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ALTERNATIVE WAYS OF  
PROVIDING MEDICAL CARE  
TO MIGRANT FARM WORKERS

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Migrant Farm Workers

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1. Purpose: This paper reports on the cost effectiveness study performed by the authors in QNT 451 to examine alternative ways by which migrant workers in the United States may be provided medical care. The general problems associated with the existence of migrant labor, and the specific problems of migrant health are presented in Appendix 1.

2. Scope: The approach to the migrant health problem is generalized; alternatives considered can be applied to all or a part of the migrant population of the U.S., inclusive of those foreign migrants who work in the U.S. and return to their homeland during the non-harvest period. The alternatives considered are predicated on a constant effectiveness level of medical care. This level is provided by a medical staff including one physician (general practitioner), equipped with modern facilities comparable to those enjoyed by the average general practitioner; the staff is also provided a suitable installation in which to operate. The constant level of medical care further provides each migrant the opportunity of seeing a doctor once each week throughout the year. This involves an average patient load of 150 patients per week per thousand migrant population.

3. Problem: Given the poverty of migrants and their lack of social acceptance in the areas in which they work, (See Appendix 1) and recognizing that schemes to provide medical care which exist only on paper do not provide migrant medical care in fact,

due to a lack of information and transportation on the part of the migrants; the basic problem was indentified as that of getting the migrant together with a medical doctor and his staff on a regular basis, and further, of providing that opportunity for medical care to the migrant throughout the year.

4. Alternatives Considered: A total of ten distinct options for solving the problem, as stated above, were developed. These are addressed in detail in Appendix 2, and summarized below.

a. Option 1. A medical activity is established within a permanent type installation within each migrant area of 1000 population and is maintained active throughout the year. Its primary function is to provide medical care to migrants during the active harvest period each year. During this period migrants are transported from camps to the doctor and return by bus. During the remainder of the year the medical activity is utilized to service the rural population at large in the general area. The costs involved in this total project are therefore viewed as jointly applicable between the two programs and allocation is made accordingly.

b. Option 2 is the same as option 1 except that the activity is operated exclusively for migrants during the harvest period and closed down during the remainder of

the year. All equipment is stored in place, appropriately maintained, and protected during the inactive period.

c. Option 3 is the same as option 2 except that at the conclusion of the harvest period the equipment is removed from the installation and stored in a commercial warehouse. The installation is retained on lease for the full year.

d. Option 4 is the same as option 2 except that at the conclusion of the harvest period the equipment is packed and moved to an installation to be opened in the next active harvest area.

e. Option 5 uses temporary installations, rented for the harvest period only. The target population is transported to and from the doctor by bus. At the conclusion of the harvest period, the installation is evacuated and released, and the equipment is stored in a warehouse for the remainder of the year.

f. Option 6 is the same as option 5 except that at the conclusion of the harvest period the equipment is moved to a rented installation to be opened in the next active harvest area;

g. Option 7 uses a mobile trailer or van, suitably modified for operation as a clinic. Migrants are bussed to and from the doctor as before. The facility provides service during the active harvest period and is parked and protected

for the remainder of the year.

h. Option 8 is the same as option 7 except that at the conclusion of the harvest period, the van or trailer is moved to the next active harvest area.

i. Option 9 uses a trailer or van; suitably modified, which visits the target population camp-to-camp during the active harvest period, and is parked and protected for the remainder of the year.

j. Option 10 is the same as option 9 except that at the conclusion of the harvest period, the van or trailer is moved to the next active harvest area.

Appendix 2 lists and defines the terminology used.

5. Assumptions: The following significant assumptions were made:

a. Costs of program administration and costs associated with hospitalization and other care beyond the capability of the activity established, are assumed to have equal impact on all options examined.

b. Total hours per week for each member of the medical staff will not exceed 42 hours including travel time; a standard 30 hours per week clinic - in - operation time.

c. The time required to move the medical activity to a new harvest area is negligible.

d. For any specific migrant stream, migrants have a definable home-base area to which they go during the

off-harvest period.

e. All options examined are predicated on the programs being unified and centrally directed, with the capability to operate independent of state boundaries or other political subdivisions.

6. General Development of Option Costs: A single model was developed by means of which all options were compared. The model encompasses three broad categories of costs: one-time cost, yearly costs, and variable costs. One-time costs are initial outlays only, representing sunk costs, capital expenditures. Yearly costs are those which recur on a relatively stable basis, year-to-year and include interest charges (opportunity cost of capital) on one-time costs and depreciation of capital equipment. The remaining yearly costs are: installation lease or rental, maintenance, operation, upkeep, refurbishing, and protection during out-of-use periods; equipment maintenance, operation, upkeep, storage, temporary hook-up, moving, and protection during out of use periods. For options 8 and 10 the cost of moving the installation is also included. Variable costs pertain directly to the operation of the medical activity including pay allowances and travel costs of the medical staff; medical supplies expended for patient care and costs of transporting patients. The details of model development are presented in Appendix 3. The detailed listing of input cost data, with sources indicated, is contained



in Appendix 4. The mechanics of aggregating costs, option by option, depends upon the use of multiplicative factors. These factors, together with their derivations are contained in Appendix 5. Formulation of one-time and yearly costs are listed, option by option, in Appendix 6, and those for variable costs in Appendix 7. Formulae, individually developed and presented in the appendices referred to above, were incorporated into a computer program to permit manipulation of the input data and the quantification of output costs for option comparison. Appendix 8 contains a copy of the computer program list together with an explanation of input data required and an explanation of the program operation.

7. Model Input Variables: The significant input parameters are:

- a. X; the mean one-way travel distance between the point of origin for either the bus or the mobile clinic and the target population.
- b. Y; the mean one-way travel distance between the point of origin for the medical staff and the location of the medical activity in its fixed mode (not in a van or trailer visiting camp-to-camp).
- c. N; the number of distinct, geographically placed migrant areas, established in a year for a 1000 population slice of the migrant stream.
- d. WKL; the number of weeks in a year representing the

out of season period for a 1000 population slice of the migrant stream. (This corresponds to that period during which the migrant area is established at home-base. The input N therefore includes this area).

e. DIST; The total length in miles between migrant areas, successively established, throughout the year, for a given migrant stream. (This distance divided by N equals the mean distance between successive migrant areas).

f. RATEI; the social discount rate.

g. XT; the total migrant population considered as a standard slice of the migrant stream (This quantity is taken to be 1000).

h. XL; the total number of non-US nationals comprising the standard 1000 population slice of the migrant stream. (This number departs the US during the period WKL)

i. XR; the average number of rural personnel served at each migrant area as established under option 1 only.

j. T; a decimal fraction which specifies that difference in total costs by which each option is compared to the least cost option, for the same parameters. When the cost difference is less than T (in percent) the options are considered to tie for optimum.

8. Model Manipulation: The model was exercised using the East-Coast Migrant Stream as a basis for investigation. XT was fixed at 1000, T was established as .05, RATEI at 10%,

WKL at 8 weeks, and DIST at 3150 miles. With these values XL was used as 0 and 300, XR was set at 500 and 800, and X, Y, and N were specified as follows:

- a.  $X=11, 15, 21, 25, 31, 36, 41, 50, 55, 60, 70$ , and 75 miles.
- b.  $Y=0, 10, 20, 30, 35$ , and 40 miles.
- c.  $N=4, 9, 14$ .

9. Results Obtained:

- a. When the migrant population is concentrated to the extent that no transportation is required, i.e., all 1000 of the migrants can walk to the clinic, and when the clinic is located coincidental with the target population, for small values of N ( $N=4$ ) options 1, 5, 6, and 8 are within 5% of the minimum cost option. (Minimum cost option, 1, based on  $XR=800$ ) For midrange through large values of N, options 1, 6, and 8 are within 5% of the minimum cost option (which is option 8).
- b. When maximum distances of X (70 to 75miles) and Y (35 to 40 miles) are considered, for small N, options 1, 4, 5, 6, 8, and 10 are within 5% of the minimum cost option (Minimum cost option, 1, based on  $XR=800$ ). For midrange through large values of N, options 1, 6, 8, and 10 are within 5% of the minimum cost option (which is option 8).
- c. For all other values X and Y and N option 10 is

optimal by 5% or more.

