

METHODS OF IDENTIFYING POTENTIAL VANPOOL RIDERS

by

George S. Goodwin III
Graduate Assistant

and

R. Neal Robertson
Research Engineer

(The opinions, findings, and conclusions expressed in this report are those of the authors and not necessarily those of the sponsoring agencies.)

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PREFACE

This report is part of a research effort by the Virginia Highway and Transportation Research Council on the applicability of vanpools in Virginia. An earlier report entitled "Organizing and Operating a Vanpool Program" by Lester A. Hoel, research associate and chairman of the Department of Civil Engineering, University of Virginia; and Moreland Herrin, visiting research associate, identifies the various elements of vanpool programs, describes the procedures necessary for employers and agencies to implement a vanpool program, and furnishes details concerning costs involved in vanpool operations, based on Virginia's conditions. The present report deals with the identification of potential riders and the grouping of them to form vanpools. Although the research deals specifically with vanpools, the matching techniques discussed in this report may be successfully used in identifying and grouping potential riders for other types of ride-sharing programs such as carpools and buspools. Much of the information in this report was gathered during the original project utilizing HPR funds.

ABSTRACT

Identifying potential vanpool riders and matching them to form pools are fundamental tasks in the initiation of a vanpool program. The manner in which these tasks are done will determine the costs and benefits of the program.

This report presents the data requirements for a vanpool project and reviews the techniques that may be applied in the identifying and matching processes. Two matching techniques are evaluated; manual and computer. A manual matching system is generally recommended for a company that has fewer than 500 employees, while a larger company which has access to a computer should use a computerized program.

All of the matching systems discussed in the report may be successfully used in Virginia, however, modifications may be required to meet particular needs. The employer initiating a program is encouraged to review all available alternatives, because to a great extent the success of the program will depend upon the selection of an efficient matching technique.

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INTRODUCTION

Several studies have concluded that vanpools can conserve energy, alleviate traffic congestion and pollution, increase employee promptness and morale, and reduce parking demands.^(1,2,3,4) Although a number of programs across the nation have demonstrated the benefits that can accrue from vanpools, only limited action has been taken to initiate them in Virginia. Much of the lack of interest can be attributed to the novelty of the vanpooling concept and the many questions relative to the applicability of vanpools for a particular industry or agency. Furthermore, despite the essential similarity among vanpool programs, each is uniquely suited for a particular situation. Many company officials do not have sufficient information for a decision relative to the formation of vanpools.

This report is part of a research effort being conducted by the Virginia Highway and Transportation Research Council on the applicability of vanpools in Virginia, and deals with the identification and grouping of potential vanpool riders. The grouping, or matching, phase is a fundamental task in the initiation of a vanpool program; it locates the commuters who have common travel patterns and commuting needs. The costs and benefits of the program depend to a large extent upon the grouping of the participants.

Several techniques that may be employed in identifying riders are presented in this report. A knowledge of these should prove helpful to an employer planning to embark upon a vanpool project.

DATA REQUIREMENTS

Many of the identification and matching techniques used in developing a vanpool program require similar data; therefore the requirements will be discussed before the alternatives are presented.

The first step in the identification program is to determine the potential market for the vanpool. Although this can be done through a formal survey, it is advisable to conduct a feasibility study to ascertain the need for and interest in a vanpool program. Normally, the study can be conducted by an employee within a day or two and the findings can be summarized in a three to four page report. In determining the need for vanpools, information on the size of the company, parking demands, parking capacity, and modes of travel should be reviewed. This information may be obtained from visual checks and personnel records. The plant or office location along with the availability of public transportation in the area should be considered. In order for a vanpool program to be successful, it must fulfill a need and offer service comparable with that provided by existing modes of travel.

Among the basic factors to be considered are:

1. The number of people working similar hours;
2. the regularity of the work schedule; and
3. the necessity to use private vehicles for work.

This information, supplemented by discussions with the employees about their current needs and travel arrangements should indicate the interest in vanpooling.

An estimate of employee groupings may be obtained by plotting locations on a local map by zip codes, telephone numbers, or addresses. This information may be acquired from personnel records. It would also be helpful to plot the public transit routing on the same map, as well as the travel times and distances.⁽⁵⁾

With the above statistics at hand and before making a decision, the potential sponsor should be cognizant of the fact that as the size of the company increases, the probability for a successful vanpool program increases. Furthermore, the chance for a successful program increases with an increase in the number of employees in a particular geographic area.

If the feasibility study reveals a sufficiently high probability of success for a vanpool program, then a formal survey may be required. Several of the manual matching systems suitable for companies with fewer than 100 employees do not require the formal survey data. These systems are discussed in detail in other sections of the report. The purpose of a formal survey is to provide the sponsor substantial data about the potential market for a vanpool. The survey should obtain information about:

1. Employee interests,
2. employee residence locations,
3. current travel patterns, and
4. required vanpool characteristics (service times, method of finance, personal preferences, etc.)

