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AN EVALUATION OF RIDESHARING IN LEXINGTON, KENTUCKY

A Thesis

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Master of Science in Planning

Degree

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S. Charles Hite, Jr.

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Àjâb, mon meilleur ami.
qui a donne son temps,
sa patience, et de lui-
même. Son inspiration
et encouragement sont
sans prix pour cet effort
de recherche. Son amité
sera gardée pour jamais.
JE LUI A DEDIÉ CETTE THÈSE.

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ABSTRACT

This thesis evaluates the quality of performance of the Lexington Area Ridesharing Project in Lexington, Kentucky. Two methods were used to complete the evaluation: an information and collection process entailing interviews with many important transportation officials in the Lexington area, and a mathematical evaluation technique developed by the Texas Transportation Institute at Texas A & M University.

The results from both methodologies led to the same conclusions. These were that ridesharing in Lexington had an inauspicious beginning, but now, through the Lexington Ridesharing Project's efforts, ride-sharing is picking up momentum and the program is better than most of those in the United States. The Texas A & M methodology was more specific on the last point, calculating that Lexington's program rated better than 65.2 percent of those around the nation. In the comparison of the programs in Lexington and Knoxville, it was found that Knoxville had coped better with the turfism problem, had been much more successful at obtaining the cooperation of its area's large employers, and had provided more incentive for its residents to ride-share. Knoxville has many more poolers than Lexington, but also has spent more money in its pooling program efforts.

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DEFINITIONS

Ridesharing is the replacement of single-occupant vehicles with multi-occupant vehicles. The effort usually concentrates on work commuters. Ridesharing can be divided into carpooling, vanpooling and buspooling, reflecting the different types of vehicles used. The term "pooling" will be used interchangeably with "ridesharing" in this thesis.

Carpooling is the grouping of two or more travellers, or commuters, into one vehicle. With similar origination and destination points, these commuters save money and gasoline by eliminating the duplicated vehicle trips.

Vanpooling involves the replacement of up to fifteen commuters' vehicles with one van that duplicates the collective route these vehicles take. Vanpoolers often have the same employer or have work places in close proximity. They also often live close to one another and/or choose meeting or staging areas in the morning (an activity termed "park-and-riding").

Buspooling also involves the replacement of numerous vehicles with one vehicle, in this case a bus. Buspooling often uses the park-and-ride scheme and usually is utilized for longer commuting trips, often between differing cities.

CHAPTER I

INTRODUCTION

Ridesharing has been an informally organized phenomenon for probably about as long as there have been automobiles. Government and corporate interests in ridesharing, however, have only surfaced in the past quarter century with the greatest levels of participation coming in the decade since the 1973 Arab Oil Embargo.

Ridesharing involves the replacement of single-occupant vehicles with multi-occupant vehicles on urban streets and highways. This effort usually concentrates on rush hour work commuters. There are different types of ridesharing approaches and varied, but related, goals and objectives that ridesharing strives to meet.

The different approaches or methods that are used in the application of a ridesharing program range from the types of vehicles used to the sponsoring agent and the scope of the program. Privately owned cars are the most prevalent type of vehicle used for ridesharing. In groups who rideshare using privately owned cars the driver in the group is usually the owner, while a smaller percentage rotate drivers. There are a few ridesharing buses in operation in the United States, but most of the non-auto vehicles involved in ridesharing are vans. While a new phenomenon of third party ownership is occurring in some localities, most vans are owned either by one of the vanpool participants, or by a sponsoring employer of the participants.

Organized ridesharing efforts are usually either employer-sponsored or area-wide programs. Organized ridesharing owes its birth, in part, to the efforts of individuals with similar commuting patterns who sought out each other. This "spontaneous carpooling" still comprises one-third of the ridesharing market (Hoel and Gray, 1979). Later, employers became the first organizational sponsors, matching employees who live in close proximity. The Federal Highway Administration (FHWA) began its involvement in ridesharing in 1977 by funding four demonstration projects. The most recent development has been the sponsorship of local governments in areawide ridesharing efforts and in further encouraging employer-based programs.

Lexington, Kentucky, is one of those cities that became involved in ridesharing after the 1973 Oil Embargo. The first program was begun by Lexington's Chamber of Commerce. Its success was limited, however, and after its discontinuance local government began the program that operates today. The purpose of this thesis is to perform a case study and evaluation of the Lexington ridesharing program, as well as to compare the features of the Lexington program with some of those in Knoxville, Tennessee, long recognized as a pioneer and leader in the ridesharing field.

Objectives of the Thesis

This thesis will attempt to identify the components of Lexington's ridesharing effort that have been and have not been

viable. It will examine the histories of the pooling types and the factors that have affected these elements. This examination of the components' characteristics in Lexington, as well as comparisons with programs of other cities, including Knoxville, will yield possible recommendations for Lexington's ridesharing in the future.

Questions to be examined include why the Lexington Chamber's effort virtually failed, what changes in approaches and/or in Lexington itself allowed the Urban County Government's effort to achieve viability, and what factors are affecting the program today.

In comparing Lexington with Knoxville the thesis will examine the different environments for ridesharing in the two cities. Some of these factors include employer cooperation, a higher rate of inherent and induced incentives in Knoxville and the apparent "brokerage" in Knoxville versus the "turfism" of competing agencies in Lexington.

The current status of ridesharing in Lexington will also be discussed. Current data for the number of ridesharing participants both in area-wide and employer programs will be examined. The current rapid growth of vanpooling will be discussed, with the focus on new programs sponsored by the University of Kentucky and the Lexington-Fayette Urban County Government. Current participant attitudes toward ridesharing will also be included. A mathematical methodology developed by the Texas Transportation Institute at the Texas A & M University will also be used to help measure the current status of ridesharing in Lexington, and compare the program to national standards.

A final component of the paper will be an examination of the future of ridesharing in Lexington. This section will incorporate ideas from the examination of ridesharing in Lexington and the comparisons with other cities to make suggestions for how ridesharing might or should progress. New opportunities for ridesharing's expansion will also be examined.

Value of the Study

This study will be of benefit to those interested in ridesharing as it will highlight the techniques and approaches to ridesharing that have worked in Lexington, with possible application to other cities. It will also demonstrate the use of the Texas A & M methodology, a relatively new technique whose value has yet to be fully assessed. This information will be valuable to the specific cities mentioned, as well as other cities with comparable situations.

The main city comparison, between Lexington and Knoxville, will point out the different hierarchical structures existing in the two cities' ridesharing programs. It will also show the comparative abilities of the two programs in garnering employer participation. This will be useful to both cities, but especially to Lexington's younger and less advanced program.

This study will also be beneficial to cities in different stages of ridesharing development. Those with existing programs could benefit from innovative or alternative methods of operation brought to light in the study. Cities which are in the planning stages of instituting a

ridesharing program could identify positive components of existing programs mentioned and avoid previous mistakes that had been made.

Organization of the Thesis

The chapter following this introduction will address the history of ridesharing, first recounting the general nationwide history, and then addressing the history of ridesharing in Lexington with comparisons to Knoxville. The general history will concentrate on the organized efforts of the past decade. It will begin with a discussion of the Minnesota Mining and Manufacturing (3M) programs, recognized as the pioneer. The history will then progress chronologically through the 1973 Arab Oil Embargo, ridesharing's peak era of growth, federal programs of the middle and late 1970's, and will conclude with a discussion of current programs.

The second portion of this chapter will discuss the history of ridesharing in Lexington. Also structured chronologically, this section will begin with the unsuccessful Chamber of Commerce program, progressing to the revival of ridesharing by the Lexington-Fayette Urban County Government and International Business Machines (IBM) in separate programs. It will track the progress of these programs and the addition of new ones, including the University of Kentucky's to the present, and the recent addition of a vanpooling element.

The third chapter of this paper will discuss methodology. The methodology to be used in this study will concentrate on a case study of the Lexington ridesharing program and will include some comparisons

with the program of Knoxville, Tennessee. The case study of Lexington includes an historical view of ridesharing's progress there as well as an evaluation of performance standards for determining the efficiency and impact of the program.

The fourth chapter contains a presentation of the data obtained. Questions and answers from the interviews conducted will be discussed. Additionally, the raw data and computed figures of the six tables comprising the evaluation procedure will be presented.

The fifth chapter of this thesis deals with the findings of the research effort. The data obtained will be analyzed to evaluate ridesharing in Lexington. Interview, survey and qualitative methods will be used to answer the questions of how efficient and effective Lexington's ridesharing program is, both in an absolute sense and in comparison with other localities.

The final chapter contains conclusions made based on the data obtained. It also contains recommendations and expectations for the future of Lexington's ridesharing program. In this chapter the final evaluation and analysis of the summarized data from the previous chapter will be presented and assertions will be made pertaining to the overall quality of Lexington's effort.

CHAPTER II

THE HISTORY OF RIDESHARING IN AMERICA

The Minnesota Mining and Manufacturing Company (3M) was the first major employer to sponsor a ridesharing program. The Saint Paul firm's prime incentive was to eliminate the need for parking expansion, thus enabling the company to save money and put the land to better use. The effort was a success as over 2.5 million dollars was saved by the company in parking lot construction alone (Hoel and Gray, 1979). This represented the estimated 340 spaces that did not have to be built (US DOT, 1977). The need for the parking expansion reflected the fact that the number of employees at the 3M plant was anticipated to double, but the appropriate government officials could not guarantee that new highway construction or improvement was imminent. After a six-month research period the company agreed to utilize six vans as a demonstration for six months.