10. Conclusions:

- a. Within the constraints established the mobile installation, van or trailer, is consistently least cost optimal at the 5% level. This optimality applies to option 10 except when the migrant population is concentrated within walking distance of the medical activity, in which case it applies to option 8. No other option or combination of options are optimal for all values of X, Y, and N.
- b. The van cost for various values is 2% higher than the trailer cost. Within overall accuracy this difference cannot be considered significant.
- c. For mid-range values of X, all N, the average total cost per migrant per year ranges between \$70.00 and \$75.00. It should be noted that this cost is exclusive of administration and other medical costs, principally hospitalization, not included in this model.

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APPENDIX 1

## GENERAL PROBLEMS OF MIGRANT HEALTH

1. The need for a mobile labor force during peak seasonal demands in agriculture has been consistent in America since the late 19th Century. The migrant farm worker was a response to these demands, the continuation of which has established migrant farm workers as a social institution in contemporary society. Official estimates place the number of people engaged in migratory farm work, together with dependents, as remaining fairly constant at about one million since World War II.<sup>1</sup> The actual number of migrant workers is not precisely known. Fig. 1-1, lists a 1960 U.S. Department of Labor estimate based on peak number of migrants in each reporting state. Yet these figures, according to Shotwell,<sup>2</sup> underestimate the true numbers of migrants by as much as 50%. Although mechanization over the recent past has significantly transformed the agricultural industry and reduced man-hour requirements, many farming communities continue to have acute needs for seasonal workers which the local area cannot begin to supply. With the present pattern of crop harvest requirements and insofar as "stoop" labor remains more economic than mechanization, it seems reasonable to expect that a large force of migrants will continue in the U.S.

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<sup>1</sup>Helen L. Johnston, "Migrant Health -Present and Future" p.1.

<sup>2</sup>Louisa R. Shotwell, The Harvesters The Story of the Migrant People. Doubleday and Co. Inc. Garden City, N.Y.; 1961. p. 32.

STATE	DOMESTIC MIGRANTS (Exclusive of dependents who travel but do not work)	FOREIGN WORKERS	TOTAL
Texas	96,000	137,000*	233,000
California	60,000	84,000*	144,000
Michigan	47,000	11,000	58,000
New York	28,000	600	28,600
Florida	25,000	10,000	35,000
Kansas	21,000	30	21,030
Oregon	20,000	400	20,400
Washington	18,000	50	18,050
North Carolina	14,000	none	14,000
Missouri	13,000	1,000	14,000
New Jersey	13,000	800	13,800
Maryland	13,000	50	13,050
Wisconsin	12,000	1,500	13,500
Oklahoma	11,000	none	11,000
Virginia	11,000	600	11,600
Colorado	10,000	5,700	15,700
Ohio	10,000	30	10,000
Arkansas	9,000	39,000*	48,000
Idaho	9,000	none	9,000
Arizona	8,000	16,000*	24,000
Illinois	7,500	500	8,000
Pennsylvania	7,500	none	7,500
North Dakota	7,000	50	7,050
Montana	7,000	2,000	9,000
Indiana	7,000	1,500	8,500
Minnesota	5,000	300	5,300
Georgia	5,000	1,000	6,000
Louisiana	5,000	none	5,000
Delaware	5,000	none	5,000
Connecticut	4,500	1,200	5,700
Nebraska	4,000	2,000	6,000
South Carolina	3,500	none	3,500
Kentucky	3,500	350	3,850
Alabama	3,500	none	3,500
Utah	2,500	400	2,900
Wyoming	2,000	1,200	3,200
South Dakota	2,000	200	2,200
Massachusetts	1,500	500	2,000
New Mexico	1,500	20,000*	21,500
Mississippi	1,500	none	1,500
Iowa	800	75	875
Nevada	600	100	700
West Virginia	600	400	1,000
Tennessee	500	800	1,300
Maine	400	8,100	8,500
New Hampshire	300	200	500
Vermont	200	25	225

\* These five states use four fifths of the Mexican nationals.

Fig. 1-1. Estimate Number of Migrants in 1960.<sup>1</sup>

<sup>1</sup>Shotwell, op. cit., pp. 33-34.



2. The situation for the migrant farm worker relates to a number of areas, all of which combine to intensify his plight. Income averages at the poverty level even when several members of the family work. Estimates of average earnings are \$514 per annum for 1949, and \$1362 for 1965.<sup>1</sup> The migrant therefore is faced with the fundamental issue of requiring all of his income to maintain basic sustenance so that he may go on to the next harvest, with no capability to provide for either education or medical attention for himself and his family.

3. The problem of the migrant worker is closely allied to the overall larger problem of poverty in the United States in general. A simple statement of poverty however, is inadequate to the case of the migrant. Migrants work in communities in which they are not legal residents, and most of the social assistance programs which do exist confer legal right to such benefits only on those who live in the community. The migratory worker is therefore usually excluded from benefits generally available, in varying degree, to the poverty level population. A U.S. Department of Labor Bulletin points out that only three states have no residency requirements for health services other than public health, these are: New York, Rhode Island and Hawaii.<sup>2</sup>

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<sup>1</sup>Johnston, op. cit., p. 1.

<sup>2</sup>U.S. Dept. of Labor Bulletin No. 226, Bureau of Labor Standards. 1960. p. 28.

Moreover, as an interloper into the community, the migrant is first of all neither wanted nor welcome; segregation and discrimination against him is further sharpened by virtue of color or language - as well as social position; and his interests and protection under the laws are easily slighted. In sum, the totality of community facilities - basically designed to provide for the community proper - are in large part denied the migrant by one means or another, even if payment were assured. This applies particularly to local educational facilities, hospitals, medical and dental facilities, courts, and law enforcement agencies. These disadvantages of the migrant therefore are viewed as even more severe than those faced by the non-migratory poverty level population, and serve to intensify the ills of poverty within this particular group. As a consequence, the misery from the diseases, disabilities and mental retardation caused by under and mal-nutrition, inadequate shelter, clothing, sanitation and other brutalizing effects of poverty, are more pronounced in this segment of the rural poor. Migrants, especially their children, are beset by diseases generally thought of as virtually eradicated in the U.S.; these include smallpox, diphtheria, whooping cough and lockjaw.<sup>1</sup>

4. At the present time, the Federal Government has a Migrant

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<sup>1</sup>Truman More, The Slaves We Rent. Random House, New York. 1965.

Health Program (under PL 87-692) which is organized into 9 regional districts for the 50 states, DC and Puerto Rico. Its purpose is to improve health services and living conditions of the migrant by assisting communities to provide access to health services and to link the services of different communities together for some continuity of health care. There are 116 projects devoted to health and medical care in approximately 300 counties. Over 200 family health centers operate on a seasonal or year-round basis. The 1969 federal appropriation for this purpose was approximately \$8 million, and the program is augmented in diverse degrees by local, county, and state governments, private charities and volunteers. Estimates are that health care in some measure has either been provided for, or been made accessible to, about one-third of the migrant population - at least part of the year.<sup>1</sup> In a recent California survey two thirds of the migrant children were found to have never received any immunizations.<sup>2</sup>

5. Clearly, the problem of health care for migrant farm workers is a part of the larger problem of health and medical care for the rural poor; both of which are intrinsically related to the overall national problem of massive poverty within an affluent

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<sup>1</sup>National Committee on the Education of Migrant Children "Migrant Health Program", n.d., p. 1.