An example of a survey questionnaire is shown in Figure 1. In addition to the essential information such as home and work addresses, working hours, travel mode and vanpool interests, the questionnaire should seek to elicit the preferences of the participants. These preferences include methods of fare collection, alternative uses of the vehicle, and personal preferences such as smoking, music, and game tables. The questionnaire shown in Figure 1 will not fulfill the need of every agency considering a vanpool program, and modifications may be required to obtain complete information about a particular situation. The questionnaire should be designed to ensure clarity, brevity, and ease of coding.

A letter of explanation should precede the questionnaire to ensure that the employees realize —

1. the purposes of the survey;
2. how to complete the questionnaire effectively;
and
3. the implications of the survey results.

An example of the letter is given in Appendix A. Additional publicity describing how the vanpool would operate, the benefits it would provide, and the approximate cost can be made available through bulletins, company newsletters, etc.

It is advisable to require all (100%) of the employees to complete and return the questionnaire. The information from the nonparticipants will not only prove beneficial should they later change their minds about the program, but the data regarding travel characteristics will aid in future planning for company growth and parking demands.

After the data have been collected, a degree of manipulation is required. In all probability the returned questionnaires will contain errors which must be located and corrected before the actual matching or grouping is done. Then the questionnaires should be classified and arranged on the basis of the responses. Entries may be classified in a number of categories such as the following:

1. Interested in vanpool — not interested in vanpool;
2. working hours;

QUESTIONNAIRE

ABC COMPANY VANPOOL PILOT PROGRAM

Return to John Doe, Program Administrator, by June 15, 1977

1. Name _____ Social Security No. _____
2. Home Address
 Street _____
 City _____ State _____ Zip Code _____
 Telephone No. _____
3. Work Address
 Building _____
 Office _____
 Telephone No. _____
4. Using the grid map provided, locate your residence with the corresponding grid coordinates. If you live outside the grid map, indicate the map entry point through which you pass on your way to work.
 X _____ Y _____
5. Working Hours
 Reporting Time
 hrs. mins. am pm
 _____ : _____ (check one)
 Departing Time
 hrs. mins. am pm
 _____ : _____ (check one)
 Are these working hours regular? _____yes _____no (check one)
6. Current travel mode (check one)
 I currently
 _____drive alone _____walk
 _____pool with others _____other (please state)
 _____use public transportation
 How many in present pool? _____
7. Would you be interested in participating in a vanpool ride-sharing program?
 _____yes _____no (check one)

If you are interested, please answer the remaining questions

8. Vanpool Preferences (check one)
 - a. Do you prefer to be a (check one)
 _____driver _____passenger
 _____backup driver
 - b. Method of Fare Collection (check one)
 _____pay driver _____pay company treasurer
 _____payroll deduction
 - c. Frequency of Fare Collection (check one)
 _____daily
 _____weekly
 - d. Personal Preferences (check as desired)
 Yes No
 _____ tobacco smoking
 _____ music
 _____ air conditioning
 _____ game tables
 _____ features for the handicapped
 _____ other (list)
 - e. What alternative services would you desire? (check all applicable)
 _____emergency services _____lunch break shuttles
 _____after-hours van services
9. Do you have any suggestions relative to the program?

Figure 1. Vanpool survey questionnaire.

3. smokers — nonsmokers;
4. drivers — passengers; and
5. handicapped — not handicapped.

Once the questionnaires have been edited and classified, grouping or matching may proceed.

MATCHING TECHNIQUES

The employees interested in vanpools must be formed into groups. The grouping can be accomplished manually or by a computer, depending upon the number of employees and access to a computer. There are advantages and disadvantages to both techniques. Although manual procedures require less time and money for implementation and are more personal than the computer techniques, they must have continual management for errors, maintenance, promotion, and feedback. Matches with the computerized systems are quicker and easier for large companies that have the equipment and trained technicians. They result in fewer errors than the manual systems, however, the beginning cost is greater and more extensive research and training are required.

Manual procedures are generally recommended for companies that have fewer than 500 employees, while larger companies with the required resources should use the computerized programs.^(5,6) Interestingly, the vast majority of employers in Virginia fall into the first category and can effectively utilize the manual systems. Even larger employers may find it desirable to use manual vanpool matching as an initial step, and later switch to computer systems. Regardless of the technique chosen, the data should be grouped according to the following priorities:

1. Location of residence,
2. working hours,
3. location of work (if the company has dispersed working sites),
4. regularity of working hours, and
5. personal preferences.