The vanpool model that was developed by 3M became an instant success, was adopted by many later programs, and is still the most common system used by van sponsors today. Vans were organized such that they would pay for themselves over the life of the vans if the pool contained eight paying passengers in addition to the driver who rode gratis. If any additional riders helped to further fill the 12 passenger vans, their fees would be given to the driver. Under this system the driver kept the vehicle during the non-work periods and was allowed to drive it for private use on a mileage charge basis.

Three years into the program 91 vans were in operation, with twelve of these being privately owned. Ten percent of the employees were in the program. The number of carpoolers also doubled from one to two thousand, so while employment increased 23 percent, the number of vehicles arriving at the plant actually decreased. Over 82 percent of the vanpoolers considered it more convenient than their previous mode (Owen, 1977).

Another major employer which began a successful ridesharing program during the early history of the phenomenon was the Knoxville office of the Tennessee Valley Authority. Planning for the program began in early 1973 and the program began operating that December. By January 1975, fifteen buses were commuting. After another year, 22 buses were in operation. When TVA anticipated its move to the current headquarter towers in 1975, unions and management agreed to continue the ridesharing program in lieu of building extensive parking lots or garages. It was estimated that five million dollars were saved by the decision (Hoel and Gray, 1979).

From November 1973, before the program's inception, to January 1976, the percentage of those driving alone to TVA decreased from 65 percent to 19, while the bus ridership increased almost tenfold (3.5 percent to 31 percent) and those pooling, walking or riding a bike to work rose from 1.5 percent to 7 percent (Stokey, 1977). Annually the program costs TVA \$125,000 in operating expenses, but it is estimated to save \$337,820 per year in parking space costs alone. The program reduced from 2195 to 1066 the number of vehicles arriving at

TVA while the number of employees increased from 2950 to 3400.

Vehicle occupancy went from 1.2 persons per vehicle to 1.9 (Meyer, 1981). By 1980, 85 percent of the 4200 employees at TVA were ride-sharing. Roughly 1000 of these were vanpooling in 100 vans (US DOT, 1982).

The first major catalyst to ridesharing in the United States was the 1973 Oil Embargo. Because of their refusal to buckle under to Arab demands to stop supporting Israel, countries including The Netherlands and the United States were kept from buying Arab-produced oil. The Dutch nation turned to bicycles to solve its problems but other alternatives were needed for America. The embargo encouraged other employers to follow 3M's lead in organizing employee vanpools and carpools. The Westinghouse Broadcasting Corporation, through its local radio stations, sponsored ridesharing efforts. Area-wide programs were begun by local Chambers of Commerce (as in Lexington's case), and by local governments. Although these efforts proved largely unsuccessful because of poor organization and little expertise, they were significant in that they marked the first government involvement in ridesharing (US DOT, 1982).

The Continental Oil Company (CONOCO) was one of the companies that began a ridesharing program as a direct result of the oil embargo and subsequent energy shortage. The program was in the planning stages soon after the embargo began and was in operation by March 1975 at CONOCO's Houston, Texas, plant. At the time of the program's inception, already one-quarter of CONOCO's 1450 employees were carpooling. The company set a goal of 65 percent pooling and within a

year was well on its way to that goal with 36 percent of its employees in carpools and another 16 percent vanpooling (Hoel and Gray, 1979). With the success of the Houston program, CONOCO expanded to other offices, and by mid-1976, vans were running in nine states with others in the planning stages. An interesting sidelight is CONOCO's claim to sponsor the most efficient and comprehensive plant carpooling program; at one of their oil fields one van carries all twelve employees to work.

For the field of ridesharing, federal involvement in the problems of commuters was the most important result of the Oil Embargo (US DOT, 1982). In January of 1974 Congress passed, and the President signed, the Emergency Highway Energy Conservation Act. Out of this act came federal sponsorship of carpool demonstration projects. One hundred demonstration projects in 96 urban areas of 34 states were begun by the act, which provided a 90 percent federal share. Five years later, even though the energy crisis had ended, thirty-five programs were still in operation (US DOT, 1983). The original provisions for funding of ridesharing projects in the January 1974 act were expanded later that year and in 1976. These acts allowed for continuing project eligibility, an adjustment in the federal share of funding and an expansion of the scope of eligible projects.

The first expansions were contained in the Federal Aid Highway Amendments of 1974 which Congress passed late in that year. These amendments extended by a year the period of time for approval of

carpool demonstration projects to December 31, 1975. The Federal Aid Highway Act of 1976 extended this approval period indefinitely by striking the termination date from the stipulations for funding, signaling a continuity of federal funding for these projects. The 1976 Act also began the federal funding of vanpooling, providing a 90 percent federal share for the purchase of vanpool vehicles.

By authorizing funding for vanpooling the federal government showed its realization of the value of vanpooling, which had been demonstrated by private corporations. Reasons supporting vanpooling included poor transit systems (Knoxville's "limited service" was one reason for TVA's vanpooling program, discussed earlier); rising gas prices; parking problems (the main impetus for the 3M program); and long employee commuting time.

The year 1976 also saw the expansion of services offered by an innovative Los Angeles concern. Commuter Transportation Services, Inc. (better known as Commuter Computer) had begun in 1974 as the pioneer in third party ridesharing coordination. It was jointly sponsored by Atlantic Richfield Company and the California Department of Transportation (Caltrans), which also made it the first effort sponsored by a combination of public and private concerns. This new trend in ridesharing organization involves independent (often non-profit) corporations that may lease vans to employees, employers or individual commuters, as well as provide the standard matching and promotional services. In 1976 Commuter Computer added a vanpooling element. Starting with 20 vans, the eventual program had 160 vans.

Third party programs that offer commuter matching services as well as van leasing are usually called brokers. The brokering concept was begun in Knoxville and will be discussed in the section discussing Knoxville's ridesharing history.

In the years since the energy crisis and the first emergency act, the emphasis on and participation in ridesharing has increased, and it is now recognized as a permanent ongoing program instead of an experiment. One indication of this has been the increase in both the amount and permanence of federal programs and funding. The 1978 Surface Transportation Assistance Act replaced the earlier Emergency Act, making ridesharing assistance permanent. Another indication is the acceptance of Transportation Systems Management methods, of which ridesharing is an important component.

Transportation Systems Management, or TSM, is a program supported by the Federal Highway Administration (FHWA) and the Urban Mass Transit Administration (UMTA) that plans contingencies for the most efficient use of existing transportation facilities, rather than building new systems. Ridesharing has become an increasingly important component of the TSM philosophy. Some of the more recent federal programs have included the USDOT's National Ridesharing Discretionary Program which made grants for promoting ridesharing programs. The first phase was instituted in 1979 with 17 demonstration sites receiving \$2 million. By mid-1982 sixty-four projects had received \$7 million from DOT and FHWA. TSM federal aid funds are now the largest sources of ridesharing funds. Four billion dollars have been

allocated from the FHWA Federal Aid Urban System to TSM funds with nearly \$10 million of that designated to supporting ridesharing since 1979 (US DOT, 1982).

Ridesharing in Lexington, with Comparisons to Knoxville

The Lexington Chamber of Commerce's ridesharing program followed one instituted by Knoxville's Tennessee Valley Authority by over a year. In comparing the history of ridesharing in Lexington with Knoxville and other area cities, one finds Lexington at a disadvantage immediately in that it got both a later and less successful start in implementing a ridesharing program. Because of poorer coordination and organization and a less definite purpose, Lexington's first program enjoyed less efficiency and participation and eventually was discontinued while TVA's program is still in operation today. It would be almost two years before ridesharing was rejuvenated in Lexington (Sturgeon, October 28, 1983).

Ridesharing began in Knoxville in response to the employees of the downtown offices of the Tennessee Valley Authority as discussed earlier. Lexington's ridesharing experience was begun in April of 1974 by the Lexington area Chamber of Commerce under contract with the Kentucky Department of Transportation. Unlike TVA's effort, which was an employer-based program, Lexington's was an areawide ridesharing program. As with many of the early areawide efforts, Lexington's program suffered from less continuity and less purposeful direction than were found in employer-based programs. These factors, among

others, led to the eventual demise of the program (Herrington, March 22, 1984).

After the spring 1974 beginning of the Chamber of Commerce program, the first six months were spent building a computer file of possible ridesharing matches. By the end of the year 550 names had been entered. However, only 15 of these people eventually formed carpools (Lexington Carpool Project Summary Report, 1977). By July 1975 the number of names in the file had grown to 654 but the Chamber's interest was already waning and quick personnel turnover caused a lack of consistency in the direction of the effort. Five different individuals operated the program in its first four years, causing problems such as employer contacts not being followed up and rideshare matching lists not being returned to companies whose employees had filled out questionnaires.

After eighteen months, active promotion of the program and aggressive pursuit of employer participants by the Chamber had become minimal. By 1978 the Chamber of Commerce no longer had a staff member working on ridesharing concerns and the only part of the program that was maintained was a telephone line for the general public to call. The carpool commuter matching file contained 650 names. After spending \$47,000, the Lexington Chamber of Commerce's effort ended with little success. The Chamber attributed this to such factors as Lexington's status as a white collar community (with only 19,000 of the non-agricultural work force of 105,000 in large factories), the failure of efforts to involve major employers such as IBM and the Urban County

Government, and the handicap of the program being the first effort in the area (Lexington Carpool Project Summary Report, 1977).