<sup>2</sup>Moore, op. cit., p. 57.

society. The care of the migrant takes on special significance brought about by the transient state in which he lives, and the impermanency of his status and lack of acceptance in those communities where he performs the greatest service. As a result, the migrant, most generally, finds himself in isolated rural areas and either unaware of or cut-off from such services and assistance as may be available locally. The migrant therefore, constitutes the last large segment of the U.S. population at or near the poverty level towards which some form of concerted public or private assistance welfare program is not directed. The present modest program of the U.S. Public Health Service is clearly inadequate; dependent mostly on private charities or county governments for what effectiveness is obtained. A 1969 estimate maintains that 600 U.S. counties using migrant labor have no organized project services worthy of the name, either publicly or privately supported.<sup>1</sup>

6. In the case of the "Braceros", the Mexican nationals who work part of the year in the U.S. and return to Mexico during the off-season, an insurance plan is in effect. This plan, underwritten by two California insurance companies is described: "...the health insurance plan..., created on paper... must be

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<sup>1</sup>National Committee on the Education of Migrant Children, op. cit., p. 1.

judged less than adequate."<sup>1</sup> The source did not qualify adequacy, merely stating that the criteria was a day-to-day evaluation of the working of the plan. The charge to the Mexican migrant for this insurance is \$4.00 per month.<sup>2</sup>

7. The failure is a failure to address the specific problem of getting the migrant together with the medical personnel on a regular basis.

8. There are instances in which this basic problem has been addressed on a local level. In Maricopa County, Arizona the Director of the Migrant Ministry with the cooperation of the Kiwanis Club built a trailer unit in which a clinic was installed. The equipment was furnished by donation; local doctors and nurses donated their services. The clinic became operational in 1959.<sup>3</sup>

9. The University of Rochester Project, Migrant Office, staffs and equips two clinics for the Monroe and surrounding counties during the migrant season. Transportation for migrants, when available, is furnished by either a borrowed bus or private vehicles. The clinics are open two nights a week, staffed essentially by volunteer doctors and workers.<sup>4</sup>

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<sup>1</sup>Gerald Gordon, et al. Disease the Individual and Society, College University Press, New Haven, Connecticut 1968. p. 590.

<sup>2</sup>Ibid. pp. 589-593.

<sup>3</sup>U.S. Dept. of Labor Bulletin 221, 1960. p. 29.

<sup>4</sup>Interview with Miss Julia Porter, Coordinator, University of Rochester Project, Migrant Office. Nov. 1969.

10. There is not now any integrated nation wide program by which migrant workers are assured of regular and consistently available medical care.

APPENDIX 2

## OPTIONS CONSIDERED

1. A total of ten distinct options as alternative ways of providing medical care to migrant farm workers were selected for detailed study, based upon the following primary considerations:

- a. Possible methods by which the doctor and the target population could be brought together to accomplish the required dispensation of medical care.
- b. Alternative ways of establishing medical care dispensing sites in or for areas with migrant populations.
- c. Alternative means by which the equipment, facilities and installations provided to or required in the program could be employed.

2. All options are based upon a constant level of effectiveness of medical care provided to a nominal migrant population of 1000 (including dependents and non-US nationals); or a case load of 150 patient visits per week during a 30 hour total operating hour period for the medical activity. The medical equipment and supplies, and the medical staff considered in terms of active operating time, therefore are constant between all options. The ten options of concern are represented in the branch schematic presented in Figure 2-1, and described in detail below:

a. Definitions:

- (1) The medical activity is defined as the total of

medical equipment, supplies and staff established to provide that level of medical dispensation and care specified.

- ° (2) The installation refers to the structure or conveyance which houses the medical activity. The installation may be of either;

- (a) permanent type, in which case it is retained the year around for the program during both in-use and out-of-use periods; or

- (b) of temporary type in which case the installation is rented only for the in-harvest period, and closed down and released at conclusion of the period.

- (3) A migrant area is that geographic subdivision within which a target population of 1000 migrants nominally reside.

- (4) Home base is included in the definition for a migrant area, but specifically refers to that location generally occupied by the migrant during the harvest inactive (or "wintering") period.

- (5) Fixed mode refers to operation of the activity from a fixed location and requires that the target population be transported from resident camps within the migrant area, to the activity and return. This is opposed to the mobile mode in which the activity-installation combination is brought to the target



# BRANCH SCHEMATIC OF TEN OPTIONS SELECTED

OPTION

OPEN ALL YEAR

1

EQUIPMENT REMAINS IN USE - ON SITE.

2

CLOSED - END OF HARVEST PERIOD  
EQUIPMENT STORED ON SITE

3

CLOSED - END OF HARVEST PERIOD  
EQUIPMENT REMOVED TO WAREHOUSE STORAGE

4

CLOSED - END OF HARVEST PERIOD  
EQUIPMENT MOVED TO NEXT MIGRANT AREA

5

CLOSED AND RELEASED - END OF HARVEST  
EQUIPMENT REMOVED TO WAREHOUSE STORAGE

6

CLOSED AND RELEASED - END OF HARVEST  
EQUIPMENT MOVED TO NEXT MIGRANT AREA.

7

CLOSED - END OF HARVEST PERIOD.  
INSTALL. W/ EQUIPMENT MOVED TO STORAGE AREA.

8

CLOSED - END OF HARVEST PERIOD.  
INSTALL. W/ EQUIPMENT MOVED TO NEXT MIGRANT AREA.

9

CLOSED - END OF HARVEST PERIOD  
INSTALL. W/ EQUIPMENT MOVED TO STORAGE AREA.

10

CLOSED - END OF HARVEST PERIOD.  
INSTALL. W/ EQUIPMENT MOVED TO NEXT MIGRANT AREA.

PERMANENT INSTALLATION  
(LEASED - BLDG)

TEMPORARY INSTALL.  
(RENTED - BLDG)

PERMANENT INSTALL.  
(TRAILER OR VAN)

PERMANENT INSTALLATION  
(TRAILER OR VAN)

FIXED MODE

MOBILE MODE

population in place by suitable towed trailer or truck van conveyance.<sup>1</sup>

- (6) The migrant stream refers to the migration sweep made by the target population in its displacement from one migrant area to another over time, dependent upon harvest requirements. The migrant stream thus consists of a general number (N) migrant areas (including home base) over the year.

b. Option #1, requires an activity within a permanent type installation in each migrant area of the migrant stream, for the migrant population during that period of the year in which migrants are present; and is thereafter kept open and functioning for the native rural population remaining in place. The activity-installation combination is therefore maintained open and operational on a continuous basis throughout the year. The operation is conducted in the fixed mode with the migrant population provided transportation to and from the medical activity. The shared nature of the option involves two distinct programs - one for migrants and one for the in-area rural population, with a resultant allocation of those costs which can be

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<sup>1</sup> Note that mobile mode refers to the movement of the van or trailer within a migrant area, not to movement of the van or trailer from one migrant area to another.

considered as joint. Figure 2-2 presents a schematic portrayal of the essentials for this option.

c. Option #2 establishes activities and installations on the same basis as for option #1 except that the activity is operated exclusively for migrants as the target population and is closed down at the conclusion of the migrant-harvest period. During operating periods, the migrant population is provided transportation to and from the activity. At conclusion of the operating period, the installation is closed down, the equipment and supplies are stored in place, and appropriate maintenance and protection provided during the out-of-use period preparatory to reopening for subsequent harvest periods.

d. Option #3 is a variation of option #2 in that the activity equipment and supplies are removed from the installation at conclusion of the harvest period, moved to a commercial warehouse and stored there for the annual out-of-use period. The installation is retained on lease throughout the year. With the next harvest season, the activity equipment and supplies are removed from storage, reinstalled in the installation and reopened for operation.

e. Option #4 is an additional variation of option #2 with the difference concerning the disposition and use made of the equipment for the medical activity. At the conclusion of the harvest period in the current migrant

# SCHEMATIC REPRESENTATION OF OPTION #1

PERMANENT INSTALLATION - IN FIXED  
MODE - EACH MIGRANT AREA.

