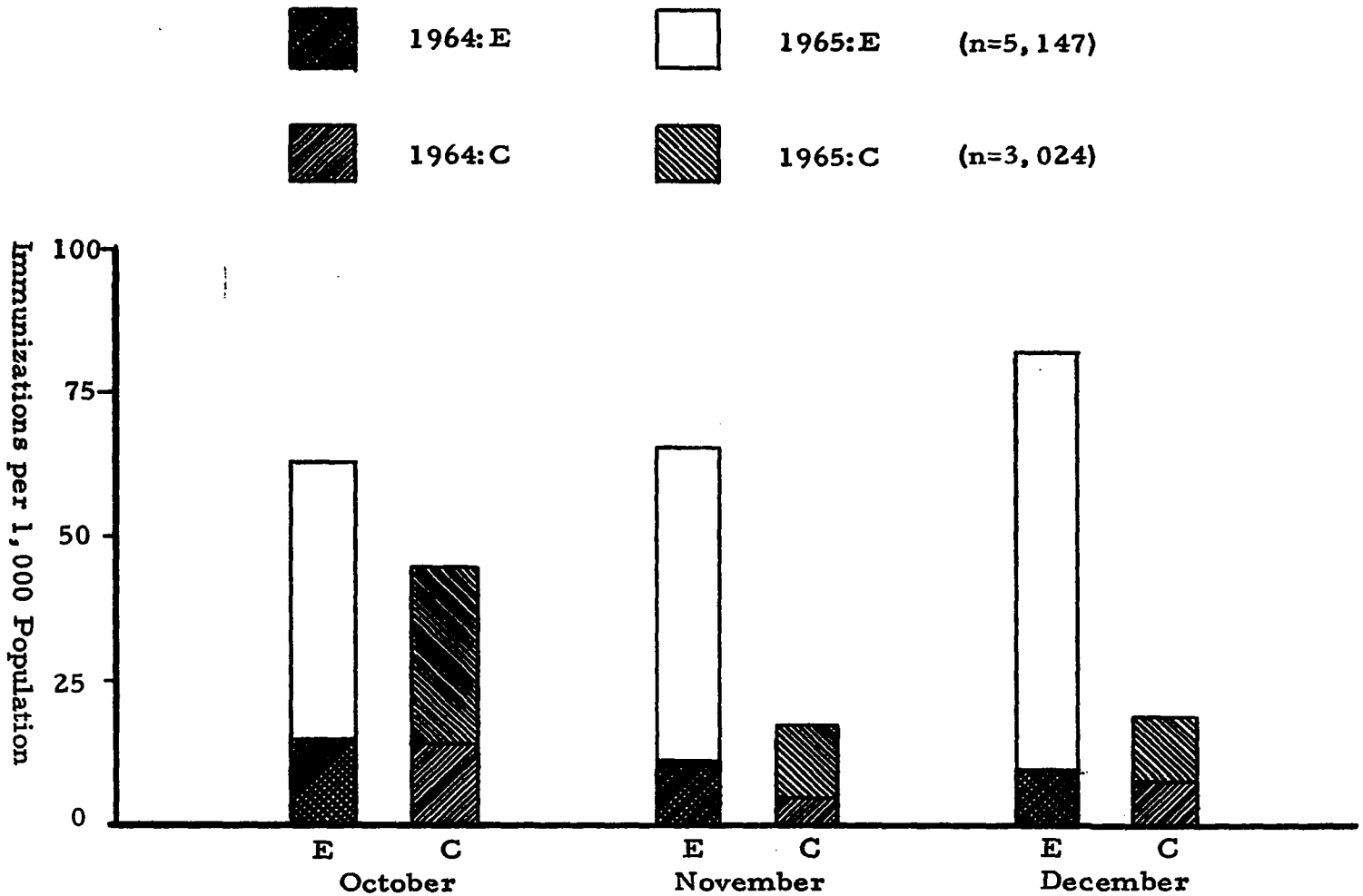

Fig. 2 Immunization Rates in Experimental Intervention Area (E: Census Tract No. 10) and Control Area (C: Census Tract No. 11), October-December, 1964 and 1965.