Manual Matching Systems

The four most commonly used procedures for manually matching vanpool participants are:(6,7)

1. The centralized matching system,
2. the locator-board and pigeonhole system,
3. the roster system, and
4. the pin and number system.

The characteristics, requirements, and procedures for each of the systems are presented in the following sections. As previously noted, it is advisable to conduct a feasibility study to determine the need for and interest in vanpooling before using any matching technique. The centralized system is employer-administered and requires data from a formal questionnaire survey, however, surveys are not required for the other three systems which are self-administered. It should be noted that the last three have been used mostly by employers who have fewer than 100 employees.

Centralized Matching System

The support of top management is a key element in a successful vanpool program and the centralized matching system allows management to demonstrate more support than does any other manual matching procedure. Management also has control over the program, as the administration is given to one person or office in the company. In this process the administrative person or office conducts the questionnaire survey, executes the matching, and disseminates the information on the program.

By use of a grid map or pigeonhole system, the program administrator groups the executed questionnaire forms in accordance to the priorities listed previously in the report. Where there are fifteen or more persons within an area, acceptable groups can be formed. If an insufficient number of applicants appear in a single grid, the area may be expanded to adjacent grids or along the major corridor used for the work trip. In the expansion of an area, caution should be taken to ensure that the pickup time will be less than the travel time. All vital information is recorded from the forms of those applicants whose residences are represented by the same grid or pigeonhole numbers. The groups may be formed before or after the drivers are selected.

Some companies may choose to furnish all applicants a list of the interested persons in their areas with the request that they contact one another and form the pool. The driver is then selected from the preformed group by the company's program administrator. In other cases, the driver is selected first and he determines his own pool from the list of potential passengers. The program administrator should monitor the selection process to ensure that the riders are selected on the basis of the most direct travel route.

Regardless of the selection process, the program administrator and the driver should establish the exact route, fares, and pickup times and supply the information in writing to the potential riders. It is also advisable to have a group meeting to discuss the pools and operational procedures.

The applicants not chosen may remit their names for possible future matches. Vacancies, new applicants, and remitals should be continually monitored by the program administrator in an effort to keep all pools filled.

Locator Board and Pigeonhole System

The locator board and pigeonhole system is primarily a self-service technique and may be applicable in companies where the employees already have a definite interest in vanpools. The system requires less administration than the centralized matching system, however a program administrator should be provided to monitor and promote the project. As the name implies, the necessary equipment consists of a large grid map, a pigeonhole set up with compartments corresponding with each grid on the map, and a supply of application cards. The U. S. Department of Transportation recommends the application card shown in Figure 2.(8)

Interested employees are requested to complete the application cards, using the grid map to locate their home residences, and place the executed cards in the corresponding pigeonholes. The employees should then check the pigeonholes periodically in an attempt to locate a suitable number of pool partners. Once a pool is formed, the information should be presented to the program administrator, who will assist the employees in the selection of drivers, routes, fares, pickup times, etc.

It is also recommended that the system include a supply of vacancy cards. These cards, Figure 3, can be used by the driver to advise of vacancies in the pool. The use of colored cards can alleviate confusion. For example, the application cards may be red and the vacancy cards green.

Only one locator board should be used and it should be located in an area conspicuous to all employees.

(Color - Red)

TYPE OR PRINT. DO NOT REMOVE FROM LOCATOR COPY INFORMATION NEEDED.	OFFICE	ROUTING SYMBOL	MAP GRID NO.
	WORK HOURS		OFFICE PHONE
NAME		HOME PHONE	
RESIDENCE ADDRESS			
NOTES (i.e., willing to share driving; small cars; irregular schedule, etc)			
<i>When arrangements have been completed, remove this card from board.</i>			
Form DOT F 1700.13 (11-71)			

Figure 2. Pool application card.

(Color - Green)

TYPE OR PRINT. DO NOT REMOVE FROM LOCATOR COPY INFORMATION NEEDED.	OFFICE	ROUTING SYMBOL	MAP GRID NO.
	WORK HOURS		OFFICE PHONE
NAME		HOME PHONE	
RESIDENCE ADDRESS			
TYPE OF DOT PARKING PERMIT <input type="checkbox"/> NASSIF BLDG. <input type="checkbox"/> FOB 10A <input type="checkbox"/> OUTDOOR			
COMMERCIAL PARKING LOT (Location)		STREET PARKING (General Location)	
NOTES (i.e., Driver/rider wanted; irregular schedule, etc.)			
<i>When vacancy is filled, remove this card from board.</i>			
Form DOT F 1700.14 (11-71)			

Figure 3. Pool vacancy card.

Roster System

The roster system is another self-service method of matching potential vanpool riders, but it is recommended for use by companies with fewer than 100 employees. For this system it is essential that all employees work the same hours. Like the locator board system, the roster system requires little administration and it is necessary for the matching center to be located in a conspicuous place. The employer should provide a program administrator who will promote, manage, and monitor the project.