LEGEND:  
 $X_T$  = TOTAL MIGRANT POPULATION (1000)  
 $X_L$  = NON-US MIGRANT POP.  
 $X_R$  = RURAL POPULATION ( $\leq 1000$ )  
 $N$  = NO. OF MIGRANT AREAS IN STREAM.  
 $K$  = AVER. WEEKS PER HARVEST PERIOD.

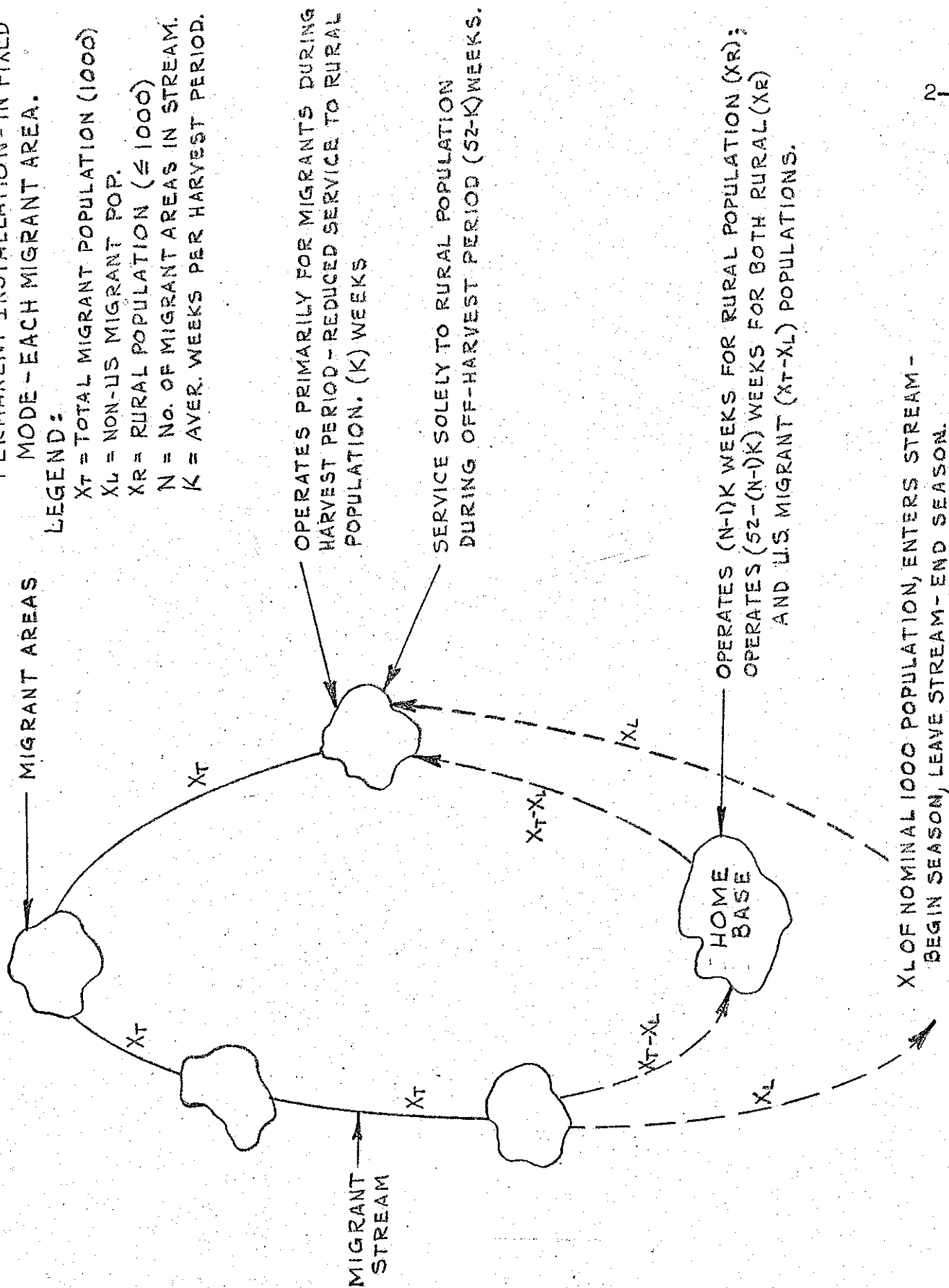


FIGURE 2-2.

area, the equipment is packed and moved by long-haul to another installation in the next appropriate migrant area within the migrant stream.

f. Option #5 establishes activities within temporary installations rented for the migrant harvest period only. The operation is conducted in the fixed mode for a given migrant area with the target population transported to and from the activity. At conclusion of the harvest period the installation is evacuated and released, with the equipment removed to a suitable warehouse and stored contingent to reopening of the migrant area for the next active harvest period. Reopening of the activity can normally be expected to take place in a different installation each year.

g. Option #6 is a variation of option #5 in that the equipment for the medical activity is packed and shipped by long-haul to another rented installation in the next appropriate migrant area within the migrant stream.

h. Option #7 houses the medical activity within a mobile trailer or van suitably modified to accept the medical equipment and supplies and permit operation of the staff in the dispensation of medical care. This option is operated in the fixed mode in which the activity-installation combination is suitably located for the migrant area serviced, and remains on site during the operating period.

The target population is provided transportation to and from the activity during the active harvest season. At conclusion of the season, the equipment is suitably stowed and the installation (with equipment) moved to a storage or parking area approximate to the migrant area, where it is stored for the remainder of the year. Surveillance and protection of the installation (with equipment) is provided for at this storage location. When the migrant area again becomes active in harvest season, the installation is relocated, and reopened for operation.

i. Option #8 is a variation of option #7 in that, upon conclusion of the harvest season in the current migrant area, the installation, (with equipment and supplies) is moved long-haul to the next appropriate active migrant area within the migrant stream, and reopened for operation at the new location.

j. Option #9 involves a trailer or van suitably modified for acceptance of the equipment and to permit operation of the medical activity. This installation - activity combination operates in the mobile mode, visiting the target population camp-to-camp during the active harvest period for the migrant area of concern. At conclusion of the harvest period, the mobile unit is moved to a storage or parking area, approximate to the migrant area served, where it is stored for the remainder of the year with

suitable protection provided. The unit is reactivated and placed in operation when the migrant area of concern again becomes active.

k. Option #10 is a variation of option #9 in that the mobile unit, at conclusion of the harvest period in the current migrant area, is prepared for travel and moved long-haul to the next appropriate active migrant area within the migrant stream, and placed in operation (mobile mode) at the new location.

3. All options considered have been developed with appropriate consideration for operation and maintenance of the activity, the travel and moving distances of concern, methods of transporting the target population and provisions for maintenance on storage and physical protection of equipment or material during out of use periods. The specifics of general model development are presented in detail in Appendix 3.

APPENDIX 3

## GENERAL MODEL DEVELOPMENT

1. The Migrant Stream: The fundamental requirement for migratory labor rises from the fact that large areas in the United States are planted with the same (or similar) produce crops which must be harvested in a relatively short time. The nature of this demand is such that large labor augmentations are required in specific areas for relatively short periods of time. Moreover, there is no particular set pattern to harvest requirements in both time and space, with the situation further compounded by crop rotation, varying yields from year to year, land taken out of production for specific times and the climatic gradient existing through cross sections of the U.S. Because of these factors, there is no reasonably stable pattern of additional farm labor requirements over both time and space. In general, however crop areas ripen for harvest in time from the southern to the northern regions of the country. The migrant therefore can be conceptually viewed as following a migratory pattern or "stream" oriented roughly north-south, as he attempts to obtain hire for his labor resource to the maximum extent. One such "stream" can be mentally pictured as the "East Coast Migrant Stream". Here the migrant begins his annual migration with early crops in Florida and the lower south, and works his way through the mid Atlantic region, New Jersey, and into New England and the



Eastern Great Lakes area by late summer and early fall. Thereafter, the "stream" begins south with such employment as is possible from second crop areas, and eventually winds up in Florida or the deep south for a wintering period of relative unemployment. A generalization of this result is a stream or wave consisting of a build-up in migrant population in specific areas, gradually displacing to the south. Once full displacement to the south occurs, the migrant population remains reasonably stable in both space and time even though relatively unemployed. This viewpoint permits the concept of a migrant population which is relatively fixed in size at any given time and over any given space. The "East Coast Migrant Stream" is one such result and is estimated to contain some 150,000 migratory workers, including dependents and foreign national augmentation, the latter being minimal.