Source: Table 3

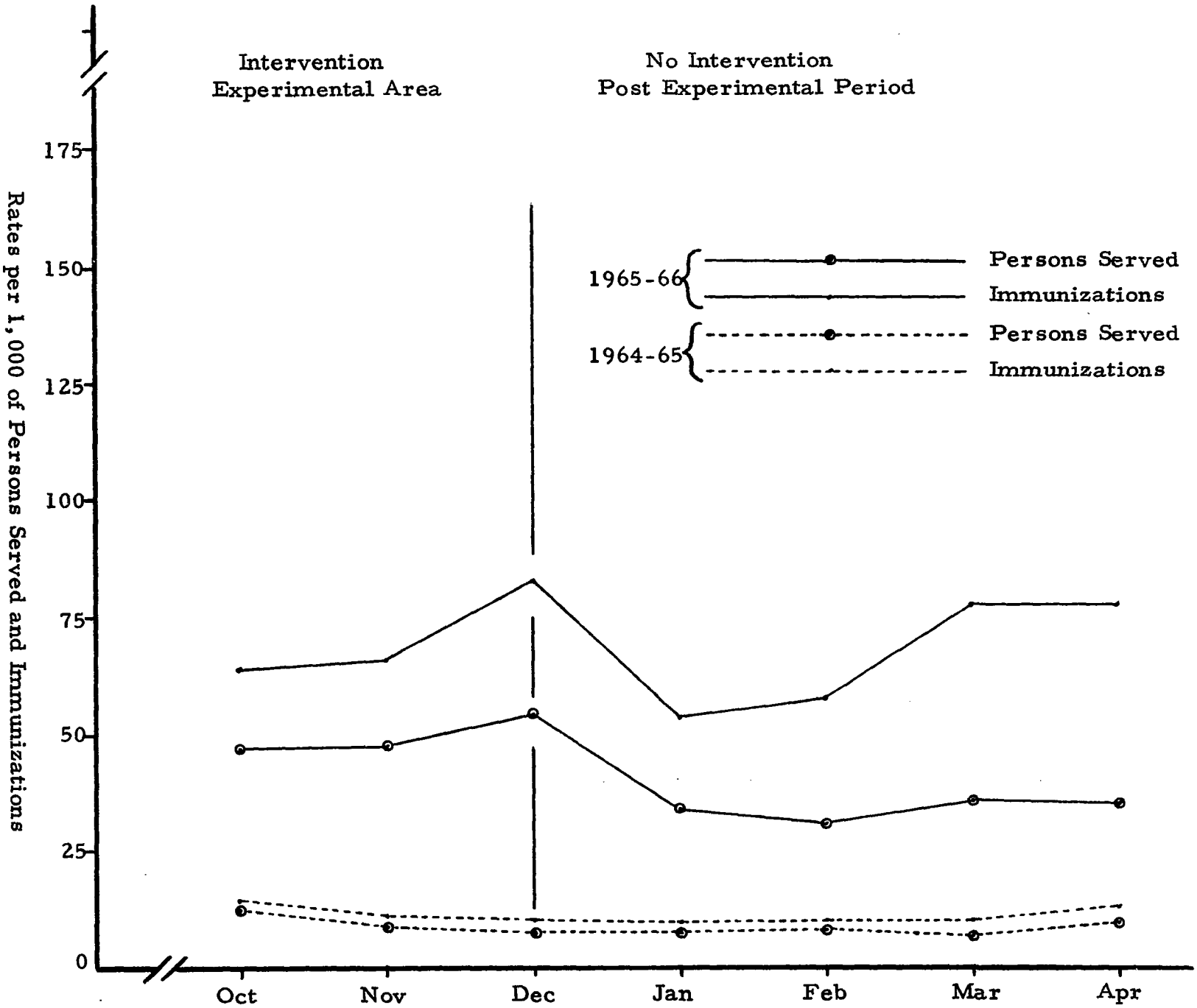

Fig. 3 Census Tract No. 10: Rates of Persons Served and Immunizations per 1,000 Population Resident in Tract, October through April, 1964-65 and 1965-66.