The only equipment needed for the system is a large area map and a roster board. The entire employee population is listed on a roster along with their addresses and telephone numbers. The roster is numbered and each name has a correspondingly numbered locator pin. Prospective poolers are requested to place the locator pins at their places of residence on the area map. By periodically checking the map, the employee can determine the other employees in his area who are interested in vanpooling. The organization of the pool is the responsibility of the interested employees, however the program administration should be kept informed as to the potential formation of a group. Of course he should assist in the selection of the drivers, routes, and fares, and in the implementation of the project.

Pin and Number System

The pin and number system is normally utilized by companies with over 100 employees, however the basic matching procedures are similar to those of the roster system. Due to the large number of employees, a complete roster may be impractical, therefore, the interested employee is requested to place a numbered pin on the grid map and fill in the corresponding numbered space on the roster board with his or her name, address, and telephone number. This procedure eliminates the listing of uninterested employees on the roster. The remainder of this system is identical to the roster system.

Other types of manual matching techniques have been used but they are basically modifications of the four systems previously described. The employer who is interested in a vanpool program is encouraged to use imagination and initiative in developing a matching technique that is tailored to the company's needs.

Computerized Matching Systems

Since the energy shortage in 1973, ride-sharing has been promoted in an effort to conserve energy and improve the efficiency of highway facilities. As a result many computer programs that group commuters, especially car poolers, have been developed.(8,9,10,11) These programs are useful in matching potential vanpool riders, and a list of the programs along with the capabilities of each is given in Appendix B.

Two widely used computer matching programs are presented in the following sections of the report. The Virginia Department of Highways and Transportation is familiar with these programs, and they can be used in the identification of potential vanpool riders in Virginia. The purpose of this discussion is only to introduce the programs to the readers; detailed descriptions should be obtained from the organizations that developed them.

FHWA Matching Program

The Federal Highway Administration Matching Program is perhaps the best documented and the most widely used of the computerized matching programs.(9) The program is available from the Urban Planning Division of the FHWA in Washington, D. C. at no charge if used in a nonprofit public service. It was developed and tested on an IBM 360/65(OS) machine, however it is transferable to other environments since it is written in American National Standard COBOL computer language. The time core equipment is 110 K. The questionnaire shown in Figure 1 provides the input data for the program.

The program consists of a grid system, program package, and matching logic. The matching procedure is based on a grid system overlaid on urban area maps to which home and work locations are manually coded, usually by the applicants. An example of the grid system and corresponding functional grid maps are shown in Figures 4, 5 and 6. The X and Y coordinates of the home and work grids are used in the matching procedure. The grid map should cover at least 80% of the residential locations, and the people living outside the area should use the grid at which they typically enter the system on their trip to work.

In developing the grid overlay map the selection of the correct size of land area (cells) is critical. It is suggested that 2.6-square kilometer (1-square mile) cells be used for the inner map of a two-density grid system in areas which are highly developed. Subsequently, the 10.4-square kilometer (4-square mile) cells will be acceptable for the outer map in the rural, sparsely developed areas.

	X01	X03	X05	X07	X09	X11	X13	X15	X17	X19	X21	X23	X25	X27	X29	X31	X33	X35	X37	X39	X41	X43	X45	X47	X49		
Y01																										Y01	
Y03																											Y03
Y05																											Y05
Y07																											Y07
Y09																											Y09
Y11																											Y11
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Y41																											Y41
Y43																											Y43
Y45																											Y45
Y47																											Y47
Y49																											Y49
	X01	X03	X05	X07	X09	X11	X13	X15	X17	X19	X21	X23	X25	X27	X29	X31	X33	X35	X37	X39	X41	X43	X45	X47	X49		

Figure 4. Standard two-density grid system.