While the success of the Lexington Chamber's program peaked and then began its long decline through the mid-1970's, innovativeness and growth characterized the ridesharing environment in Knoxville. The TVA ridesharing program continued successfully, and the Knoxville Commuter Pool began its operations in 1975. Urban Mass Transit Administration (UMTA) projects flourished in Knoxville, including a pioneer project in third party ridesharing sponsorships, otherwise known as brokerage.

Beginning in late 1975 at The University of Tennessee's Transportation Center, the Knoxville Transportation Brokerage Service (KTBS) introduced third party sponsorship to ridesharing for the first time. Previous ridesharing programs had been run by employer, government or civic entities who usually would reap direct benefits from the program. However, Knoxville set the precedent for neutral, often non-profit, organizations operating brokerage services. The project began at The University of Tennessee and after a brief period under city government reverted back to UT.

Another innovation that was attributable to the KTBS was a program that authorized the purchase of "seed" vans for lease and eventually for sale to private individual carpoolers. Fifty-one of the vans were sold in the effort to "demonstrate the viability of vanpooling and thereby spur the growth of a large privately owned fleet of vanpools" (US DOT, 1982). The KTBS was also instrumental

in getting legislation favorable to ridesharing enacted, as Tennessee became one of the first states to deregulate vanpools.

The KTBS, or Knoxville Commuter Pool (KCP), as it was also called in the beginning, and is more commonly known as now, has always enjoyed substantial amounts of federal funding, averaging around \$175,000 per year. The Fiscal Year 1984 budget was \$190,000. FY 1985's budget is expected to decrease, slightly, to around \$160,000, but this will mark the first year that funds have been received from the State of Tennessee. As has been the Lexington program's experience, all funding to KCP up to now has been federally provided (Beeson, May 29, 1984).

KCP's efforts in vanpooling began as a third-party sponsor, taking the risk away from the drivers. Since 1979, the drivers have owned the vans which they operate in pools, thus assuming the risk. In 1981 the number of pools under KCP peaked with seventeen operating buspools and over 100 vanpools. As of 1984 these numbers had dropped to thirteen and 80, respectively, but were again on the increase (Beeson, May 29, 1984).

The later 1970's found ridesharing in Lexington finally realizing viability. The Lexington-Fayette Urban County Government (LFUCG) and the Bluegrass Area Development District (BGADD), the locally designated council of government, began proposals for a joint coordinated ridesharing effort in 1979. The Urban County Government became responsible for ridesharing in Fayette County while the area development district handled a surrounding fifteen county area. This

renewed interest corresponded to a period of increasing fuel prices and the possibility of recurrences of the fuel shortages of the mid-1970's.

The Urban County Government effort began by contacting Lexington's twenty-five largest employers and distributing questionnaires to their workers for ride matching. The two top employers, the University of Kentucky and International Business Machines, had already begun efforts to encourage ridesharing. IBM began its effort by furnishing employees with coordination information including addresses and pool formation instructions at information booths in each of the firm's major buildings. Through these informal means, 38 percent of IBM's employees had formed carpools by 1981, the year the company increased its emphasis on ridesharing and began a formalized effort (Lexington Herald-Leader, February 8, 1981). In that year the carpooling program was moved to the jurisdiction of the "IBM Club," an in-house organization which coordinates social and cultural activities for IBM employees. Cards were distributed to employees who returned them on a voluntary basis, and their addresses were categorized according to which area of the Bluegrass they lived in. Today over 50 percent of IBM's 6200 employees carpool and another 600 are on the matching rolls (Banta, December 19, 1983).

Prior to the 1979 LFUCG-BGADD joint effort, the University of Kentucky had also encouraged carpooling through the use of priority parking stickers sold at a reduced rate. The stickers cost two-thirds of the normal charge for a faculty sticker in 1978. They also

featured an added advantage of allowing the carpool vehicle to park in any of the University's 14,000 spaces, rather than being limited to certain letter-designated lots. By 1981 only 76 pools had taken advantage of the sticker. This small number was attributed to the sticker's requirement of a minimum of three riders (thus eliminating the much more numerous two-person pools) and the lack of extensive promotion of the sticker's existence. UK has recently begun a van-pooling program which will be discussed later in this section.

The joint LFUCG-BGADD carpooling program marked the first federal involvement in Lexington ridesharing. Forty thousand dollars in federal and Urban Systems Funds were provided in the original grant, with slightly less in the following year. In 1981 and 1982 Lexington and the Bluegrass ADD jointly received \$73,102 and \$81,270 respectively with each getting about half. In 1983, however, the Area Development District dropped out of the ridesharing partnership and Lexington alone was provided with \$38,778 (Harrington, March 22, 1984). In fiscal year 1984 federal funding to the Lexington ridesharing program totalled \$46,612 (Sampson, December 22, 1983). In previous years localities were required to provide a matching share for their funding at a 25 percent rate. The passage of the Surface Transportation Act eliminated this requirement but the Commonwealth of Kentucky still asks for a good faith match. Lexington utilizes public service announcements for its match. This year PSA's will total \$15,540 (Schaars, 1983).

The end of BGADD's participation left Lexington as the only remaining Kentucky city whose government sponsored ridesharing. Louisville's program is run by its Chamber of Commerce while in-state area development districts previously operated programs in Paducah, Bowling Green, Mount Sterling, Ashland, and Morehead. These are all now inactive or functionally dormant. The Ohio-Kentucky-Indiana (OKI) Regional Council of Governments sponsors a program in Metropolitan Cincinnati, which includes three northern Kentucky counties.

By February 1981, 5,500 names were in the computer matching file of the Urban County Government's ridesharing program and it had been calculated that 624,000 gallons of gasoline had been saved by the program's participation (Herald-Leader, 1981). This progress had been achieved by continued interaction with Lexington employers. By this point the largest 100 had been contacted. The next step was to expand from the primarily employer-based format to include an areawide program. This was begun in May of 1982, when 65,000 questionnaires were distributed to Fayette County citizens via the local newspaper, the Lexington Herald-Leader. The large number of returned questionnaires generated the problem of how they would be processed. To answer this question Lexington decided to borrow directly from another of Knoxville's innovations in the ridesharing field.

The Knoxville Commuter Pool in conjunction with the Urban Mass Transit Administration (UMTA) had developed microcomputer software to handle ridesharing matching. In the fall of 1981, the Ridesharing

System (RSS) was instituted in Knoxville and has been in continuous use since then. It is capable of providing matches for both an employer-based, or batched, mode, as well as for individuals wanting ridesharing partners. Lexington's interest in computer processing of the questionnaires was heightened in December of 1982 when the Kentucky Transportation Cabinet approved of that method, with the original site to be the University of Kentucky. The following month Lexington officials contacted the Knoxville Computer Pool and the RSS program (Schaars, August 27, 1983). In March 1983, the Lexington ridesharing coordinator and transportation planners traveled to Knoxville for a first-hand look at the RSS package and by May, Lexington had purchased it.

Among the newest developments in ridesharing in Lexington is the advent of organized vanpooling. Both the Urban County Government and the University of Kentucky are sponsoring programs. In the Urban County Government program seven vans are in operation including two vans travelling to the Bluegrass Army Depot and one going to Nicholasville that replaced a Lex-Tran bus (Schaars, March 21, 1984). The program started in May 1983 with two vans, and was expected to have twelve vans by May of 1984.

The UK program also began in May of 1983 and has three vans in operation. It is a 100 percent federally funded demonstration grant. All passengers are either University employees or employees at the Veteran's Administration Hospital adjacent to the campus. Two vans were purchased for \$25,000 and recovery of the costs is expected

in four years (Pigman, 1984). The vans commute daily to Lexington with one beginning in Richmond and the other starting further south in Berea. Funding for the program under UK's jurisdiction ended on March 31, 1984. At that point it was absorbed by the Lex-Van program, run through the Lexington Ridesharing office. Fee charges for the old UK pools were adjusted to conform with those vans in the Lexington program that also follow a Berea-Richmond-Lexington route and white on blue colors were changed to the maroon on white scheme and logo that is the symbol of the Lexington program.

Progress in the Lexington program continues to this day. With the current Lexington vans filled, an order for another six has been sent to Chrysler. However, delivery is not expected until early 1985 as the manufacturer is months behind in filling requests. Work is also beginning on a canvass of Bourbon County residents through the local banks and weekly newspaper for possible pools to Lexington. Local industry surveying is continuing and still produces significant amounts of new poolers (Schaars, April 12, 1984).

CHAPTER III

METHODOLOGY

The purpose of this thesis is to evaluate the success and effectiveness of the Lexington Ridesharing Project. The methodology used to accomplish this goal entailed a case study of the Lexington ridesharing program. Evaluation of the program was accomplished by utilizing data from two surveys of Project matchlist registrants (conducted by the Ridesharing Project in 1980 and 1982), performing a quantitative evaluation and analyzing subjective opinions of the worth of Lexington's program garnered from city and commonwealth transportation officials.

Documents, Interviews, and Surveys

Much of the information for the study was obtained from documents and records such as monthly status reports, budgets and correspondence from the offices of the affiliated agencies including the Chamber of Commerce, the Urban County Government, the Bluegrass Area Development District, District offices of the Kentucky Department of Transportation and major Lexington employers such as IBM and the University of Kentucky. Another major source of information was obtained by personally conducted interviews. Those interviewed were David Schaars, Lexington's ridesharing coordinator; Michael Hailperin, Head of the Lexington-Fayette Urban County Government's Transportation Planning section; Jerry Pigman, head of the University of Kentucky's

vanpool program; and Andrew Terwilleger, an engineer in the Traffic Engineering Section of the LFUCG.