Source: Table 3

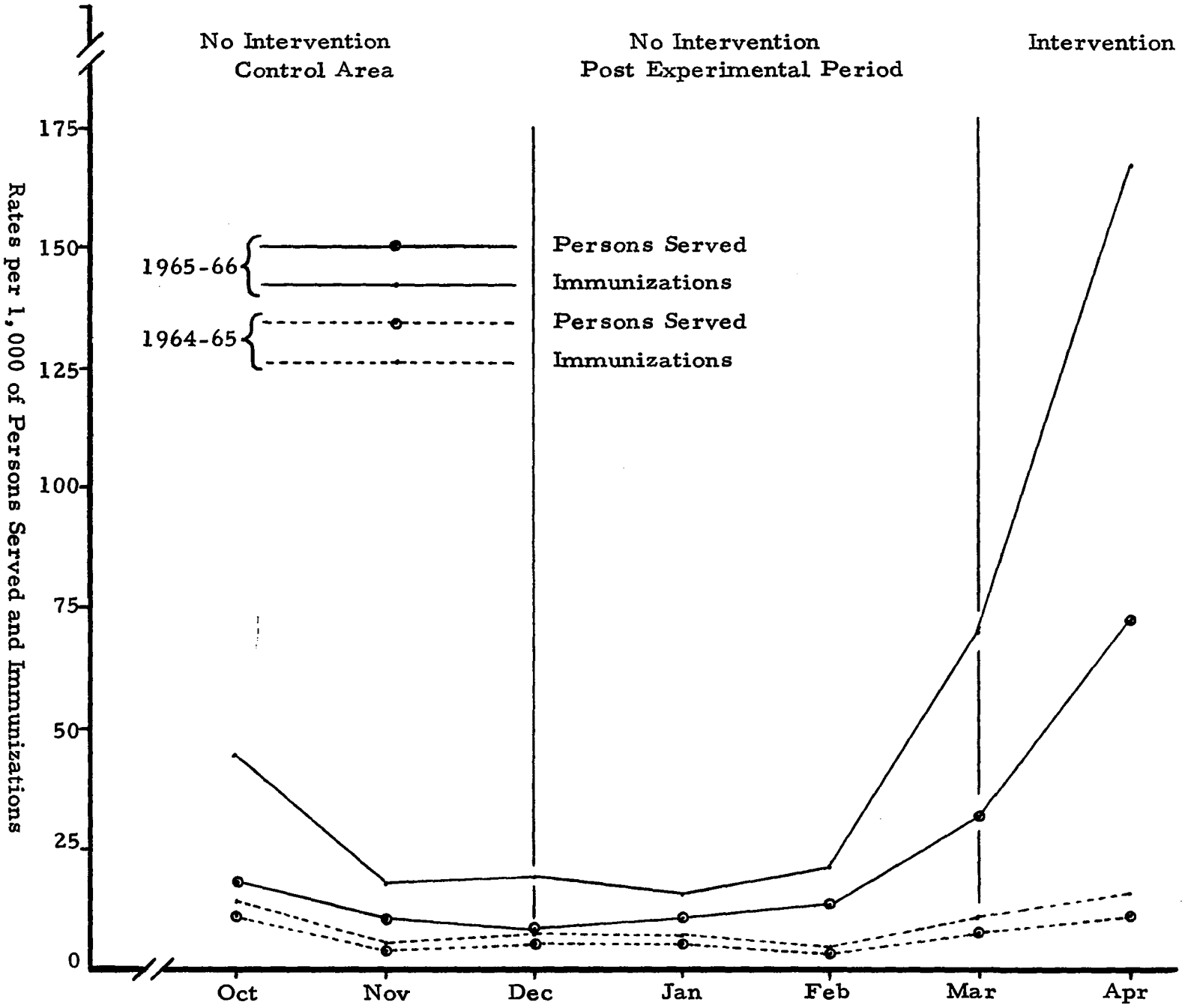

Fig. 4 Census Tract No. 11: Rates of Persons Served and Immunizations per 1,000 Population Resident in Tract, Actober through April, 1964-65 and 1965-66.

Source: Table 3

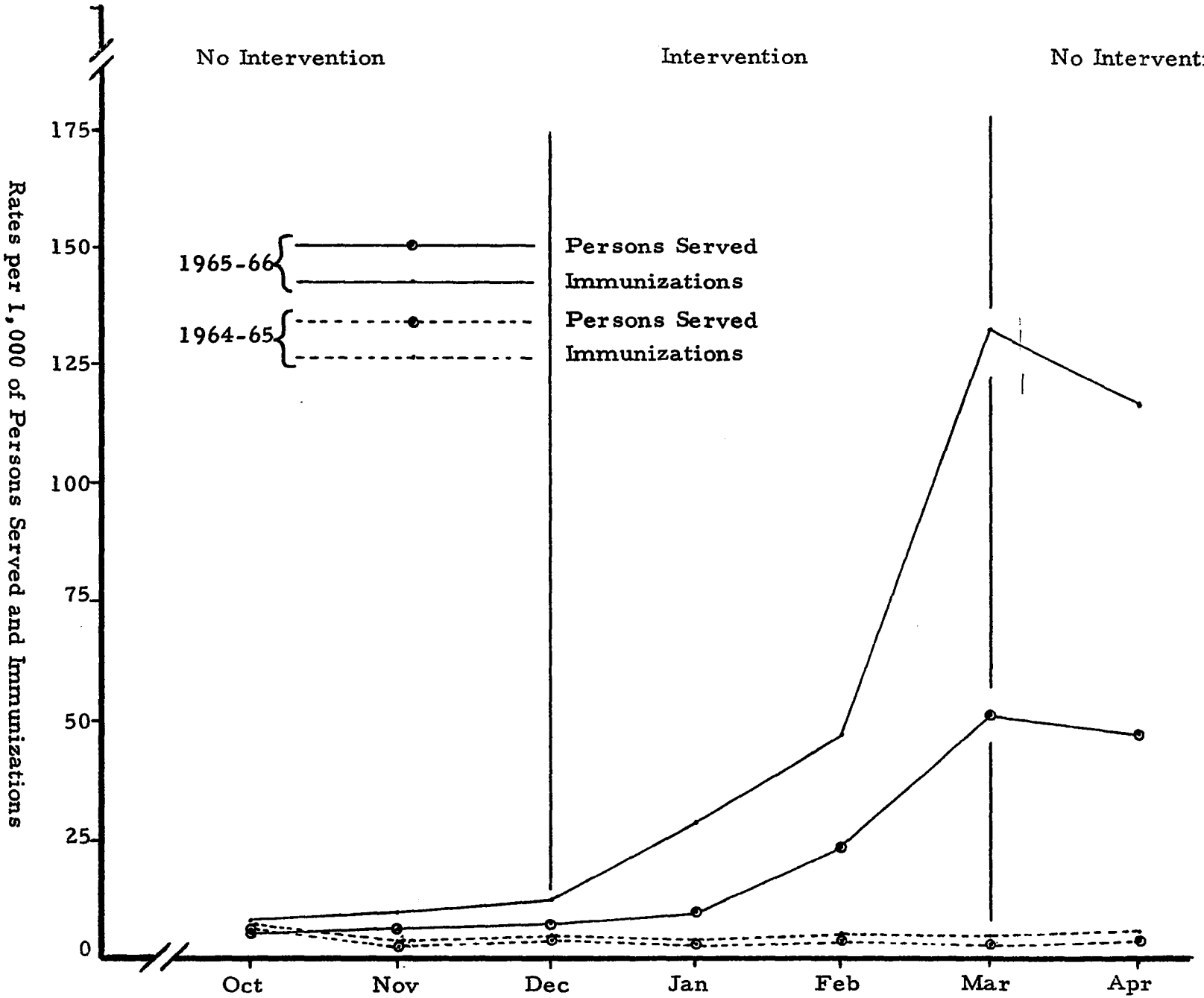

Fig 5 Census Tract No. 7: Rates of Persons Served and Immunizations per 1,000 Population Resident in Tract, October through April, 1964-65 and 1965-66.

Source: Table 3

April, 1966 only. Consequences of these sequential interventions can be seen in Tables 2 and 3. Figures 3, 4, and 5 show comparisons of each Census Tract with itself only during the period of intervention in that tract as compared with the comparable period during the previous year and with non-intervention periods for that tract. Not only were more persons served and more immunizations administered during the intervention period, the measures continued to rise while workers were in the area. There is, furthermore, evidence of improved effectiveness of intervention over the whole seven-month period. Intervention in the first census tract (No. 10) resulted in moderate improvement, the second (No. 7) in more rapid improvement, and in the last (No. 11) the most rapid improvement.