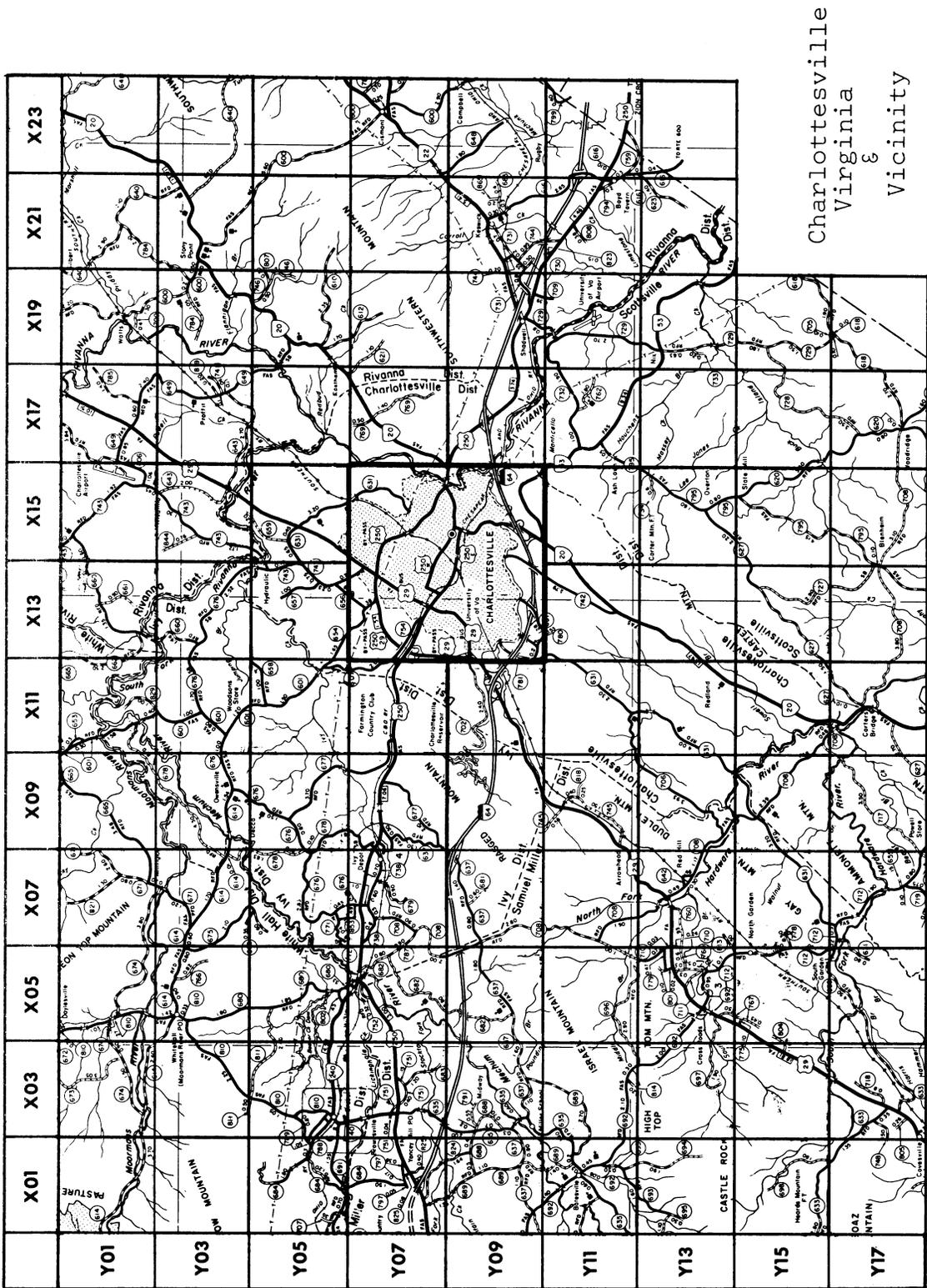


Figure 5. Outer map of a two-density grid system.