2. The Concept of a Migrant Area:

a. In the development of the model it was necessary to reduce the total migrant population and the "Migrant Stream" down to a specific analog so that the details of alternative methods could be established, quantified, and analyzed in terms of specific requirements and costs. The device used to accomplish this is the "Migrant Area" defined as containing a population of 1000 migrants.

Within the "East Coast Migrant Stream" therefore, approximately 150 such migrant areas exist at any specific point

in time during the active harvest season. During the "off-harvest" (or "wintering") period, this requirement can be reduced by the proportion of non-US nationals who return to their home country when the opportunity for employment is essentially ended.

b. The concept of "Migrant Areas" each containing a 1000 migrant population, allows for the specification of medical equipment and staff as well as the hours of operation for the medical staff as constant for all options - with a resultant uniformly effective level of medical care provided under all options. A population of 1000 migrants is projected as having a demand for medical services of 15% of that population per typical week. The actual operational practice of medicine for the medical staff has been fixed for all options at 5 hours per day, 6 days per week - or a total of 30 hours per week. A total of 150 migrants therefore are afforded the opportunity of medical attention per week with an average time attendance by a medical doctor of 12 minutes per person. This is constant for all options and provided uniformly for the total population of the migrant stream. As a result of this, any variation in the migrant stream or differences between options are transferred to the costs involved in providing medical activities and the installations to house them, and measures required to bring patients and medical care together - to maintain this constant level

of effectiveness of medical care.

3. The Concept of N: The migrant stream and the associated concept of migrant areas together fix the requirement for the total number of active medical activities required for a constant level of effective medical care to the total population; but does not consider the number of migrant areas which will exist as distinct geographic entities annually. A typical migrant can be expected to work in a specific number of geographical location per year. This number can be generalized into a variable N which represents the average number of distinct migrant area which exist for each 1000 population of the migrant stream. The number N therefore can be varied as desired to investigate the effects that the number of displacements of the migrant population in general will have upon the efficiency and requirements of each option considered. The N chosen, appropriately modified, therefore is employed as a multiplier to those costs and requirements which are dependent upon the number of migrant areas established for a 1000 population group. Since the migrant area - home base is included, N as a multiplier can be reduced by the proportion ( $\frac{XL}{XT}$ ) of the 1000 nominal population who are foreign nationals and leave the migrant stream as home base becomes active for the "wintering" period. The specific employment of N as a multiplier is presented specifically in Appendices 5 and 6.

4. The Development of X and Y: Within any given migrant area

two distances are critical to the cost and requirements of the various alternative options. They are separately defined as: Y - the one way travel distance between the doctor and medical staff and the medical activity operated in the fixed mode; and X - (which includes Y) is a generalized distance required for purposes of transporting the patients to the medical activity or to bring the medical activity to the migrant population (as per options 9 and 10). So that comparisons may be made between options on a basis of strict comparability the begin and end points of travel for both Y or X are treated as variables so that the impacts of changing distances as a result of variations in migrant area configuration can be investigated as they may effect each of the ten options. The quantities Y and X additionally subjected to constraints as follows:

- a.  $Y \leq 40$  miles; represents one hour of travel time for the medical staff at nominal passenger car speeds and is required to permit a constant 5 hours of productive operational time for a maximum of a 7 hour day - work plus travel time.
- b.  $X \leq 75$ ; represents a constraint required by distance considerations. Migrant areas with part population removed by more than 75 miles from point of origin of the conveyance which is to service them are considered unreasonable and unlikely.

- c.  $X - Y \leq 35$ ; is a constraint required so as not to exceed an 8 hour day for the bus travel time in reaching the migrant population, transporting them to and from the medical activity and returning to origin.
- d.  $X - Y \geq 0$ ; prevents the quantity X (which includes Y) from becoming less than zero.
- e.  $2X - Y \leq 35$ ; is a constraint which permits selection of a least cost mode in alternatives for transporting patients to and from the medical activity.

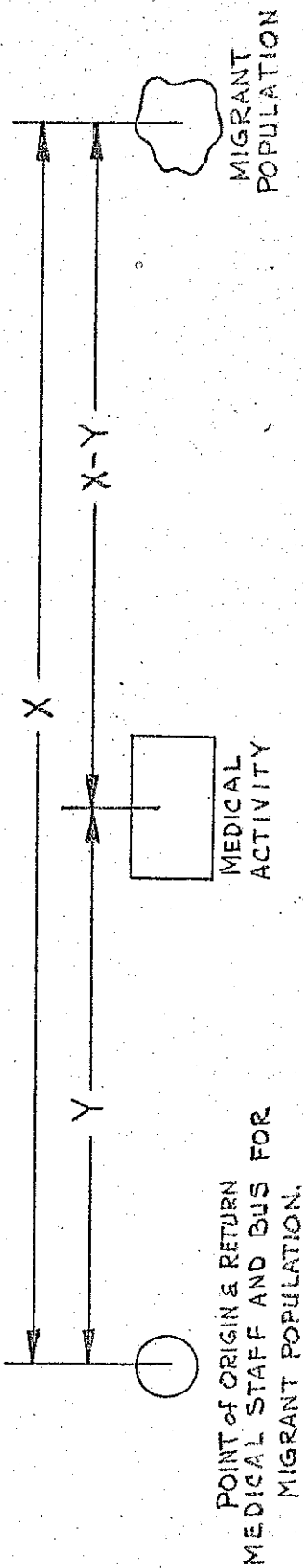
A schematic representation of the distances Y and X is presented in Fig 3-1. Specific formulae involving the use of X and Y in the development of travel times and costs as applicable to the medical staff, and in both the fixed and mobile modes are presented in detail by options in Appendix 7.

5. Cost Categories Considered: Development of the model used considered costs according to the breakdown structure of One-Time Costs, Yearly Costs and Variable Costs. These categories are specifically defined as follows:

- a. One-Time Costs are those requiring an initial outlay one time only at the initiation of a program for migrant medical care of the type demanded by the model. One-time costs include acquisition of equipment for the medical activity; initial furbishing (or modifications) of permanent installations required for operation in the fixed mode (options 1-4); acquisitions of mobile units for housing,

# DEVELOPMENT OF THE DISTANCES "X" AND "Y."

OPTIONS 1 THRU 8  
(FIXED MODE)

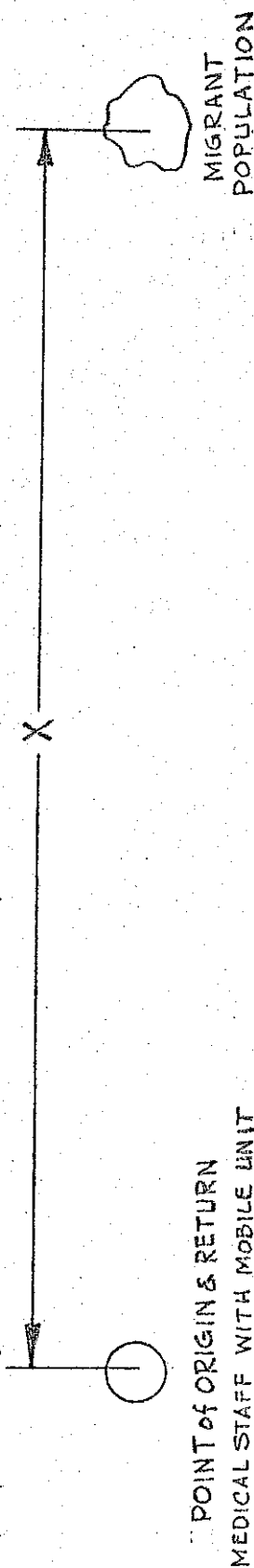


X = AVERAGE ONE-WAY TRAVEL DISTANCE, BUS FROM  
POINT OF ORIGIN TO MEAN TARGET POPULATION  
DENSITY (MIGRANT CAMPS).