Statistical comparison of Variety Center totals for the three time periods (1964, 1965 and 1966) by chi-square indicates $p < .001$ confidence (chi-square = 511.76) that more adults were immunized during the period of intervention than during the previous year or during the post-intervention period, although post-intervention adult immunizations were also significantly higher than in the earliest year. Proportions of immunizations administered to adults were tested for statistical significance, comparing October-December, 1964, 1965, and 1966 with a resulting confidence estimate of $p. < .001$ (chi-square = 183.26).

Since immunization of adults in "hard-core" areas is considered especially difficult, age-specific rates were computed for the Experimental and Control areas, October through December, 1964-65

Table 4

Age-Specific Immunization Rates (per 1,000)* for Census Tract No. 10 (Experimental Area) and Census Tract No. 11 (Control Area), Preintervention (1964) and Intervention (1965) Years.

	Experimental Area		Control Area	
Ages	Preintervention	Intervention	Preintervention	Intervention
October				
< 5	93.40	151.37	54.24	99.06
5-14	11.26	167.79	8.09	118.12
≥15	.00	21.99	.00	9.59
November				
< 5	61.19	143.32	25.94	61.32
5-14	11.26	176.80	1.62	27.51
≥15	.00	24.19	.00	5.05
December				
< 5	67.63	159.42	42.45	40.09
5-14	11.26	323.19	4.85	35.60
≥15	.00	36.56	.00	9.08

Source: Table 2

*Population proportions: Census Tract No. 10 - < 5, 621; 5-14, 888; ≥15, 3,638. Census Tract No. 11 - < 5, 424; 5-14, 618; ≥15, 1,982.

(pre-intervention) and 1965-66 (intervention). Inspection of Table 4 reveals improvement in immunization rates at pre-school, school, and adult age levels in the area of intervention (Census Tract No. 10). The improvement in adult rates is particularly striking since no adults from either Census Tract No. 10 or No. 11 were immunized in 1964.

Although the comparisons in Table 4 are the most rigorous, they include only a three-month period during two years in two census tracts. Table 5 and Figure 6 show the proportion of total immunizations at the Variety Health Center administered to adults during the three relevant comparison periods--pre-intervention (seven months), intervention (seven months), and post-intervention--covering the time span from October, 1964 through December, 1966.

Table 5

Immunizations Administered to Adults and Children (Age 15 Years) at the Variety Health Center between October, 1964 and December, 1966

Month	No. of Children	No. of Adults	Total	Percentage of Adults
1964				
October	241	8	249	3.2
November	134	2	136	1.5
December	139	1	140	0.7
1965				
January	144	4	148	2.7
February	114	0	114	0.0
March	161	5	166	3.0
April	207	2	209	1.0
Mean Percentage Adults for Pre-intervention Period				1.9
1965	No data: May through September			
October	499	131	580	22.6
November	405	164	569	28.8
December	457	203	660	30.8
1966				
January	453	228	681	33.5
February	579	271	850	31.9
March	1,063	513	1,576	32.6
April	1,170	531	1,701	31.2
Mean Percentage Adults for Intervention Period				30.8

Table 5 (Continued)

1966				
May	1,496	527	2,023	26.0
June	1,196	561	1,757	31.9
July	886	353	1,239	28.5
August	856	329	1,185	27.8
September	468	148	616	24.0
October	413	80	493	16.2
November	383	74	457	16.1
December	243	43	286	15.0
Mean Percentage Adults for Post-intervention Period				28.5