Also interviewed for pertinent historical and statistical information were: Bill Sampson, Steve Williams and Randy Gnau, employees of the Commonwealth of Kentucky in the capital, Frankfort, who deal with funding and performance for all of the Commonwealth's ridesharing programs; Ron Herrington of the Bluegrass Area Development District (central Kentucky's council of government) who related that agency's involvement in ridesharing; Jim Banta, an officer in IBM's ridesharing program; and Ed Sturgeon, Director of Research at the Lexington Area Chamber of Commerce.

Knoxvillians interviewed included John Beeson and Karen Stanley of the Knoxville Commuter Pool and Dr. Frederick Wegmann of The University of Tennessee's Civil Engineering Department, well known in the field of ridesharing. Wegmann's advice was sought for methodology strategy.

Wegmann mentioned measures such as reduced-vehicle-miles-travelled, reduced parking needs, pollution and fuel consumption, and a reduction in vehicle ownership (less desire and purchasing of second cars) as examples of pertinent barometers of the success of a ridesharing program. These performance measures are also benefits to society that a successful ridesharing program provides. Wegmann also listed benefits to participating industries and employers including

reduced absenteeism and improved worker morale (Wegmann, September 30, 1983).

Wegmann (September 30, 1983) was asked what factors should be considered and what strategies should be used in a study such as this one. He replied that investigation of the demographic factors, such as locations of concentrated industry and travel distances and times, and a research effort that stressed segments of the program that worked well rather than which segments did not.

Most of the remaining interviews conducted began with the same set of core questions. The core questions included:

1. How well is Lexington being served by the Lexington Ridesharing Project?
2. Is Lexington's program cost-effective and cost-efficient?
3. How does Lexington's program compare with others you are familiar with?
4. How big a problem is "turfism" to the ridesharing effort in Lexington?

After the opening core questions were discussed, the interviews usually progressed into discussions involving the respondent's particular area of expertise or involvement with ridesharing in Lexington. (The significant exception to this was the set of interviews conducted with David Schaars, the Ridesharing Coordinator. The first interview conducted with Schaars was on July 18, 1983, and the last was on April 12, 1984. These, and the eight interviews in the interim, served to constantly update information on activities and

events pertinent to ridesharing in Lexington as new questions or concerns arose throughout the research process.)

Information on participant attitudes toward, and levels of utilization of, the Lexington Ridesharing Project was obtained from two telephone surveys conducted by the personnel of the Project itself. These surveys, conducted in 1980 and 1982, randomly contacted Lexingtonians who had requested carpool matches from the Project. Questions concentrated on the respondents' current commuting characteristics. With sample sizes of 130 for both surveys, they had a 10 percent (plus or minus 5 percent) margin of error (Schaars, January 31, 1984). Some information from the 1980 Census was also used. However, these data were limited, as Lexington did not purchase the "Journey to Work" data available to it from the federal government.

The aforementioned data collection and interviews were all personally conducted, with the results from the surveys and census statistics being the only secondary data sources utilized. All interviews, except three phone interviews, including one with Donald Maxwell in Texas, were conducted in person, on location in Lexington, Frankfort or Knoxville.

The Texas A & M Technique

A trio of documents published by Texas Agricultural and Mechanical University (Texas A & M) in January 1984 for the United

States Department of Transportation (USDOT) described a new methodology for evaluating a ridesharing program. From this series entitled Performance Standards for Ridesharing Projects the method described in Project Evaluation Workbook and Project Evaluation Program were utilized to evaluate Lexington's effort. A third companion document, Comparative Standards Guide, was an interim technical document, and not published by FHWA (Maxwell, April 5, 1984).

This methodology consists of a process whereby a city's ridesharing program can be evaluated in an objective manner and be compared, in part, to other programs around the nation. The process involves transforming data (concerning costs, utilization and miles and resources saved) from the operation of Lexington's ride-sharing program using six "Evaluation Forms" to yield percentiles rating the program's performance.

The first task in this evaluation procedure (described as Step 0—pre-evaluation requirement in the Workbook) was the collection of pertinent data from Lexington's program. The yearly Lexington Ridesharing Project budget was described in terms of (1) labor (split into hours spent for general administration, employer-based ride-sharing, public service ridesharing, public awareness and evaluation); and (2) outside services (split into allocations for such items as computer hardware, telephone and advertising expenses) (Fiscal Year 1984 Budget and Man Hour Estimates, 1983). However, the evaluation sheets required the delineations of "matching services, formal workshops, technical contacts, providing vehicles, increasing awareness,

increasing attractiveness and transit services" (Workbook, 1984).

Therefore, all the hours-spent and appropriations amounts in the Project Budget were translated to fit the categories used in the Texas A & M technique. This was done in consultation with Lexington's Ridesharing Coordinator, David Schaars. After this task was finished computations to complete the six evaluation forms began.

The tables discussed here are displayed, complete with the Lexington data and computed numbers included, in Appendix A. Specific, step-by-step explanations of the calculations involved in computing the components of each table are described in Appendix B. All dollar and performance figures are for Fiscal Year 1984, except for the last table which specifies use of monthly figures. Here a twelve-month average was utilized.

Evaluation Form One provides a service cost allocation evaluation. The first step was determining the budget allocations for the specific categories of the ridesharing project's tasks. By comparing the number of tasks performed (calls answered, pools formed, etc.) to the dollars spent in each respective category, performance ratios were determined. These ratios were then compared to national standards provided in the Workbook to yield percentiles, which were then adjusted based on the percentage of the budget spent for each category. The final outcome was the Phase I, or "Service" percentile. This is the first of three percentiles that were averaged at the end of the evaluation to yield a final overall program percentile.

The second table performed a *services-to-mode results translation*. This is a determination of the amounts and types of services that are utilized to aid each mode or type of pooling, as well as the specific numbers of each pooling type. This translation provided a technique for assessing the number of "program poolers," those car-, van- and buspoolers that can be attributed to the Lexington Ridesharing Project. In the cases of vanpoolers and buspoolers direct counts were available. The number of carpoolers was determined by using census figures, ridership data from the Ridesharing Office and the Workbook conversion factors. The final products were the numbers of program carpoolers, vanpoolers and buspoolers which were utilized later in Evaluation Form Number Four.

A *services-to-mode translation* was computed by Evaluation Form Number Three. Its function was to divide the Ridesharing Project's dollars into those spent for the three component parts of ridesharing: carpooling, vanpooling and buspooling. Similar to the second table, the third table was a building block whose results were inserted into the fourth table.

Evaluation Form Number Four produced the second of the three comparative program percentiles by determining the program's mode results. The costs-per-mode from Form Two were utilized to determine the dollars spent per pooler for each mode. These figures were compared with national standards and converted into percentiles (which were then adjusted) as was done in the first table.

Calculated data representing numbers of poolers were brought forward from Form Two to begin Evaluation Form Five, the *mode-to-transportation translation*. This table expressed the values for measures such as vehicle miles travelled (VMT) and gallons-of-gas-saved for each pooling type. By calculating and comparing commuter miles with and without ridesharing, such program benchmarks as savings in vehicle miles travelled (VMT), round trips and passenger mile service were determined. These parameters are displayed in this table on daily, monthly and yearly bases and the monthly figures are carried forward to the last evaluation form, which calculates the monthly "Transportation Results."

This final table displays budget appropriations for the same total budget of \$46,610; however, they are divided by twelve to show average monthly expenditures and are delineated differently than were the earlier tables. These delineations describe budget percentages assigned to achieving program goals rather than identifying action categories. These budgetary figures along with the number of VMT's saved per month and a conversion factor were used to calculate a ratio that was compared to previously determined standards to yield the evaluation percentile. This third percentile was averaged with the two obtained earlier to provide a final comprehensive percentile. This final percentile identifies a ridesharing program's relative status among the nation's programs. Lexington's score of 65 indicates that the Ridesharing Project rates better than 65 percent of those in the United States.

The combination of the interviews and the Texas A & M methodology provided both the expert opinions and data needed to evaluate the Lexington Ridesharing Project. The data obtained are displayed in the following chapter with the subsequent evaluation findings in Chapter V.

CHAPTER IV

PERTINENT PROGRAM DATA

Data sources utilized for this evaluation included local and state transportation officials who were personally interviewed, the 1980 United States Census, many urban-county government documents and correspondences concerning ridesharing in Lexington and the Texas A & M methodology's evaluation forms. Categories of data include budgetary and participation statistics, interview responses, Census data on Lexington ridesharing, with some corresponding data from Knoxville, and the comparative percentiles and other statistics generated from the Texas A & M methodology. These data are presented in this chapter.

Information from the Interviews

Responses to the core questions asked during the interviews tended to be fairly consistent among all the respondents. In answer to the first question about the quality of service the Project provides Lexington, nearly all queried felt that the Ridesharing Project was serving Lexington well. Many added that it was doing well especially in light of its comparatively meager amount of funding. This begins to also address the second question of the cost effectiveness and cost efficiency. In answer to this question an expert crediting Lexington with getting "more bang for the buck" (Sampson, December 22, 1983) and another relating that Lexington had a "large

number of potential vanpoolers on the rolls for a city [its] size" were characteristic of the responses.

The question about comparisons with other projects brought limited responses. Most of the officials spoken with had little knowledge of programs except Louisville's and Northern Kentucky's, two programs whose scopes dwarf that of the Lexington Ridesharing Project. By the same token, the Lexington effort was substantially larger than the programs in Mount Sterling, Ashland, Paducah, Bowling Green and Morehead, all of which are now in various states of dormancy (Schaars, April 12, 1984).