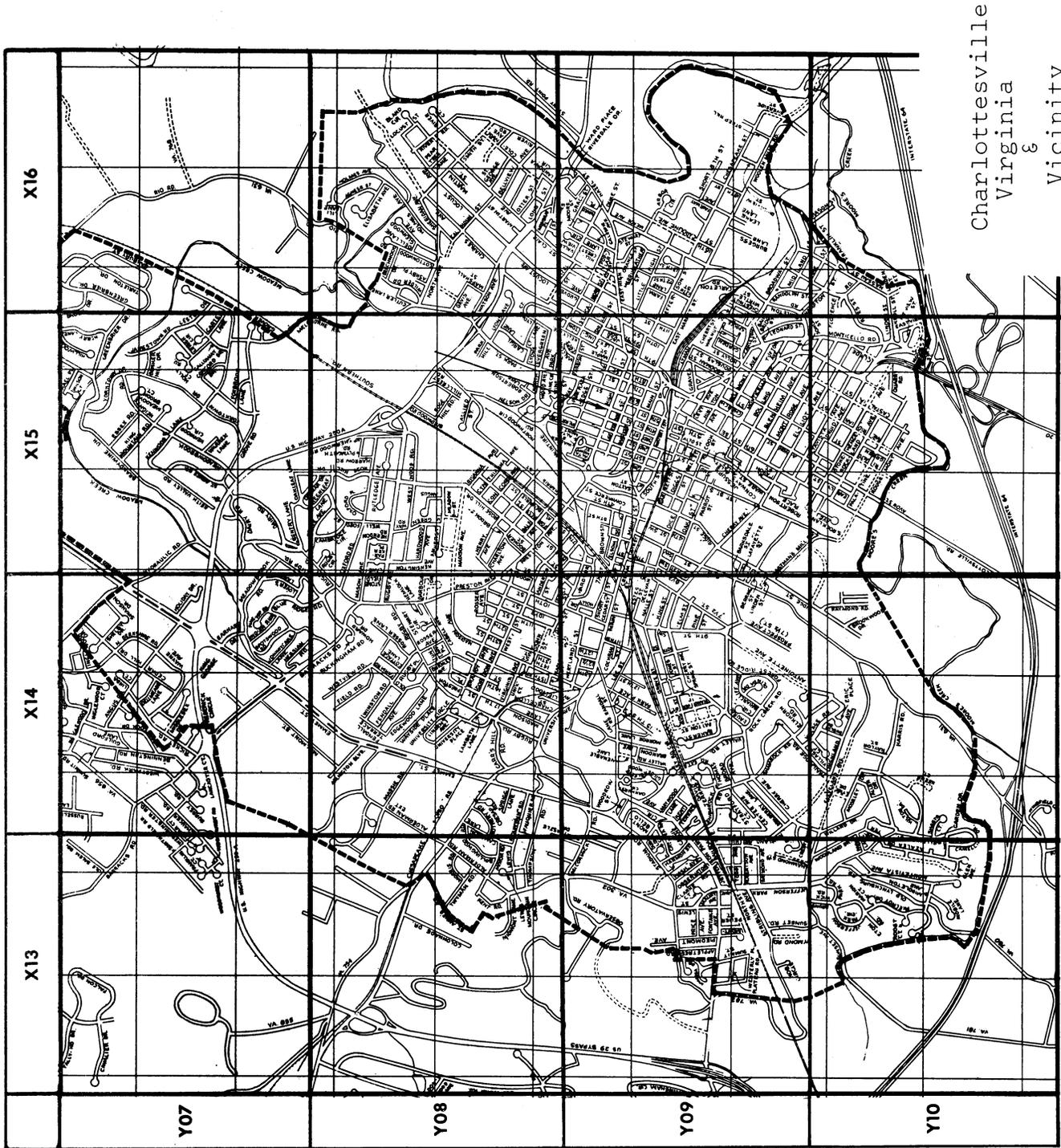


Figure 6. Inner map of a two-density grid system.

The segments of the program package are indicated in the flow chart shown in Figure 7. Any or all of the segments may be called for by the user of the program. In the *update* segment the basic information is provided and a sequential file of the participants is formed or updated. The information is edited and lists of the rejected and accepted participants are printed. The program *processes* the basic sequential file into categories specified by the programmer and then *lists* of the matched output are produced. The output may be presented in one of three formats, depending upon the information desired. The employer may desire a *master* list of all participants for his use in the operation of the vanpool program. In other cases when the pools are being formed an individual listing showing the potential vanpool riders will be necessary. These listings are usually *mailed* to the potential riders with the request that they form a pool. It is also possible to obtain an individual listing of selected participants as requested by the user. This type of output would identify a potential rider along the route of the existing vanpool.

The final segment of the program, *density*, produces geographical home grid printouts selected according to reporting or departing time and work grid. This output shows the total participants in each home grid cell and indicates visually the distribution of trip origins and their densities.

The logic of the match is simple. From the input, the computer identifies all participants who live in the same home cell, work in the same work cell, and arrive and depart within a specific range of time. If an insufficient number of commuters are located in the home cell, the area is expanded automatically to the adjacent cells. If there are an insufficient number of commuters in the work cells, no further search is made. The work cells are considered as independent units.

The FHWA is sponsoring a project to improve its computer matching program. The new package will be known as the Commuter Information System (CIS).⁽¹¹⁾ In the design of the new system, the users of the FHWA Matching Program, as well as users of other programs, were surveyed to determine their needs and capabilities. The new system will consist of the following three major components.

1. A matching system containing many (optional) sophisticated features.
2. A buspool/vanpool planning system, based upon a density matrix.
3. A transit information system to inform applicants of the transit routes serving their community needs.