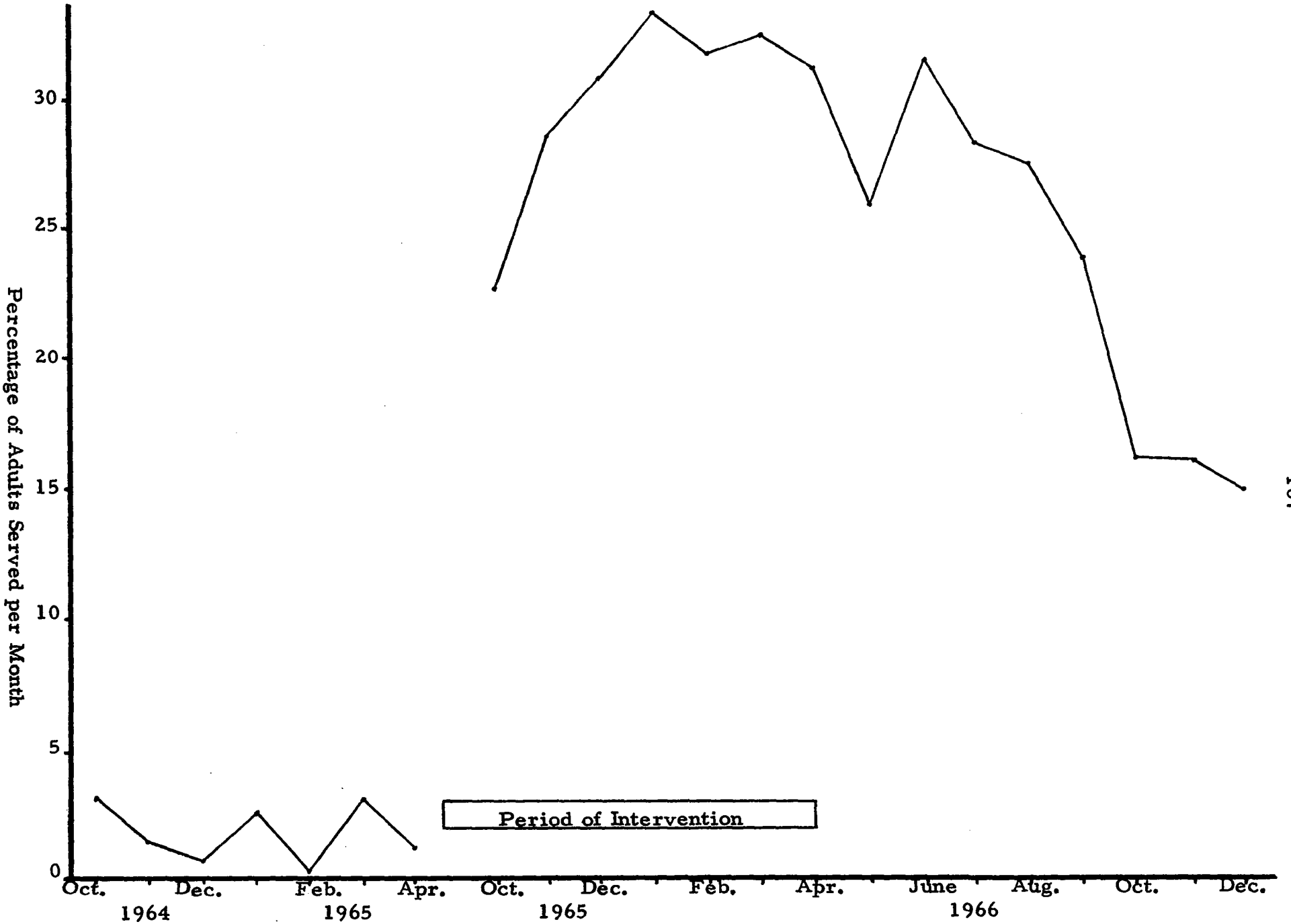

Fig. 6 Percentage of Immunizations Administered to Adults, per Month, Variety Health Center Totals, October, 1964 through April, 1965 and October, 1965 through December, 1966.

Source: Table 5.

CHAPTER IV

DISCUSSION

There are multitudes of variables involved in a study of this nature. On the basis of this writer's experience in the present study, and based also on related literature in the area, several factors seem to have particular significance. The rationale of the original study was to test the hypothesis that indigenous personnel could significantly raise the immunization levels in "hard-core" areas of an urban area. The original proposal to the Department of Health, Education and Welfare specifically stated that mass media techniques would not be utilized and that the primary focus of the project would be on informal kinds of person-to-person communication. These strictures precluded involving other agencies such as the Public Welfare Department, the public school systems, churches, etc. After the original experimental phase of the project was completed, these strictures were removed, but at that time the clinics were operating at capacity levels. This meant that in the latter stages of the project we "didn't farm nearly as well as we knew how to," to use an old farming anecdote.

It seems to this writer that future studies of this nature should make every attempt to involve agencies such as public and private schools,

churches, social organizations, public and private welfare agencies, etc., since the cross-cultural studies particularly, revealed the response which can be achieved as a result of broader based involvement. Also, the utilization of other techniques should be considered.

One of the interesting findings of the present study was that certain older elementary school students would come into the clinic alone and get their immunizations and the next week they would bring several of their friends, and the next week or month, several more. One of these original groups grew in size from one person to a group of approximately 18 young students. We in social science supposedly know something about the influence of peer groups and Madison Avenue certainly does. Future studies of this nature might well consider the possibility of awarding each person who brings in x number of persons a record album, or some other sort of inducement which would appeal to this particular age group. We might be highly surprised at the results.

There is also ample evidence that certain segments of the population read rather limited sections of the newspapers. In future projects of this nature, attempts to utilize immunization information in the mass media should perhaps be more selective in light of known reader habits. Immunization information might perhaps be inserted in various ways into the society pages, sports and comic sections, and gossip columns in an attempt to determine if they might be more effective in getting immunization information to more people than the more general approaches heretofore utilized. Also in utilizing radio station announcements, it might

be worthwhile to attempt to involve the teenager's favorite D. J. 's to make a pitch for the immunization program rather than depending on general spot announcements. Appeals could also be directed to adult segments of the population, utilizing their more popular radio announcers in an attempt to determine how effective these sort of techniques are.

Another very important insight which was gained from the experience of the present study is that the lack of a specific research design can often be chaotic. The present study was a result of a two-page letter to the Department of Health, Education and Welfare outlining the project in very general terms. This writer strongly feels that in the future, projects which are funded should require a specific research design. Such a design should outline the specific goals of the project, the hypotheses, the specific variables which the project will attempt to cope with, as well as those felt to be relevant but not easily controllable. A general step-by-step description of the project should be required, outlining the roles of all the personnel involved, the techniques which they will be utilizing, the specific areas which they will be working in, how much time they will spend in each area, etc. Such projects need not be saddled with a rigid and inflexible research design. After entering the field it is almost inevitable that changes in the project have to be made, and they should be made, with appropriate explanations as to why the changes were necessary.

The primary rationale for the strong emphasis on specific research design is that if it is not done prior to entering the field, it will not likely

be done, because the pressures of keeping the project moving leave no time for adequate consideration of research components. This finding is consistent with the findings of a number of other studies in this area which have been discussed earlier. Perhaps another rationale for the requirement of a specific research design is that it might tend to eliminate some of the increasing numbers of charlatans in the field of research who are excellent "con" men and who are very articulate in speaking about research generally, but who actually know little, if anything, about specific research design. A specific research design would either eliminate these sorts of people or it would force them to hire others who are competent in the area, and it would provide the funding agency with a blueprint by which it could evaluate the accomplishments of any specific project on the basis of the original criteria.

Another very important finding of the present study, which perhaps has implications for future ones, concerned the lack of involvement of all personnel directly affected by the project in the planning of the project. The present study, as indicated a moment ago, was conceived and written in a two-page letter to the Department of Health, Education and Welfare. A key component of the project involved the Nursing Division of the Tulsa City-County Health Department. The Director of Nursing was not involved in the planning of the project which was added on to an already over-burdened staff. Had she not been sympathetic to the goals of the project and flexible and cooperative generally in meeting the personnel needs, the project would never have gotten off the ground.