Y = AVERAGE ONE-WAY TRAVEL DISTANCE, MEDICAL  
STAFF TO MEDICAL ACTIVITY.

X-Y = AVERAGE DISTANCE, MEDICAL ACTIVITY TO MEAN  
TARGET POPULATION DENSITY.

OPTIONS 9 AND 10  
(MOBILE MODE)



X = ONE-HALF AVERAGE DAILY TRAVEL DISTANCE  
BETWEEN POINT OF ORIGIN AND MEAN TARGET  
POPULATION DENSITY. INCLUDES ONE-HALF  
DAILY CAMP-TO-CAMP TRAVEL DISTANCE.

FIGURE 3-1

the medical activity (options 7-10), and modification of mobile units to adapt the medical equipment.  $N$ , the number of migrant areas established on average for a 1000 population slice of the migrant stream and the proportion of foreign nationals ( $\frac{XL}{XT}$ ) comprising the migrant population are determining on these one-time costs according to the following:

- (1) The number of sets of equipment when the equipment is not moved with the migrant stream (options 1,2,3,5,7,9).
- (2) The number of mobile units and their modification when these are not moved with the migrant stream (options 7 and 9).
- (3) Furbishing of installations leased on a permanent basis (options 1,2,3,4).

b. Yearly Costs are those which recur on an annual basis, year-to-year, and are not costs directly associated with operation of the medical activity. Although sensitive to  $N$  and  $XL/XT$ , they are independent of variations in  $X$ ,  $Y$ , patient load, and alternative ways of transporting patients to and from the medical activity. They are:

- (1) Annual interest on one-time costs (opportunity cost of capital).
- (2) Depreciation on mobile installations and all equipment (including one-time charges associated) -

to provide for continuing replacement in the program.

(3) Leasing and rental costs for permanent and temporary installations in the fixed mode (options 1-6).

(4) Installation opening, closing, and refurbishing costs.

(5) Maintenance, operating and upkeep costs on installations and equipment (including insurance).

(6) Pick up, packing, movement to and from storage area, handling charges and guarding of all equipment (during periods of storage) and installations (when out of use).

(7) Temporary hook-up of equipment in fixed installations.

(8) Moving (long-haul), equipment and mobile installations when rotated between migrant areas.

c. Variable Cost is that category which pertains directly to the operation of the medical activity, as a medical care dispensing unit, and patient oriented cost. These fall into the following specific elements:

(1) Pay, allowances and travel costs for the medical staff.

(2) Supplies and medicines expended in caring for patients.

(3) Costs to bus the target population to and from the medical activity.



6. All costs for all options are based upon a 1000 migrant population slice which moves with the migrant stream and displaces to a total of N migrant areas for the year - including home base. This 1000 population includes a proportion ( $\frac{XL}{XT} \times 1000$ ) non-US nationals which is included in the 1000 population at N-1 migrant areas for the active harvest season but is excluded from the home-base population during the "wintering" period.

A generalized representations of the operation within a given migrant area for an active harvest season is presented in Fig. 3-2. The stylized situation depicted by Fig. 3-2 together with the concepts of the migrant stream, N and the provision for a non-US proportion of the population making up a 1000 total population slice of the migrant stream - as discussed herein - gives rise to a number of standard factors which effect cost calculations. These factors, and their application are developed in detail in Appendix 5, and discussed as to their specific application to cost elements for the various options in Appendices 6 and 7.

# SCHEMATIC OF TYPICAL MIGRANT AREA

(FIXED MODE)

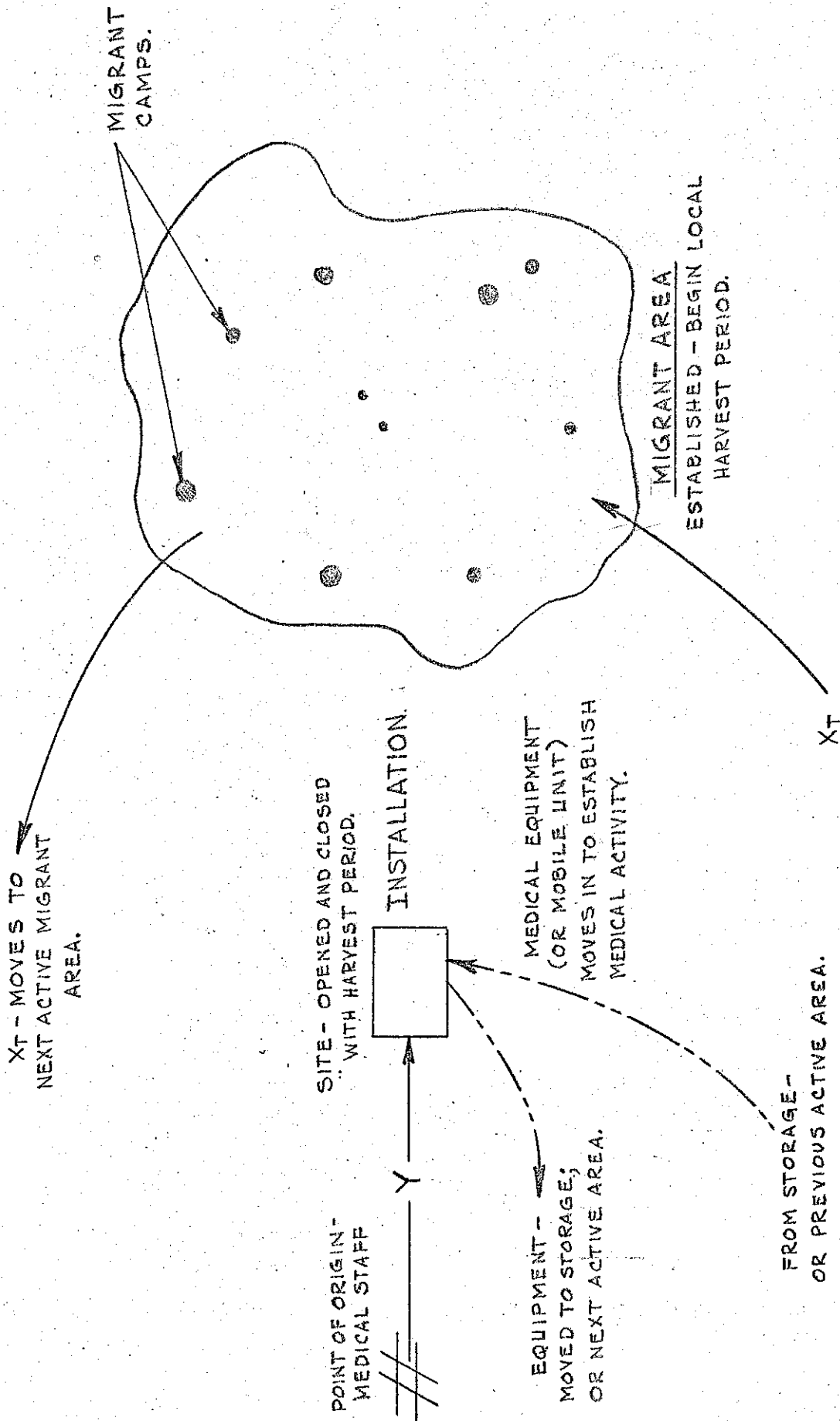


FIGURE 3-2

APPENDIX 4

## INPUT COST DATA

1. This appendix lists each cost identifier number, which corresponds to the number used in Appendicies 6,7 and 8; the dollar amount, a description of the cost and the time frequency on which it is based; and identifies the source of the information used to estimate these costs.