The only other two programs in the Commonwealth are Louisville's and one in Northern Kentucky run in conjunction with the Ohio, Kentucky, Indiana Regional Council of Governments (OKI). Lexington's more closely parallels the latter. Louisville's program, like Lexington's, began in the Chamber of Commerce and it has remained under that body. Instead of relying on governmental connections and arrangements it is run more like a private concern. The director is John Miller, a retired Public Relations Director with General Electric, the area's largest employer. He uses past business contacts and those of the Rotary Club to which he belongs to garner employer support for and cooperation with the ridesharing program.

As does Louisville's, the OKI program has a much larger staff than does Lexington's (six employees versus one). In every other respect, though, it operates similarly to Lexington's program. It is government sponsored, under an area planning agency, as was part

of the Bluegrass program at one time. Now the Lexington ridesharing coordinator operates directly under the mayor. The OKI approach to employers is also similar in that both localities utilize direct agency-to-agency interaction as well as sponsor workshops and breakfasts, and both are beginning vanpool programs. In evaluating the Commonwealth's ridesharing programs, Sampson also said that, "they are not as far along in employer marketing but that has really improved in the past eighteen months" (Sampson, December 22, 1983).

Turfism was the other major topic that was discussed in most of the interviews. "Turfism" as it is used here can be described as the opposite of "brokering" transportation services available to commuters. Instead of having a central (often third-party and not-for-profit) organization which comprehensively organizes or brokers transportation services, Lexington functionally suffers from rivalries among its transportation providers. However, although acknowledging its existence, most of those responding said that, "The turfism problem had little effect on the efficiency of the Lexington Ridesharing Project" (Gnau, December 22, 1983).

Turfism was also one of the specific topics discussed with individual experts after the core questions had been asked. Randy Gnau, Section Supervisor for Public Transportation in the Commonwealth of Kentucky's Department of Transportation, was the primary expert for this topic. Gnau expanded on the statement quoted above saying that turfism had hurt transportation efforts in Lexington worse in earlier years than it did now.

For many years, and still to a lesser extent today, the efficiency of the provision of transportation services in Lexington has been hampered by infighting between the various providers of these services. The "turfist" attitudes of agencies fighting to protect their perceived territories and markets and duplicating efforts as a result, contributed to the sluggish start experienced in the ride-sharing program. According to Gnau, Lexington turfism usually surfaces when "one company sees an opportunity to improve its public relations," and there is "less turfism found in the ridesharing program, especially since ridesharing has been solely under one agency" (Gnau, December 22, 1983).

As an historical note, it should be explained that Gnau mentioned the fact that, before 1983, Bluegrass area ridesharing was handled jointly by the Lexington program and by the Bluegrass Area Development District (BGADD), Central Kentucky's area council of government. As a joint effort for four years the Lexington project handled any commuters whose work trips either began or ended in Fayette County while BGADD handled non-Fayette trips. For instance, residents of Nicholasville who worked in Georgetown would be handled by BGADD, even though their daily commuting route passed through Fayette County. BGADD's area of responsibility entailed sixteen Bluegrass counties surrounding Fayette County. From 1979 to 1982 the two programs each received about \$40,000 in federal funding but beginning in Fiscal Year 1983 (July 1, 1982-June 30, 1983) the federal government stopped its Section 8 funding of the BGADD program and

continued to fund the Lexington program at the same rate. Although the Lexington program handles calls from the outlying areas and keeps a manual file of Bluegrass area residents who wish to be matched, effective organized ridesharing, such as contacting employers or getting governmental assistance has ceased outside of Fayette County.

In the past year the Lexington Transit Authority (Lex Tran), the local bus operator has become the self-proclaimed transportation broker (Sparer, January 31, 1984). Lex Tran, however, is not a disinterested third party and has been one of the main combatants in previous turf battles. Although it does not show a profit (few transit companies do) and is heavily subsidized by all three levels of government, neither is Lex Tran a not-for-profit organization. The turfism-brokerage question is also one that marks the difference between the Knoxville and Lexington programs.

While turfism and competition among agencies in similar fields is common, especially in government circles, Knoxville seems to have handled, and overcome, the turfism problems of its ridesharing programs better than Lexington, with the help of, among other factors, a better separation of responsibilities. While two Lexington agencies shared the task of providing matching services and both were perceived as competition by the local transit and taxi companies, Knoxville saw ridesharing activities split between its participating agencies and avoided much of the intra-agency bickering experienced in Lexington.

Knoxville's ridesharing agencies have kept their roles and purposes separated, which has kept the visible effects of turfism at a minimum. TVA has kept their employer-based program separate from the area-wide efforts of KCP. Wegmann cited an example that "KCP and TVA cooperated with each other on the seed van program but that they never became what he would call 'a team'" (Wegmann, May 25, 1984). During the first year of KCP's operation, one controversy did surface when a comment by Frank Davis, a KCP project member and member of the Transit Authority Board, gave indications that "some unprofitable transit lines could be replaced by KCP's vans," was blown out of proportion. Concern was expressed by K-Trans and its employees but the disagreement soon faded away. Unlike Lexington's case this has been the only major difference of opinion between Knoxville's Transit Authority and the ridesharing providers.

Two other officials of the Kentucky Department of Transportation were interviewed in addition to the aforementioned Randy Gnau. These were Steve Williams, a Project Engineer for the Division of Planning, whose information on operation of a vanpool will be presented later, and Bill Sampson, a Project Engineer in the Mass Transportation Section. Sampson, the Commonwealth's official liaison between the federal government (the funding provider) and the local programs (the funding receivers), supplied the yearly budget figures for the Lexington Ridesharing Project since its inception. These annual amounts follow in Table 1.

TABLE 1
ANNUAL BUDGETS—LEXINGTON RIDESHARING PROJECT

FY	To Lexington Ridesharing Project	To Area Development District	Total
1979 (3 Months)	\$11,350	\$22,875	\$34,225
1980 } 1981 }	36,575	36,527.50	73,102.50
1982	37,845	43,425	81,270
1983	38,778	0	38,778
1984	46,612.50	0	46,612.50

Source: Sampson, December 22, 1983.

This table also reflects the previously mentioned split programs before 1983 and the current single program. Funding for the first three months of the program was strong in order to insure a sound beginning for the effort (Sampson, December 22, 1983). For the next two years the joint project was funded at an annual rate of roughly \$36,500 per year (one \$73,102.50 appropriation was made for the period of July 1, 1979, to June 30, 1981). During Fiscal Year 1982 funding more than doubled with the Lexington Ridesharing Project receiving \$37,845 and the BGADD effort getting \$43,425. This period of generous funding was short-lived, however, as the federal government halted all funding for the BGADD portion of the program beginning with Fiscal Year 1983. This was the main topic of discussion with Ron Herrington of the Bluegrass Area Development District.

Herrington, the Ridesharing Coordinator for the ADD when that function was funded, defended the performance of the former program.

Although the federal officials perceived more production from the Lexington program than from the ADD's, Herrington claimed that the 1980 Census figures supported the worthiness of the regional program. He claimed that the 52,634 figure for inter-county poolers in Fayette County was due in a large part to the efforts of his program. He also felt that the discontinued federal funding would not be renewed in the near future (Herrington, March 22, 1984).

Steve Williams discussed his involvement with ridesharing, which among other things entails operating a third-party vanpool. His pool was originally begun in 1978 with funding through the Commonwealth's mass transportation office. In 1980 Williams continued operating his van after the original contract ended, making the van payments himself. With his costs he would break even with ten passengers; however, he only carries six. He believes this is due to his 7:30 to 4:00 work schedule. "If I worked the more common 8:00 to 4:30 schedule I could fill my van" (Williams, December 22, 1983). Williams, a resident of Lexington, leaves that city for his job with the Commonwealth in the capitol city of Frankfort in the mornings, parks the van there, and returns in the afternoons.

Williams said he still enjoys vanpooling and supports the effort of the Ridesharing Project, even though his pool is not a financial success. He points out that many people carpool between Lexington and Frankfort, but that vanpools are more long-lived. He also notes that, even for him, it is still cheaper to vanpool at a cost of \$2.50 per day than it is to take the Lex Trans bus over the same route for a

\$3.00 a day charge, or than it would be to take a carpool or drive alone (Williams, December 22, 1983).

Employees of the Lexington-Fayette Urban-County Government that were interviewed were Michael Hailperin, Section Head of the Transportation Section of the LFUCG's Division of Planning; Rick Sparer, a Transportation Planner in that section; and Andrew Terwilleger, an Engineer in the Traffic Engineering Section. Hailperin, interviewed early in the thesis effort, was questioned as to the differences between ridesharing efforts and transportation in general between Lexington and Knoxville, Tennessee. He stressed three major differences: Lexington's pattern of turfism versus Knoxville's brokered system (previously discussed); Knoxville's longer commuting distances and times; and Lexington's higher prevalence of white-collar workers (Hailperin, July 20, 1983). Hailperin's contentions were made "off-the-cuff" but the 1980 Census figures, to be presented later in this chapter, confirm his assumptions.