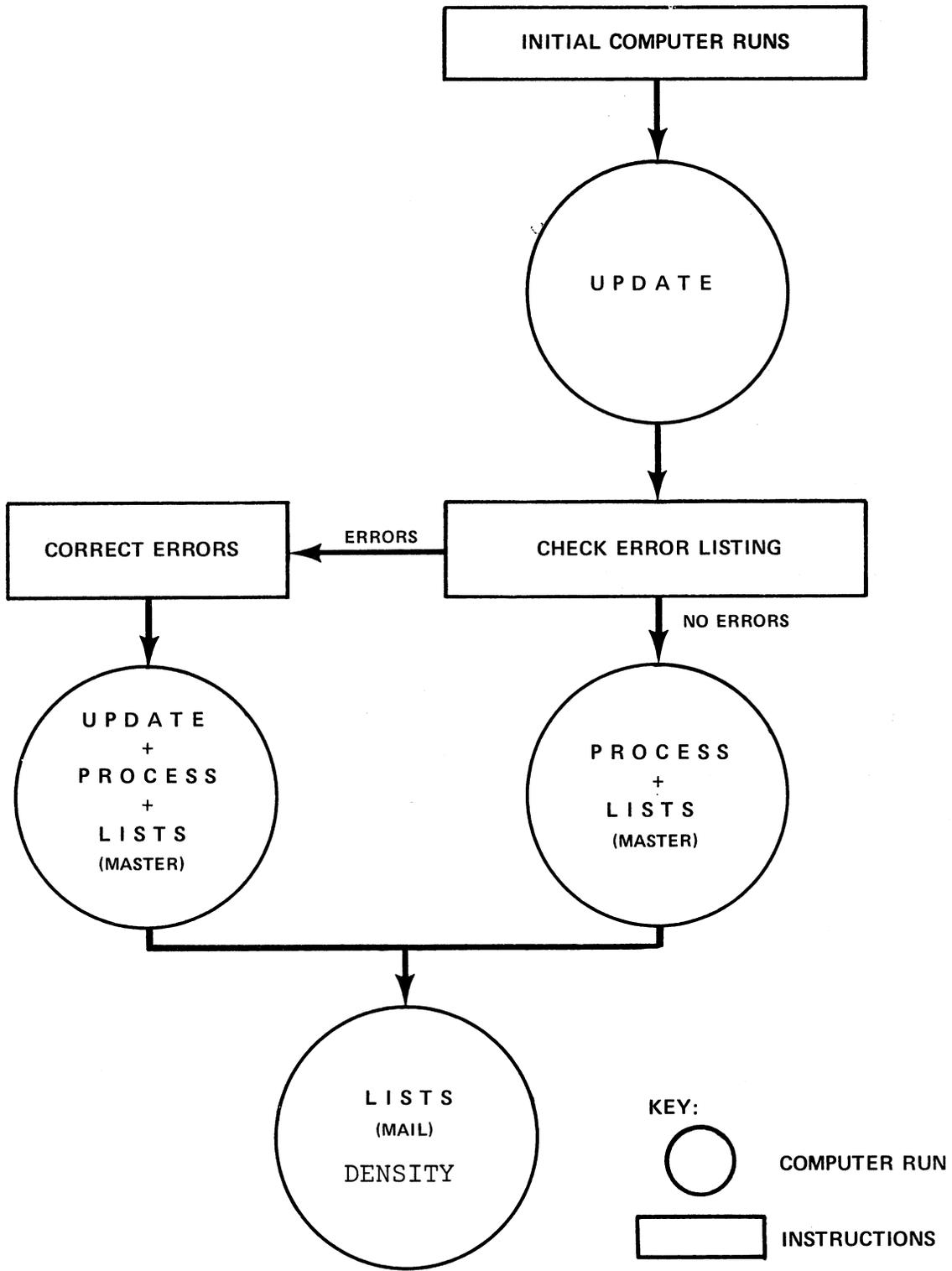


Figure 7. Flow chart of initial computer runs.

CARPOL Matching Program

CARPOL is a computerized matching program developed by the Bureau of Census that is applicable by the larger companies in Virginia in determining the potential vanpool riders.⁽¹⁰⁾ Unlike the FHWA program, which uses a grid system to locate and match the participants, the CARPOL program uses a geographic reference file. The files may be based on any geographic area such as census tracts, zip codes, and traffic zones. Regardless of the type of geographic zones used, the geographic center must be identified by coordinates.

The input data are acquired from a questionnaire survey conducted among the employees and consists of the applicant's

1. Name,
2. address,
3. working hours, and
4. working days.

The computer program first assigns the addresses to the geographic areas or zones, thereby identifying the potential vanpool riders in the different areas. A further match is made of the participants according to working hours, working days, etc. If there are an insufficient number of potential riders in a particular zone, the coordinates are used to expand to adjacent areas in an attempt to locate additional participants for the pool.

Individual lists of the participants in the area are produced and each potential rider receives a list of the other participants in his area with a request that the interested persons contact each other and form a pool.

The program is written in COBOL, Fortran, PL/1 and ALC computer languages and may be used on the IBM 360/65 machine. The core requirement is 110K. The program is available from the Bureau of Census, Washington, D. C. at a cost of \$70.

CONCLUSION

The identification of potential vanpool riders is a fundamental element in the initiation of a vanpool program as it locates the commuters who have common travel patterns and commuting needs. The cost and benefits of the program are dependent upon the efficient grouping, routing and scheduling of the vanpool participants; therefore this phase of the program should be thoroughly investigated.