CJ11 = \$2722.44 All medical equipment including an initial stock of medical supplies; a one-time cost; pertains to all options, but directly to options 7-10 (see CF11). List follows, Source: American Surgical Trade Association "Guide for Physician Office Planning" (as furnished by Physicians Supply Corp., Rochester N.Y.) (minimum equipment level used):

Instruments, \$304.08 @ 70% of list	\$212.86
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Physical Therapy & Diagnostic Equip., \$252.40 @ 70% list	176.80
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Laboratory Equipment, \$567.48 @ 70% list	397.24
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Sundries, \$264.90 @ 70% list	185.43
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Initial Inventory of;

Laboratory supplies and disposable items,

Physical Therapy & Diagnostic items,

and Sundries, \$261.70 @ 70% list	185.21
-----------------------------------	--------

Dressing, 91.00 @ 70% list	67.90
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Medicines, Drugs, Vaccines et al.<sup>1</sup>

\$1500.00

CF11 = CJ11 + \$700.00 Equipment for fixed installations including medical equipment and supplies (CJ11) plus other items either built into or not required by mobile installations; a one-time cost; pertains to options 1-6. Prices of following equipment were obtained from current Sears Roebuck catalogue.

A 10% deduction was applied and \$700.00 (approx.) obtained:

40 chairs at \$20.00 for 4

2 desks at 110.00 each

2 desk chairs at \$26.00 each

1 file cabinet (2 drawer) at \$23.00.

2 storage cabinets at \$38.00 each

1 bookcase at \$8.00

1 refrigerator, 6 cu.ft. at \$190.00

CF12 = \$250.00 Permanently installing equipment into fixed installation including modification of plumbing and electrical fixtures to make leased installation suitable for use as a clinic; a one-time cost; pertains to options 1-4. Cost estimated by authors.

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<sup>1</sup> This information on initial stock of medicine and drugs furnished by D. L. Dickerson, MD, Palm Desert, Cal. in private communication with author, April 1970.

CF13 = \$1800.00 Lease permanent fixed installation for one year; includes major maintenance on building; a yearly cost; pertains to options 1-4. Cost provided by Mrs. Booth, of Booth of Brockport, a real estate company, in private communication, April 1970. This represents an estimate of the lease price for one year of a small four room house on the edge of a small upstate New York town in the migrant stream.

CF14 = \$35.00 Rental for temporary fixed installation; includes major maintenance; a weekly cost; pertains to options 5 and 6. Source, same as CF13.

CF15 = \$20.50 Maintenance and operation, fixed installation during use; a weekly cost; pertains to options 1-6. Based on the following estimated cost:

Utilities:

telephone	\$1.50
electricity	2.00
heat	1.00
water	2.00
trash disposal	1.20

Maintenance and upkeep 10.00 (provides for the occasional repair or replacement work required.

Housekeeping 3.00 (cleaning supplies and equipment, general housekeeping of premises.)

CF16 = \$5.00 Maintenance and upkeep of fixed installation, not in use; a weekly cost, pertains to options 2,3 and 4. Cost estimated by authors based on occasional repairs and upkeep of the premises.

CF17 = \$19.00 Maintenance of equipment during use; a weekly cost: pertains to options 1-6. Cost based on following estimates:

Insurance on equipment	\$1.00
Repair of equipment and breakage	3.00
Administrative supplies	1.50
Laundry, soap, towels, non-medical expendibles	14.00

CF18 = \$2.50 Maintenance of equipment, not in use; a weekly cost; pertains to options 2-6. Cost based on following estimates:

Insurance on equipment	\$1.00
Maintenance including periodic inspection and repair	1.50

CF19 = \$9.00 Guarding (three times a week surveillance) of permanent fixed installation, with equipment inside; a weekly cost; pertains to option 2. Costs provided by private communication, April 1970, with Mr. Cousky, Pinkertons, Inc.;

Rochester, NY; a once-a-night surveillance service costs \$3.00 per visit. This cost is based on three visits per week.

CF20 = \$3.00 Guarding (once a week surveillance) of a permanent fixed installation, no equipment inside; a weekly cost; pertains to options 3 and 4. Source, same as CF19. This cost is based on one visit per week.

CF21 = \$10.00 Temporary installing equipment into a permanent installation; cost for each time event happens; pertains to options 3 and 4. Cost estimated by authors, this represents a reinstallation back into a building previously modified for use as a clinic.

CF22 = \$200.00 Temporarily installing equipment into temporary fixed installation, including modification of plumbing and electrical fixtures to make the rented installation suitable for use as a clinic; cost for each time event happens; pertains to options 5 and 6. Cost estimated by authors, using the rationale that the modifications to the rented building would be somewhat less than those done in the leased building.

See CF12.

CF23 = \$20.00 Opening, refurbishing and close down costs, permanent installation; cost each time total event occurs;

pertains to options 2,3, and 4. Cost estimated by authors.

CF24 = \$30.00 Opening, refurbishing and close down cost, temporary installation; cost each time total event occurs; pertains to options 5 and 6. Cost estimated by authors.

CF25 = \$3.00 Storage in warehouse for one complete set of equipment (CF11) at "local rate"; a weekly cost; pertains to options 3-6. Cost based on 2000lb. total equipment, using schedules provided by Mr. Sullivan, Clancey Carting and Storage Company, Rochester NY in private communication, April 1970.

CF26 = \$81.00 Packing, pickup, warehouse handling, delivery and unpacking one complete set of equipment (CF11) at "local rate"; cost each time complete event occurs; pertains to options 3-5. Same source as CF25, cost breakaout follows:

\$40.00	pickup and delivery
20.00	packing and unpacking
3.00	packing materials
12.00	warehouse handling
6.00	expected $\frac{1}{2}$ month lost rental. Based on removal of equipment not coinciding with standard 30 day period.



CM12V = \$16000.00 Mobile Van installation, completely modified as a clinic and ready for installation of medical equipment; a one-time cost; pertains to options 7-10 when van costs are considered, (INDIC = 1) Factory price complete with built-in equipment toilet, generator, water heater, refrigerator, air conditioning, cabinets and desks, estimated from interviews and telephone conversation, April 1970, with Mr. Irving Temp B.-L. Trailer Sales and Rentals, 9045 W. Henrietta Road, Rush, NY. The above source also provided information concerning van insurance, licensing and upkeep costs.

CM12T = \$6500.00 Trailer installation completely modified as a clinic and ready for installation of medical equipment; a one-time cost; pertains to options 7-10 when trailer costs are considered, (INDIC = 2) Factory price complete with built-in equipment toilet, generator, water heater, refrigerator, air conditioning, cabinets and desks, estimated from interviews and telephone conversations, April 1970, with Mr. Jack Nicholes, Camp-O-Rama Inc. 4850 W. Henrietta Road, Rochester NY. The above source also provided information concerning trailer insurance, licensing and upkeep cost.

CM13 = \$60.00. Installing medical equipment permanently into the mobile installation, involves affixing some equipment and

making necessary electrical and plumbing hookup, a one-time cost; pertains to options 7-10. Costs estimated by authors using rationale that a minimum of installing would be required since the van or trailer is designed and built to receive the medical equipment. This cost is substantially below CF12 and CF22.