In the final analysis, the project was terminated because the nursing personnel required by the project exceeded the staff capability of the nursing division. There were a multitude of problems in regard to professional staff of the clinics. Perhaps one of the primary problems was that few if any of the nurses involved in the clinic operation had public health nurses training. Most of the nurses were trained in a clinical or hospital type setting where it was "professional" to be "brisk," "efficient," "terse," etc. The aims of the present project were to have personnel who were "warm" "friendly," "efficient," and with a smile on their faces. Needless-to-say, some conflict resulted.

Some of the nurses resisted the introduction of toys in the clinic, raising the issue of hygiene, which seemed irrelevant to this writer in light of the environment in which these children lived. Some of the nurses resisted the utilization of the indigenous people in assisting them in writing out immunization cards. When this resistance was expressed, the indigenous people were delegated to other tasks. Some of the nurses resisted the handing out of appointment slips listing the time, date, and place of the person's next phase of the immunization series. They considered the use of such slips to be unnecessary. Some of the nurses seemed to resist the "people orientation" of the program. For example, some of them felt that if the clinic hours were from 2:00-7:00 p.m., at exactly 7 p.m., the doors should be locked, perhaps indicating an "agency orientation" rather than a "people orientation." Some of the nurses who were of the same ethnic group as their clients had difficulty in

communicating with them. These nurses' language, behavior, and attitudes generally seemed to be more in line with what is generally called "middle-class" values, and as a result, an undetermined amount of social distance existed.

All of the nurses in the project were highly resistant to the idea of utilizing a Hypospray Jet Injector gun, and although one was available, it was never employed in the project. The responsibility for the failure to utilize an obvious labor saving device lies with the present writer. If a public health trained nurse or a public health doctor had been brought in to demonstrate the advantages of the Jet Injector gun instead of a layman, the idea would probably have been much more easily accepted and it probably would have simplified the project's clinic operations considerably. Some of the nurses also resisted the hours of clinic operation since they were extended from 2:00 to 7:00 p.m. whereas all of the rest of the Tulsa City-County Health Department clinics hours were from 2:00 to 4:00 p.m. In retrospect, this resistance by some of the nursing personnel is easily understandable. It should also be clearly stated that a number of the nursing personnel were totally dedicated to the project and worked on it above and beyond the normal call of duty.

The major responsibility for some of the resistance on the part of some of the nursing personnel lies with the present writer. In the first place the professional personnel were not oriented and trained in regard to the goals of the project and they were not prepared in regard to the roles of the indigenous non-professionals. As a result of the experience

gained from this study, this writer strongly feels that it is vitally important to orient the professional personnel in regard to the goals of such a project, and to orient them to their roles in it, and to the roles of the non-professionals in such a project. The training and orientation of the professional staff in regard to the project goals is equally as important as the training of the non-professional staff. Had this training occurred it seems evident that many of the project problems would never have occurred.

Based on the experience of the present project this writer strongly feels that (1) only professional personnel who volunteer for such a project should be utilized. (2) Attempts should be made to recruit professional personnel on a part-time basis who are in agreement with the project's goals and who are not presently employed. Every metropolitan area of the country has a relatively large pool of professional nurses who for various reasons are not interested in full-time employment. In all likelihood some of these people could be encouraged to participate in a project of this sort, on a part-time basis, often at night, and their utilization would tend to relieve the pressure on the regular, often overburdened, public health nursing staff. (3) Consideration should be given to the utilization of licensed practical nurses in immunization clinics. Immunization duties do not require a high degree of skill and these lesser trained individuals should be able to quite adequately cope with such tasks, several of them being under the supervision of one professionally trained nurse. (4) Consideration should be given to the utilization of

non-professional personnel to actually give immunizations in programs of this sort. As previously noted, the skills required in giving immunizations are such that indigenous non-professionals could be easily trained to perform such tasks.

Indeed, as noted earlier in this study indigenous non-professionals have been utilized to perform much more complicated tasks in certain programs with a high degree of success. The utilization of these people, under proper supervision, achieves several goals. In the first place, the utilization of such people would serve to release the professional nurses' time to perform other higher skilled tasks. All indexes of health manpower needs indicate that such changes are essential if the health needs of our society are to be met. Also, and equally important, such job descriptions provide employment for a segment of the population in this society who desperately need it and who heretofore have been largely by-passed in the area of employment.

Finally, in regard to the training of non-professionals; based on this writer's experience in the present study, and several others in the literature which have been previously quoted, this writer feels that the training should be problem oriented and of a continuous nature, rather than a two-week lecture session in an academic setting. There are a number of things which should be stressed in the training of non-professionals. One of these which has been discussed by several others previously quoted is that a "people orientation" should be constantly stressed to offset tendencies toward "agency orientation" which seems to be quite

pervasive. Also the non-professional staff should be trained on the roles which the professional staff will be playing in the project and their relationship to those of the non-professional staff.

It seems to this writer that discussion sessions on the various roles and problems of the project should be held periodically with all of the personnel involved. Non-professional personnel could be easily trained to do more group work in projects of this sort which would enable them to reach more people in less time. This was not stressed in the present project because as has already been indicated the clinics were running at capacity levels. This writer is also in agreement with several of the studies previously discussed in regard to the relative lack of supervision which is necessary in projects of this sort. The indigenous non-professionals in the present project were told quite clearly and simply what the project expectations were and that there would be no one supervising them in regard to their time in the field as long as adequate numbers of people were coming into the clinic. Once the policy of working "with" and not "for" was established between the writer and the indigenous personnel, the present writer became more-or-less superfluous baggage.