Andrew Terwilleger is a member of Lexington's Transportation Coordinating Committee. Many other of those interviewed are also members (including Schaars, Hailperin, and Sparer) but it was felt that the outlook of a transportation official not directly involved with the ridesharing program would be of value to this effort. Terwilleger agreed with the other transportation officials that Lexington was well served by the Ridesharing Project. He also thought that ridesharing was on the increase and thought the "park and ride"

system was beneficial. Having previously held a similar traffic engineering position in Hartford, Connecticut, and being familiar with the eastern seaboard, he pointed out that Lexington did not have the high urban density required for large-scale transit commuting (Terwilleger, January 31, 1984).

Rick Sparer spoke at length about transportation agency interaction. In a November 1983 report that he authored, Consolidation of Specialized Transportation Services for the Lexington-Fayette Urban County Area, Sparer advocated a form of brokerage for some of the specialized transportation services offered in the Bluegrass. Ridesharing, however, was not addressed. Sparer pointed out that the taxi companies have a brokered rural area service called DART (Dial-A-Ride-Transportation) that was working well. For over five years the taxi companies have worked under a unification agreement that keeps prices uniform and service efficient and quick (Sparer, January 31, 1984).

Sparer observed that the current emphasis in Lexington was toward vanpooling with less immediate stress being placed on carpooling. He said that Lexington's current mayor, Scotty Baesler, was considering discontinuing the practice of the government's employees taking city-owned fleet cars home, and then related that Indianapolis, Indiana, has reduced the size of its fleet by requiring employee fleet-pools (Sparer, January 31, 1984).

In discussing turfism and Lex Trans' role as the self-proclaimed transportation broker (later confirmed by the Transit Task Force for Lexington), Sparer related that the ownership of Lex Tran had achieved

a desired outcome. Lex Tran is operated by the ATE Management Services Co. and their national strategy is to promote local transit authorities as the transportation brokers and pull ridesharing into their jurisdiction. Sparer expressed his concern over Lex Trans' ability to act as an unbiased provider of the most cost-efficient transportation alternatives, as is the responsibility of a broker (Sparer, January 31, 1984).

Another specific topic discussed with transportation officials was the Chamber of Commerce's participation in ridesharing. The characteristics of their pioneering program in Lexington as well as reasons for its failure were addressed in a discussion with Ed Sturgeon, the Chamber's Director of Research. He lamented that the average Lexington worker, who tended to be more affluent and was more likely to be white-collar than the average American worker, was "too addicted to his auto," and was "used to a short commuting time, usually under twenty minutes" (Sturgeon, October 28, 1983).

Sturgeon said that the Chamber's original effort had not suffered from lack of advertising, but that cooperation from UK and IBM, Lexington's two largest employers, had been only "satisfactory." Finally a lack of enthusiasm from the general public combined with inefficiency and inconsistency of direction caused an end to the program three years after its Spring 1974 beginning. During its short history it had five directors, and employer contacts and leads that had been made by one director would often go unpursued by their successor (Sturgeon, October 28, 1983).

Sturgeon's opinion that white-collar workers were a hindrance to successful ridesharing programs was not shared by officials in Knoxville, or by the documented ridesharing literature. Fred Wegmann related that Knoxville's ridesharing officials had just the opposite complaint: that with more white-collar workers and fewer blue-collar workers, they could obtain better participation rates in their ridesharing programs (Wegmann, May 29, 1984). Beeson and the majority of the literature said there really wasn't enough evidence to prove that a worker's status has any effect on his prediliction to rideshare.

Heaton et al., in their report Impacts and Effectiveness of Third-Party Vanpooling stated that, "Limited information is available from which to assess differences in characteristics of vanpoolers and those of commuters and metropolitan households in general" (Heaton et al., 1983). A study from the New York Department of Transportation by David T. Hartgen entitled Ridesharing Behavior: A Review of Recent Findings included a line which summarized the opinion of much of the literature stated, "All researchers agree that whatever demographic relationships exist are extremely weak ones, and in fact, there are many standard variables in transportation which have no relationship whatsoever to whether or not an individual carpools" (Hartgen, 1977). Beeson felt that the Lexington Chamber of Commerce was using the white collar/blue collar issue and states, "The color of a person's collar doesn't make a difference on his likeliness to rideshare" (Beeson, May 29, 1984).

Another program separate from the main Lexington Ridesharing Project was discussed when Jim Banta, in charge of the International Business Machines' employee pooling program, was interviewed. From him it was learned that over half of IBM's 6200 employees were car-pooling after the program had been in operation only two years (Banta, December 19, 1983).

The IBM program, strictly voluntary, asks interested employees to fill out a matching card. The cards are then classified as to the employee's zone of residence according to IBM's delineation of areal zones in the Bluegrass region. From that point it is up to the individual employees to form their own pools (Banta, December 19, 1983).

Since that interview with Banta actions have been set in motion to unify the IBM and Lexington programs. In early April 1984, David Schaars became the first person ever allowed to poll IBM's employees. Thus a large obstacle has been overcome and IBM has shown serious commitment to unifying the programs (Schaars, April 11, 1984).

Jerry Pigman and Ken Agent, engineers with the University of Kentucky's Transportation Research Division, were interviewed, with the discussions (after the core questions) centering on UK's former vanpooling program, its subsequent merger with the Lexington effort, and the incentives the University has provided to encourage carpooling. The segment of the interview dealing with incentives was short as UK has made little effort in this area. A few parking spaces, reserved for carpools, and special parking permits

have been offered (Pigman, January 31, 1984). The permit program has not been widely utilized. It has not been promoted and requires a minimum of three poolers (Agent, January 31, 1984). The three-pooler requirement probably eliminates the majority of UK carpoolers. In 1980, 74 percent of Fayette County carpools contained two people (1980 US Census). As of 1981 there were only 76 carpools registered with the University's Public Safety Division with "most carrying three people" (Lexington Herald-Leader, February 8, 1981).

David Schaars, Lexington's Ridesharing Coordinator, was interviewed ten times throughout the course of the research effort. These interviews provided up-to-date information on the activities and progress of the Ridesharing Project as well as providing new information on the Project as different segments were investigated. Much of the information on the history of ridesharing in Lexington, presented in Chapter II, was acquired from Schaars or from documents he made available. Pertinent information received in interviews will be presented here and data obtained from documents he made available will be presented in the next section of this chapter, "Statistical and Documented Data."

As well as the aforementioned updating of the Ridesharing Project's current activities, subjects discussed with Schaars included the constraints to ridesharing in Lexington, examples of private sector pooling activities, the outlook for the future of ridesharing in Lexington and the two surveys his agency performed in 1980 and 1982.

Constraints to ridesharing in Lexington are caused, in many cases, by the characteristics of the residents themselves. Schaars

reported that in Lexington the average worker lives within five miles of his place of employment, enjoys free parking, and encounters moderate traffic. He concluded that most Lexingtonians "really have no incentive to rideshare. We try to provide the incentive" (Schaars, July 18, 1983). Another hindrance is the high rate of mobility among Lexingtonians. Between 60 and 70 percent of the ridesharing matching file moves every two years. Schaars related that the two years preceding the spring of 1984 was a difficult period for ridesharing due to the recession but that the recovery had sparked new interest in pooling (Schaars, March 21, 1984).

In discussing private-sector ridesharing activities Schaars mentioned programs at The Lexington School, the Bluegrass Army Depot and International Business Machines. The Lexington School, a small, private high school, runs a vanpool program for its students. The program operates on a not-for-profit basis and charges \$35 per student per month in order to meet its costs. A program at the Bluegrass Army Depot runs two vans between its far-eastern Fayette County location and its employees' residences in Lexington (Schaars, January 31, 1984). Schaars saw little benefit to either party to encourage absorption of these small programs or individual vanpools like Steve Williams', but with a program like IBM's he felt the benefit would be mutual and substantial (Schaars, March 26, 1984).

When the Lexington Ridesharing Project began operations in April 1979, the IBM program was already a few months old (Louisville Courier-Journal, April 19, 1979). The programs have run separately

since then, often duplicating their effort. Lexington Ridesharing Project pools carried commuters to the large industrial complex on the north side of Lexington (of which IBM is a part) with little participation from IBM employees while the IBM pools were restricted to their own employees (March 21, 1984).

On March 27, 1984, a breakthrough took place when IBM agreed to allow Schaars to survey its employees to gauge their interest in joining the Project's effort. Although the IBM Club (the social arm of the IBM employees organization who operates IBM's current pooling program) will perform the actual distribution and collection of the surveys, this marks the first time that IBM has allowed information on its employees to be used by someone outside the corporation (Schaars, April 11, 1984). Because of its huge size IBM overcompensates and efficiently protects the privacy of its employees (Banta, December 19, 1983).

The negotiations with IBM was one of the three major current activities of the Ridesharing Project in the Spring of 1984, as this research effort was being completed. The other two were the acquisition of the Ridesharing System (RSS) Computer Program Package and progress in buspooling and vanpooling. Schaars reported on March 15, 1984, that he was in the process of forming a buspool that would effectively serve as a "double-pool." The pool leaves Lexington at 6:45 AM transporting workers to the capitol city of Frankfort. It then returns to Lexington by 8:00, taking physically and mentally handicapped workers from Frankfort to the Kentucky

Coalition for Career Development building. The pool would reverse the trips in the evening with the van ending up in Lexington ready for the next morning. Schaars had not gotten specific commitments for the Lexington-Frankfort morning trip and evening return but he anticipated little trouble in finding desirous participants (Schaars, March 15, 1984).