CM14V = \$31.50 Maintenance and operation of van, parked (fixed mode) during use; a weekly cost; pertains to options 7 and 8 when van costs are considered. Based on the following estimated costs:

Utilities: \$8.50 including:

telephone	\$1.50
electric (generator)	2.00
gas (butane)	1.00
water	2.00
trash and sewage disposal	2.00

Maintenance and upkeep: \$11.00 including:

power train	6.00
body	5.00

Housekeeping (cleaning supplies) \$3.00

Licensing (van) \$1.00

Insurance (van) \$8.00

CM14T = \$20.00 Maintenance and operation of trailer, parked (fixed mode) during use; a weekly cost; pertains to options 7 and 8 when trailer costs are considered. Based on the following estimated costs:

Utilities: \$8.50 including :

telephone	\$1.50
electric (generator)	2.00
gas (butane)	1.00
water	2.00
trash and sewage disposal	2.00

Maintenance and upkeep: \$7.00

Housekeeping (cleaning supplies) \$3.00

Licensing (trailer) \$.50

Insurance (trailer) \$1.00

CM15V = \$33.00 Maintenance and operation of van, visiting camp-to-camp (mobile mode) during use; a weekly cost; pertains to options 9 and 10 when van costs are considered. Based on the following estimated costs:

Utilities: \$9.00 including:

telephone	\$2.00
electric (generator)	2.00
gas (butane)	1.00
water	2.00
Trash and sewage disposal	2.00

Maintenance and upkeep: \$13.00 including:

power train	\$8.00
body	5.00
Housekeeping (cleaning supplies)	\$2.00
Licensing(van)	\$1.00
Insurance (van)	\$8.00

CM15T = \$22.50 Maintenance and operation of trailer, visiting camp-to-camp (mobile mode) during use; a weekly cost; pertains to options 9 and 10 when trailer costs are considered. Based on the following estimated costs:

Utilities: \$9.00 including:

telephone	\$2.00
electric (generator)	2.00
gas (butane)	1.00
water	2.00
trash and sewage disposal	2.00

Maintenance and upkeep: \$10.00

Housekeeping (cleaning supplies) \$2.00

Licensing (trailer) \$.50

Insurance (trailer) \$1.00

CM16V = \$15.00 Maintenance and upkeep, van, not in use; a weekly cost; pertains to option 7-10 when van costs are considered. Costs estimated by authors, based on paying parking

attendant to check on van, keep batteries charged, and perform maintenance on power train and auxillary equipment; and includes \$8.00 per week insurance on van, and \$1.00 per week license.

CM16T = \$6.00 Maintenance and upkeep, trailer, not in use; a weekly cost; pertains to options 7-10 when trailer costs are considered. Costs estimated by authors, based on paying parking attendant to check on trailer, and keep batteries charged and perform maintenance; and includes \$1.00 per week insurance on trailer and \$.50 per week license.

CM17 = \$20.00 Maintenance of equipment in mobile facility during use; a weekly cost; pertains to options 7-10. Based on following cost estimates:

Insurance on equipment	\$1.00
Maintenance on equipment includes breakage and repair	3.50
Administrative supplies	1.50
Laundry, soap, towels and other non-medical supplies	14.00

CM18 = \$2.50 Maintenance of equipment in mobile facility, not in use; a weekly cost; pertains to options 7-10. Based on following cost estimates:

Maintenance and inspection of equipment	\$1.50
---	--------

Insurance on equipment                      \$1.00

CM19 = \$1.62 Outside storage for mobile installation when not in use; a weekly cost; pertains to options 7-10. Source, private communication, April 1970 with Mr. Castor Spink, Spink Trailer Sales, Inc., 1029 Ridge Road, Rochester, NY.

CM20V = \$5.00 Driving charge to get parked van to storage site and return; cost each time complete event occurs; pertains to options 7-10 when van costs are considered. Cost estimated by authors.

CM20T = \$20.00 Towing charge, taking parked trailer to storage site and return; cost each time complete event occurs; pertains to options 7-10 when van costs are considered. Source, private communication, April 1970 with Mr. Castor Spink, Spink Trailer Sales, Inc., 1029 Ridge Road, Rochester, NY.

CM22 = \$20.00 Open, refurbish, close down mobile installation; cost each time complete event occurs; pertains to options 7-10. Cost estimated by authors.

CM24V = \$ .20 Long-haul cost of moving a van; per mile cost; pertains to options 8 and 10 when van costs are considered.

Based on following estimate:

40mph average for 8 hr. day = 320 miles per day.

Driver expenses \$3.00 per hour x 8 hours = \$24.00/day

\$20.00 per day expense allowance =  $\frac{20.00/\text{day}}{44.00/\text{day}}$

Milage expenses = \$ .06 1 mile, gas, oil and maintenance

cost per mile =  $\frac{320}{44} + 6 = 20\%$  per mile.

CM24T = \$ .50 Long haul cost of moving a trailer; per mile cost; pertains to options 8 and 10 when trailer costs are considered. Source, private communication, April 1970 with Mr. Castor Spink, Spink Trailer Sales, Inc., 1029 Ridge Road, Rochester, NY.

CV11 = \$15.00 Doctor (GP); hourly cost; incorporated into CV21. The cost of a physician for one hour was obtained by adjusting an average yearly, 1966 income of physicians in private practice of \$33,000.00, (adjusting by an extrapolated index of physicians income  $\frac{184}{151} \times 33000 =$ ) 40,300 1970 average yearly income. Based on 1959 average of 48 weeks worked, per doctor and 57.3 hours per week, the result  $40,300 \div 48 \times 57$  yields approximately \$15.00 per hour.<sup>1</sup>

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<sup>1</sup> Louis S. Reed, Studies of the Incomes of Physicians and Dentists, U.S. Dept. Health Education and Welfare: 1969. pp. 107-128.

CV12 = \$5.00 Nurse (practical); hourly costs; incorporated in CV21. The cost of a nurse for one hour was estimated at \$3.20 by using the same source and method used in CV11 for estimating the cost of one doctor hour. In private communication with D.L. Dickerson, M.D., Palm Desert, California, he agreed that the cost of \$15.00 for the doctor was reasonable, but stated that the nurse would cost \$5.00 per hour. The latter, higher, estimate was used.

CV13 = \$3.00 Orderly/driver; hourly cost; incorporated into CV21. In estimating the cost of the orderly/driver consideration was made for the best average hourly wage a migrant can expect to earn. In the upstate New York area of Wayne County this is approximately \$2.50/hr.<sup>1</sup> The advantage of hiring a migrant who can assist in interpreting languages (and/or dialects) used by the migrants led to the decision to use an hourly wage (\$3.00) sufficiently higher than best average expected wages of migrants.

CV14 = \$45.00 Rented automobile; for medical staff weekly cost; pertains to options 1-8. See CV18 below for source of information.

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<sup>1</sup> Bryce, op. cit. p. 32.



CV15 = \$ .03 Gas and oil for CV14; per mile cost; pertains to options 1-8. See CV18 below for source of information.

CV16 = \$ .70 Treatment cost; per patient; pertains to all options. Cost per person per visit estimated by D.L. Dickerson, MD. Palm Desert, California, April 1970; obtained in private telephone conversation.

CV17 = \$50.00 Rental automobile to pull trailer; weekly cost; pertains to options 9 and 10 when costs of trailer are considered. See CV18 below for source of information.

CV18 = \$ .04 Gas and oil for CV17 (auto) or van; per mile cost; pertains to options 9 and 10. Sources of information CV14, CV15, CV17 and CV18 are private communications with Mr. Miller, Econocar, 20 Fitzhugh St., Rochester NY. and Mr. Drennan, Taylor Chevrolet Corp. (a leasing firm), 175 Winton North, Rochester, NY. Both parties provided essentially the same information on costs, with leasing including a fixed 2000 miles per month during which only gas and oil are provided by the person leasing the car. The cost of gas and oil for the van is essentially the same as the cost of gas and oil for a car pulling a trailer.

CV19 = \$4.50 Waiting time charge for bus, including driver;

hourly cost; pertains to options 1-8. Short stops (less than 15 minutes) are not included. See CV20 below.

CV20 = \$ .65 . Operating cost of bus; per mile cost; pertains to options 1-8. The bus operating cost and also the bus waiting time cost (CV19) were provided by Mrs. Kates, Genesee Bus Service, Inc., 1220 Brighton-Henrietta Town Line Road, Rochester, NY.

CV21 = CV11 + CV12 + CV13 Medical staff; hourly cost; pertains to all options. This organization of the medical staff was recommended in private communication, April 1970, by D. L. Dickerson, MD, Palm Desert, California. He considered the alternative of employing two nurses definitely counter-productive.