It is recommended that before the technique or method for identifying the potential riders is selected, a feasibility study be conducted to ascertain the need for and interest in a vanpool program. The feasibility study should include a review of travel and parking facilities, the identification of the employees' places of residence and the general attitudes of the employees relative to vanpooling. Normally the study will not require more than a day for an employee to conduct and the findings can be summarized in a three to four page report.

The feasibility study will indicate the probability of success for a vanpool program and thus assist management in making a decision relative to the initiation of a project. If management decides to proceed with the project, then a formal survey should be conducted to obtain detailed information relative to employee interest, places of residence, travel patterns, operational preferences of the proposed vanpools, etc.

It is recommended that employers with fewer than 500 employees select a manual system for matching or grouping the potential riders. The centralized matching system appears to be the most efficient system of all those discussed in this report and it is applicable in Virginia. The system allows management to demonstrate its support of vanpooling as the administration of the program must be provided by the employer.

Large companies that have computer capabilities may use one of the computerized programs to locate and match the employees into pools. The program developed by the FHWA is well documented and widely used, therefore assistance with the computer package is readily available. The program may be obtained from the FHWA at no charge if used for a nonprofit public service. A grid system is utilized to locate and match the participants and the input data are taken from the survey questionnaire. The output may be presented in several formats, depending upon the needs of the user.

All of the matching techniques discussed in this report may be successfully used in Virginia, however, modifications may be required to meet particular needs. The employer who is initiating a program is encouraged to review all available alternatives, because much of the success of the program will depend upon the selection of an efficient matching technique.

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APPENDIX B

CAPABILITIES SUMMARY

OF COMPUTERIZED MATCHING PROGRAMS

Organization	Geo-coding	Matching		Reporting			File Maintenance
		Geographic	Compatibility	Master List	Match List	Van-or Buspool	
FHWA	49 x 49 bi-level grid	Many-to-one grid cluster at 0	Time	All or nothing	All or nothing	Yes	Reformat Of Files Required For Adds, Deletes And Changes
Census	Address match to census tracts	Many-to-one tract cluster at 0	Time and driver/pass	All or nothing	All or nothing	No	None Furnished
AAT-Detroit	Machine read X-Y coordinates	Many-to-one coordinate cluster at 0	-	Yes	Yes	Yes	-
Operation Energy	99 x 99 grid 99 work sites	Many-to-one cluster at 0	Time	Selected	Selected	Yes	Complete
UCLA	Looked-up box-and-page	Many-to-one cluster of box and page	Time	Selected	Selected	Yes	Clumsy
Washington COG	50 x 50 grid	Many-to-one grid cluster at 0	Time and Drive/Pass	All or nothing	All or nothing	Yes	Clumsy
Denver GWHS	Scaled X-Y coordinates	Many-to-one coordinate cluster at 0	None	All or nothing	All or nothing	None furn.	Complete
Connecticut Commuter Program	Hand coded to traffic zones	Many-to-one	Time	Yes	Form letter	None	Manually (Sort Utility Required)
WBZ/ALA	ZIP Codes	Many-to-one	Time Rider/Driver	Yes	Form letter	None	Deletes And Adds Required For Changes
- indicates missing information 0 = origin end of trip D = destination end							

STATUS AND SYSTEM SUMMARY
OF COMPUTERIZED MATCHING PROGRAMS

Organization	Language	Host Computer	Core Required	Disk/Tape	Time* Matches	Documentation
FHWA	ANSI COBOL	IBM 360/65	122K	1/0	29 min. 2100	Users Guide Program Documen- tation Sample Run
Census	COBOL, PL/I FORTRAN, ALC	IBM 360	110K	0/3	40 min. 5000	Users Guide No Sample Runs No Listing
AAT-Detroit	FORTRAN IV	IBM 370/168	Time Sharing	1/0	--	Not Available At This Time
Operation Energy	(ANSI) COBOL	Burrroughs 4700	Small	1/0	37.4 min. -----	Users Guide Sample Run Documented Listing
UCLA	FORTRAN IV	IBM 360/65	Varies with pool size	0/0	--	Users Guide
Washington COG	COBOL	IBM 360/--	100K	3/3	17 min. 1300	Program Listing Sample Run
Denver-GWHS	FORTRAN V	UNIVAC 1106/1108	Time Sharing	0/0	5 min. 2000	Program Listing Only
Connecticut Comuter Program	ANSI FORTRAN	UNIVAC 1108	32K (Words)	-/-	--	Very Limited
WBZ/ALA	RPG	IBM 360/70	20K	0/0	--	Users Guide
* These data are not necessarily comparable.						
-- Unknown or missing information.						