The importance of the selection process in regard to indigenous personnel can hardly be over-emphasized. As previously noted, there are at present no magical instruments with which we can select effective indigenous personnel. Based on the experience of the present study and others previously discussed, this writer did not attempt to select what

are generally described as "leaders" for the project, on the assumption that they were already involved in various other activities. These informal "leaders" were however, sought out and asked for recommendations of people who they felt could best perform the tasks in the project which was carefully described to them. The method of selection which was utilized, as has been previously discussed, has been successful. It is also this writer's opinion that this method has an advantage over mass recruiting approaches which have been previously described. The method of approaching the informal leaders and asking them to provide lists of people they thought would be best qualified for such a project avoids raising the expectations of people for jobs unnecessarily and it seems to this writer that it also avoids the inevitable negative attitudes which arise on the part of those individuals who are not selected in a mass recruiting program.

Finally, it is strongly recommended in view of the proven effectiveness of the techniques employed in this study that facilities and personnel adequate to the public health task to be accomplished be provided in advance. In this way, the reduction in desirable outcome and associated frustration of being turned away can be avoided. The terms "resistant" and "hard-core," it seems, apply only when inappropriate approaches to the problem are employed. Based on the experience gained from the present study carried out in the lowest socioeconomic area of a city, the majority of the people are not "resistant," "apathetic about health concerns," "alienated from society," etc. They may perhaps be

tired of condenscending and patronizing attitudes on the part of some "professional" public health staffs. They may be tired of long waiting times at clinic hours inconvenient for them. They may be tired of Public Health Services which have generally provided second rate vaccines, second rate service and second rate personnel, but they will respond to programs which attempt to overcome these obstacles.

CHAPTER V

SUMMARY

Some of the general problems in Public Health programs were discussed in regard to reaching certain segments of populations drawing examples from both domestic and cross-cultural materials. The studies revealed that public health programs have generally had difficulty in reaching low socioeconomic status and minority group individuals with their various programs.

The problems which Public Health Service programs have had in attempting to reach low socioeconomic and minority segments of the population in their immunization programs utilizing their traditional approaches was also discussed. Traditional approaches were defined as generally depending on the mass media such as newspapers, television, radio, posters, pamphlets, etc. in attempting to encourage people to come in for their immunizations. It was noted that these techniques had not generally been effective in reaching low socioeconomic and minority populations which have become a focal concern in the immunization programs in the field of public health. Several cross-cultural programs utilizing mass media techniques were discussed in terms of their possible implications for immunization programs in this country.

Cross-cultural experiences in the use of indigenous personnel were also discussed. It was pointed out that such individuals had not been widely utilized in this society until recent years and that this was particularly true of United States Public Health Service. It was also noted that the use of such personnel was not a particularly radical idea and that such personnel often constituted a basic part of the foundation of many public health programs in other countries. A number of implications for United States Public Health programs were discussed and it was also pointed out the cross-cultural and domestic materials, enlightening as they were, were not generally of a quantitative nature.

The utilization of indigenous personnel in health and social service programs was discussed. It was pointed out that the use of such personnel was not new or unique in this country and that Clifford Shaw, a social scientist, probably initiated the first organized program in the United States to use such workers. This was known as the Chicago Area Project and it attempted to prevent juvenile delinquency. It was pointed out that in demonstration programs the statement of program assumptions and goals and the framing of testable hypotheses was difficult and time consuming. It was also noted that in such programs research evaluation was often relegated to the last when it was too late to plan properly. It was pointed out that if social agencies and governments were to proceed rationally in expenditures of funds for the public good, research had to be a part of their everyday operation and that they should have built-in operations of accounting and quality control The importance of

selection and training of non-professionals was discussed, as was the importance of training the professionals in how to relate to and utilize the non-professionals. It was also pointed out that the lack of quantitative studies in this area was strikingly evident.

The method of selecting experimental and control areas for the project was described, including location of Census tracts which had relatively similar income, racial, health and population characteristics and which were relatively isolated from each other and the rest of the metropolitan area in terms of topography and neighborhood communities. Personnel selection, orientation, and activities were also described, as were some of the early problems which the personnel encountered.

The results of the study were reported. A comparison of the period of intervention with comparable months of the previous year revealed that both number of persons served and number of immunizations administered increased significantly for the entire immunization clinic operation. Census Tract data were converted to rates to allow for differential population sizes. As intervention was employed sequentially in each tract, immunization rates increased significantly as compared with either control tracts or the previous year in the same tract. Age-specific rates indicated a significant increase in immunization of adults who are generally considered most difficult to reach. Results of this study indicate clearly that: (1) Indigenous personnel can be effectively employed in improving the immunization level of "hard-core" areas. (2) They tend to become more effective in the work with experience.

(3) They should be continuously employed in such areas to (a) adequately maintain immunization levels in highly mobile populations (b) remind the people when booster immunizations are needed.

The discussion pointed out the need for a broadly based involvement of people in a project of this nature. It was suggested that future studies might consider various sorts of inducements as rewards for bringing x number of persons in for immunizations. It was noted that in projects of this sort the lack of a specific research design was detrimental to research goals. It was also pointed out that the lack of involvement of all personnel directly affected by a project of this nature seriously jeopardized the effectiveness of it. The general lack of public health trained nursing personnel and the implications for a "people-oriented" program was discussed. Other possible professional health manpower sources were discussed as were non-professional tasks. It was noted that the terms "resistant" and "hard-core" in regard to low socioeconomic status populations were not relevant when proper approaches were utilized.