In October 1983 Ridesharing Coordinator Schaars reported that the Project had plans underway to expand into vanpooling with sponsorship assistance from Lex Tran. Ten fifteen-passenger vans and two twelve-passenger vans had been ordered, with the latter expected in November. With Lex Tran leasing the vans to individual drivers Schaars asserted that, "the vans will pay for themselves" (Schaars, October 27, 1983). By January seven of the twelve vans had been leased out and Schaars was considering placing a Project van at the Bluegrass Army Depot to supplement their two. Billboard advertising had begun and the maroon and white logo featuring the name "LEXVAN" appeared in advertising and on the vans (Schaars, January 31, 1984). In April 1984, all eight vans that Lexington had received were in operation (three had not arrived and one was held in reserve) carrying a total of 123 passengers daily. More vans were on order from Chrysler but Schaars said demand continued to run ahead of the vans available (April 12, 1984).

The other ongoing activity in the Spring of 1984 was the installation of the Ridesharing System Computer Matching Program. This software was acquired from the Urban Mass Transportation

Administration (UMTA) and the Knoxville Commuter Pool after the Kentucky Transportation Cabinet approved its purchase in October 1983. It will provide lists of both possible carpooler and carpool matches to consumers. Within the urbanized area it will also provide the inquirer information on nearby bus routes. Schaars said that Lexington's application of the technology would be little different from Knoxville's, especially in the beginning of operations (October 27, 1983).

Lexington has had problems acquiring some of the hardware necessary to operate the RSS program. Once that task is completed Schaars still fears that successful operation of the software may be delayed. He cites two reasons: manpower and problems previously experienced by other agencies with the computer program. Schaars is the only member of the Project's staff and he believes he will have to hire outside help when the matching lists need to be entered into the system (March 15, 1984). The other reasons he mentions involves the lack of assistance that agencies subscribing to the RSS system have received.

The Western Michigan Regional Planning Commission (WMRPC) was the first agency to attempt installation of the system outside of Knoxville. The Knoxville staff provided documentation for the program but through editing oversights committed by UMTA the documentation contains many inconsistencies (MPA News, 1983). Robert Stockman, Director of the Microcomputers in Planning Association, related that two years after operation attempts first began RSS was still not running at WMRPC and

personnel there complained, "When we asked for help we got zilch from UMTA and Knoxville" (Stockman, 1984).

Another topic of discussion with Schaars was the 1980 survey the Project conducted of its matchlist file members and the 1982 follow-up survey. Described in Chapter III, the survey asked file members their commuting status. Schaars said that this survey differed from some polls that other programs conducted. "Other programs ask respondents if they have been 'affected' at all, which could include seeing a sign or advertising. Thus their participation statistics are inflated. Our survey actually determines to what extent they are helped" (Schaars, October 27, 1983). The survey results follow in the next section of this chapter.

Statistical and Documented Data

Data discussed in this portion of the chapter have been acquired from the surveys conducted by the Lexington Ridesharing Project, the 1980 United States Census and documents pertinent to ridesharing from the Urban-County Government, the University of Kentucky, the Commonwealth of Kentucky and the Lexington Ridesharing Project itself.

The results of the two Ridesharing Project surveys are presented in Table 2. With a margin of error of plus or minus 5 percent, the results show a slight increase in the decrease in commuters driving alone and the same numerical increase (eight commuters) of those carpooling. The average carpool size increased a substantial 40 percent. The average carpool formed, since the 1980 survey, had

been in operation thirteen months (Lexington Project Surveys, 1980 and 1982).

TABLE 2
RESULTS OF THE LEXINGTON RIDESHARING PROJECT SURVEYS

Category	1980	1982
Sample Size	130	130
Carpoolers	2	10
Those Driving Alone	123	115
Other Commuter Types	5	5
Average Carpool Size	2.5	3.6
Commuter Distance (Miles-One-Way)	12.1	12.3
Duration of Carpool Formed (Months)	--	13

Source: Lexington Ridesharing Project Surveys, 1980 and 1982.

The following additional data were garnered from the follow-up portion of the 1982 survey. Twenty-four (or 19 percent) of the 130 respondents (Lexingtonians who had registered to be matched into a carpool) had formed carpools through the project. Of these twenty-four, ten (41 percent) were still pooling, eight (33 percent) were forced to quit because of a change in jobs or scheduling and only six (26 percent) stopped pooling because of inconvenience or personal conflicts (Lexington Ridesharing Project Survey, 1982).

The 120 registrants not presently pooling were asked their reasons for not pooling. Some of the respondents gave more than one response. (The average over the entire sample was 1.58 responses per person.) The frequency distribution of the reasons given is displayed in Table 3.

TABLE 3
REASONS GIVEN FOR NOT POOLING

Reasons	Frequency	%
No Good Matches Available	96	51
Prefer to Drive Alone	31	15
Dependency on Others	13	7
Job or Schedule Changes	13	7
Reluctance to Ride with Strangers	10	6
Need Car for Work	9	5
Irregular Work Hours	7	3
Others	10	6
Total	189	100

Source: Lexington Ridesharing Project Survey, 1982.

The table above shows that the majority of the responses indicated that the commuters wanted to rideshare but that there were not any commuters to match them with. Another 15 percent of the responses gave reasons for not pooling reflecting factors out of the commuter's control such as needing the car for work, job changes or irregular work hours. Only 16 percent of the responses indicated a preference for driving alone (Lexington Ridesharing Project Survey, 1982).

Other data derived from the two surveys enabled the Ridesharing Coordinator to make performance estimates for the 1980-1982 period. It was determined that 906 Fayette County commuters began carpooling with the formation of 236 new pools and the expansion of another 46 (Lexington Ridesharing Project Surveys, 1980 and 1982).

Data from the 1980 Census were used for barometers of the demographics of Lexington, the progress and status of the Ridesharing

Project and for limited comparisons to Knoxville. Pertinent data acquired are displayed in Table 4. It can be seen that the conjectures made by Mike Hailperin and others were supported. The Lexington work force tends to be more affluent, more likely to be white-collar and experiences shorter commuting distances and times than does the Knoxville work force. These are all characteristics that tend to discourage the participation levels in a ridesharing program.

The third source of data discussed in this part of the chapter was official documents. These included monthly status reports, letters, interoffice memos and brochures and promotional material. These documents came mostly from the governmental and university sources listed at the beginning of this chapter section. They were obtained largely through the efforts of and in the files of the Ridesharing Project office.

A number of documents combined to provide information on the history of the ridesharing program. The monthly status reports written by the Ridesharing Coordinator provided sequential information of the important events in the history of the Lexington Ridesharing Project. The reports for the period between January 1982 and November 1983 were examined. The annual Fiscal Year Operations Reviews outlined expected accomplishments and the proposed work program and man-hour estimates. Also examined were the annual work proposals for the Ridesharing Project. Another regularly-printed report series

TABLE 4
PERTINENT STATISTICS TO CARPOOLING, LEXINGTON-KNOXVILLE

Category	Lexington	Knoxville
Intra-county Carpoolers (1979 County Residents) Percent of Work Force	18,245 20.7%	31,082
Inter-county Carpoolers (1979 County:Surrounding County Residents Crossing Border)	52,634	
Other Poolers	3,572	
Total Poolers	74,451	
County Commuting Time Average Minutes	17.6	21.4
Less than 5 Minutes	3,029	3,243
5 to 9 Minutes	11,779	12,737
10 to 14 Minutes	20,693	21,434
15 to 19 Minutes	23,929	27,007
20 to 29 Minutes	22,140	33,451
30 to 44 Minutes	9,162	28,795
45 to 60 Minutes	1,922	6,316
Over One Hour	2,439	4,655
Carpool Size (Poolers) Average	2.35	2.55
Two Person	14,207	21,170
Three Person	2,530	5,200
Four Person	1,017	2,238
Over Four People	491	2,474
County Population	204,165	319,694
Mean Household Income	\$19,590	\$18,462
Work Force		
Technical Workers	33.6%	32.3%
Professional Workers	29.5%	24.7%
Industrial Workers	20.3%	28.9%
Other Workers	16.6%	14.1%
Non-county Residents Employed Within County	43%	

Sources: 1980 U.S. Census and The Lexington Ridesharing Project.

entailed the quarterly reports submitted to Schaars by the UK vanpooling demonstration project. The reports were specified in the evaluation requirements for the TSM project and updated the progress made in filling and operating the vanpools (UK TSM Program Progress Reports, 1982 and 1983).

A single document, printed by the Chamber of Commerce, provided a history of that agency's program. By December 1977, when this document was printed, the Chamber had lost its fifth (and last) ridesharing coordinator and had stopped active promotion of their program. An uncertainty about the future of the Chamber was evident, as the document listed eleven possible alternatives for the future of ridesharing in Lexington. One choice was to leave that function under the auspices of the Chamber, but as they themselves admitted, "past performance does not seem to justify this" (Lexington Carpool Project Summary Report, 1977). Elimination of the program was immediately discounted as an option. Successful programs in Knoxville were cited as justification for suggesting the ridesharing programs be taken over by the University of Kentucky, or by the local government. The latter option was the one eventually taken, four months after this document was distributed (Lexington Carpool Project Summary Report, 1977).

The legal text of the agreement between the Urban County Government and the Bluegrass Area Development District forming the Lexington Ridesharing Project spelled out the specific responsibilities of each agency. The ADD handled ridesharing activities in the sixteen counties surrounding Fayette County, with Fayette being serviced by the

Urban County Government. The Urban County Government was the controlling agency in this contract with options to suspend it for cause or to delete funding to the ADD upon notification (Lexington Ridesharing Project Contract, 1979).