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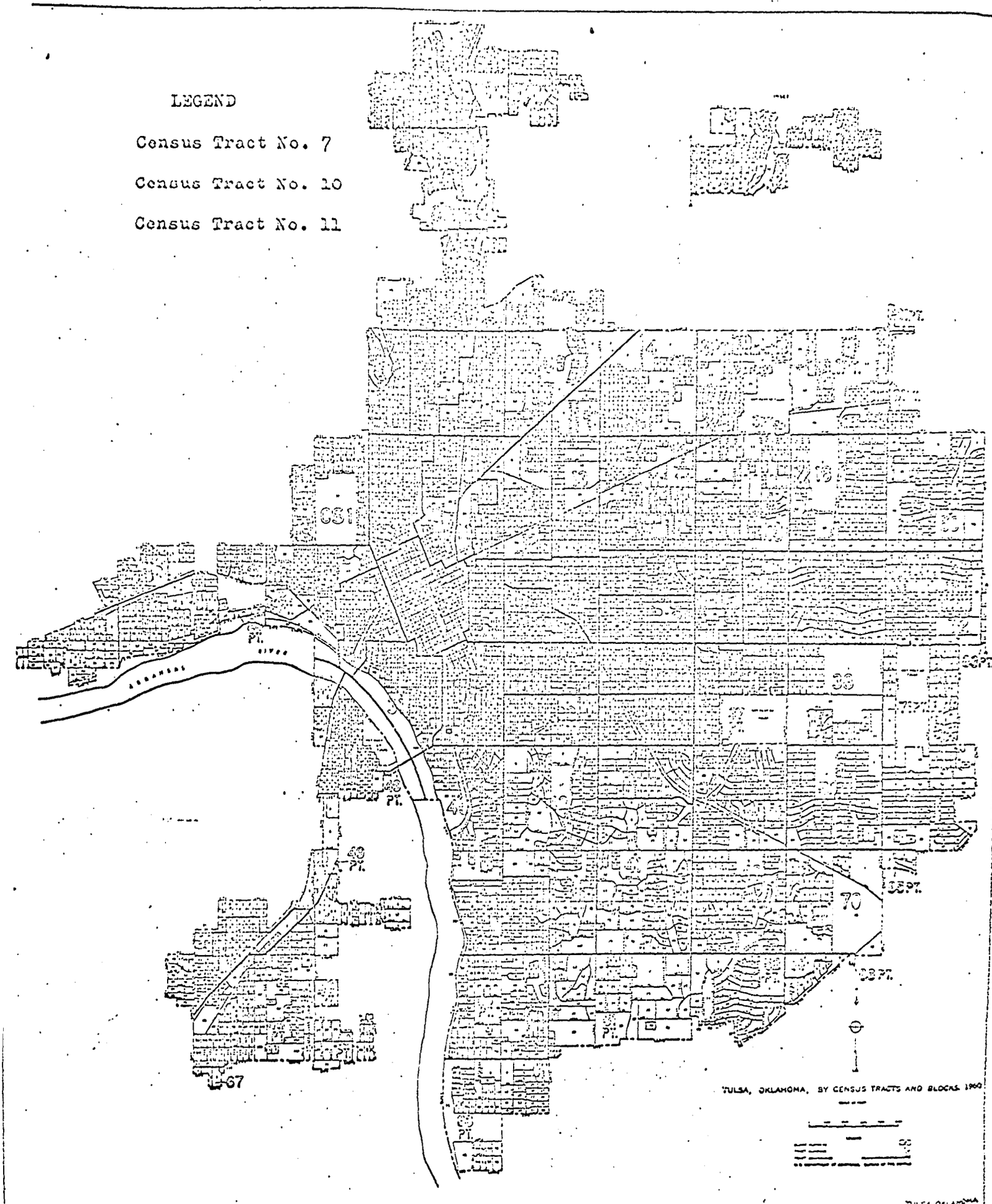
APPENDIXES

Census Tract Map of Tulsa Oklahoma



APPENDIX B

Record Forms

YOU HAVE AN APPOINTMENT AT THE IMMUNIZATION CLINIC.

DATE _____

TIME _____

PLACE _____

IF YOU ARE UNABLE TO KEEP THIS APPOINTMENT, YOU MAY COME ON _____
A PARENT IS REQUIRED TO ACCOMPANY THE CHILD TO THE CLINIC.

_____
Nurse

IMMUNIZATION HISTORY

		Date	Date	Date	Date
POLIO (all ages)	Oral Type: / Injection:				
DPT SERIES & BOOSTER (infancy and preschool)					
DT—every 3 years (school & adult ages)					
SMALLPOX—every 3-5 years (all ages)					
MEASLES (infancy & preschool)	Type:				
OTHERS					
TUBERCULIN SKIN TEST (all ages)	Type: / Results:				

The jet age brings communicable disease closer to every community. Smallpox, polio, diphtheria (D), whooping cough (P), tetanus (T), and measles can be prevented by periodic immunizations.

NAME _____ AGE _____

ADDRESS _____ SEX _____ RACE _____

SCHOOL _____ If Child, Give Parents' Names

TYPE	DATE	DATE	DATE	DATE	DATE	DATE
DPT						
DT						
TYPHOID						
SMALLPOX						
POLIO-MYELITIS						
TUBER-CULIN						

(Rev. 6-1-62) IMMUNIZATION AND TEST RECORD ODH Form No. 218

CHILD HEALTH CONFERENCE

TUL-267

DATE

LOCATION	AGE	MEDICAL SERVICE		D. P. T.					SMALLPOX		POLIO				MANTOUX	OTHER
		* INF.	* P.S.	1	2	3	B	B	1	2	1	2	3	4		

APPENDIX B
(continued)
Tabulation Forms