The final report of a Transit Task Force, appointed by Mayor Scotty Baesler in April 1982, made several recommendations for improvement in Lexington's transportation system. Some of these had a direct effect on the Lexington Ridesharing Project. The Task Force suggested designating Lex Tran the "transportation coordination center" for Lexington and asking that it provide coordination and clearing-house services (Transit Task Force Final Report, 1983). It also asked that Lex Tran develop a vanleasing and vanpooling program. A year after the report was written both of these suggested actions had been taken. Under a recommendation subsection entitled "Ongoing Actions" the Report encouraged the Transit Authority (Lex Tran) to coordinate its efforts with the Ridesharing Project and advocated that Lex Tran further explore public-private partnerships in such efforts as vanpooling and employee incentives encouraging public transit use. The Report summarized the method by which Lex Tran could (and now does) lease vans to employee groups (Transit Task Force Final Report, 1983).

On March 7, 1984, the Ridesharing Coordinator printed suggestions for minimum fees for vanpool fares. For the average 40-mile round trip per day total monthly costs for operating the 15-passenger vans was \$360.40 and for the 12-passenger vans was \$352.00. In the larger vans fees ranged from \$45.05 per passenger month with

eight riders to \$25.74 per passenger per month with a full van of 14 riders. The driver rides free. For the 12-passenger vans, 8 riders would be required to pay \$44.00 each per month while operation of a full van of 11 riders lowered the monthly cost to \$32.00 per commuter (Lexington Ridesharing Project Suggested Minimum Fares, 1984).

A number of letters and interoffice memos provided information pertinent to the study. Correspondents included government officials at both the local and Commonwealth levels, transportation officials and University officials.

A letter dated January 28, 1981, was typical of many sent by public officials encouraging pooling efforts. This letter from Judge Executive (the top administrative office for counties in Kentucky's governmental structure) Roy T. Baber of Bourbon County was mailed to county employers inviting them to a meeting promoting car-pooling. In it he asserted that the Lexington-Bluegrass Area Ridesharing Project had acquired a matchlist of 5500 names and saved over 600,000 gallons of gas in its twenty-month existence. He also stated that Bourbon County employees had not "responded as enthusiastically as we had expected" (Baber, letter to Bourbon County employers, January 28, 1981).

Another letter encouraging ridesharing was sent to University of Kentucky employees carrying the signatures of both Otis A. Singletary, President of the University, and then-Mayor James G. Amato. It stressed the economic savings that could accrue from

pooling and described the carpool parking permit mentioned earlier in this thesis (Amato and Singletary, letter to UK employees, March 16, 1981).

Letters between government officials were another type of document that provided data for the research effort. A letter from David Schaars to Mayor Scotty Baesler and the Urban County Council was prompted by the latter group's desire for an update of Lexington's ridesharing activities. In this update Schaars explained the marketing techniques currently being used for the carpool and LEXVAN programs. It also termed the implementation of the RSS program "a high priority" and described the RSS system as one that will "speed the turn around time, lower the cost, increase the accuracy and provide services not available with the current large mainframe computer matching system" (Schaars, letter to the Mayor and Council, November 9, 1983).

Another letter from Assistant State Highway Engineer for Planning Bruce Siria (by David E. Smith, Director of the Division of Mass Transportation) to Robert E. Johnson, Federal Highway Administration (FHWA) Division Administrator nominated Schaars for the 1984 National Administrator's Ridesharing Award. The letter cited Schaars' plans for RSS, his work in obtaining the TSM Demonstration Grant for the UK vans, and his work with Urban County employees as reasons for the nomination.

In response to the LFUCG the Ridesharing Project began a bus pass program for its employees allowing them to ride all regular Lex Tran routes free. Schaars also later conducted an evaluation of the

program. In addition, Schaars initiated a program whereby Urban County employees who pool were given preferred parking spaces in the indoor garage next to the Lexington-Fayette government building.

The nomination letter also mentioned the partnership between Lex Tran and the Urban County government that Schaars engineered through the LEXVAN program as an example of his unique talents. The vanpooling program was praised for its efficiency, the speed of its acceptance and its opening of a cooperative relationship between the two entities that has, "endless potential for providing efficient transportation services" (Siria [by Smith], letter to Johnson, February 21, 1984).

Three other letters of importance dealt with vanpooling in Lexington. The first from Dale B. Thoma, Director of the Division of Planning in the LFUCG to Mayor Baesler spelled out important issues in the implementation of vanpooling in Lexington. Among these were the assertion that the Ridesharing Coordinator's position directly under the Mayor gives him, and the ridesharing program, increased credibility. This was followed by a listing of reasons against moving the ridesharing function to the jurisdiction of Lex Tran citing a loss of credibility, Lex Trans' lack of physical space, as well as added expense that could be coupled with a funding decrease (Thoma, letter to Baesler, March 24, 1983).

A May 1983 letter from Coordinator Schaars to the Mayor and the Council announced the beginning of the UK vanpool program and attached a news release on the subject issued by UK. The letter stressed the

savings of twenty-two parking spaces, nearly 17,000 gallons of gas annually, and over 300,000 annual vehicle miles travelled. The van commuting between Lexington and Richmond cost patrons \$35.00 a month while the one to Berea charged \$42.00 (Schaars, letter to Baesler, May 17, 1983).

The third letter concerning vanpooling was written by Schaars to the files clarifying the legal aspects of vanpooling. Quoting from a booklet "Ridesharing Can Give You a Lift," prepared by the Kentucky Department of Transportation (KDOT), Schaars reported that the LEXVAN participants are not covered for Kentucky Workmen's Compensation Benefits during transit and that the participant-drivers do not qualify for overtime compensation. He also stated that the program's vans are exempted from Interstate Commerce Commission regulations and from those imposed by the Common Carrier Regulations (Schaars, letter to the Ridesharing Project files, November 9, 1983).

Another letter written to governmental files was written by Transportation Planner Rick Sparer concerning the implementation of the transportation brokerage concept in Lexington. His letter, dated March 7, 1983, began by listing reasons why the ridesharing project should remain under Urban County government direction instead of being moved to Lex Tran. These reasons were the bases for those spelled out in Thoma's letter of seventeen days later (mentioned above). Sparer further advocated an organizational structure for vanpooling brokerage that would require Schaars to handle the computer matching, Lex Tran to purchase and maintain the vans, WHEELS

to continue their role as the provider of services for the elderly and handicapped and the Planning Division to handle appropriate routing and coordination activities (Sparer, letter to files, March 7, 1983).

Application of the Texas A & M Technique

The final principal source of data for this thesis was application of the Texas A & M evaluation methodology to the Lexington Ridesharing Project. The tables, complete with the raw data for Lexington and the data computed through the methodology, are displayed in Appendix A. The Evaluation Forms were used exactly as they appear in the Workbook.

The final products of the Texas A & M evaluation methodology were three percentiles which described three sectors of the ride-sharing program according to their standing in comparison with other programs around the nation. These three percentiles were averaged producing a final, comprehensive program percentile. Lexington's final percentile was a 65.2, meaning that Lexington's program rated better than 65.2 percent of those around the nation, utilizing this methodology. The three percentiles that were averaged to produce this final percentile were a 90th percentile score for *transportation results*, a percentile of 61.9 for *mode results* and a percentile of 43.8 in the *service* category.

In obtaining a percentile score of 90 for *transportation results*, Lexington's program performed such tasks as reducing vehicle

miles travelled and fuel consumed, abating pollution, lessening congestion and lessening the need for parking. The *mode results* score reflects how efficiently the program operates based on a dollars-per-pooler measure. Carpoolers, vanpoolers and buspoolers are treated separately. The *service* percentile rates programs based on their costs incurred for providing various ridesharing services (Workbook, 1984).

The first Evaluation Form or table was labeled "Service Cost Allocation" and expressed a purpose of "determin[ing] the cost of providing each one of the array of services provided by [the] program" (Workbook, 1984, p. 13). Lexington received its worst score of the three sub-percentiles in this category, performing better than only 43.8 percent of the nation's programs. By spending 30 percent of its budget for matching services while only processing 1500 applications, Lexington fell to the tenth percentile in the area of matching services. Although other percentiles in this table were two fifty's, a seventy, an eighty (for technical contracts) and a ninety (for providing vehicles), they were for functions which took up smaller percentages of the budget; thus they carried little weight in the final percentile compilation.

The poor score of the matching services should be remedied when Lexington begins to successfully utilize the Ridesharing System (RSS) Commuter software acquired from the Knoxville Commuter Pool and the Urban Mass Transit Administration (UMTA). Five thousand dollars of the seventy-five hundred dollars in box 1c of the cost table was spent on RSS (although Schaars had been unable to procure some of the

necessary hardware in order to begin operation of the program). Thus it is costing money without showing benefits, yielding a low efficiency score.

In this first table Lexington received half of its 43.8 percentile points in the "increasing awareness" component. Because of the intangibility of the measure of this factor all programs are automatically assigned a 50 percent score. In this evaluation technique increasing public awareness entailed "public service announcements, signs along the highway [and] presentations at public meetings" (Workbook, 1984, p. 8). Lexington increases public awareness through billboards, which are located in prominent, high-traffic areas in Lexington. Also, as previously mentioned, Lexington still provides a local match for federal funding (by obtaining public service announcements (PSAs) in the local media) even though they were freed from that requirement by the passage of the Surface Transportation Act.

The *services-to-mode results translation* of Form Two estimated the number of poolers that the Lexington Ridesharing Project could take credit for. Because of the city's and the program's small size this task was made easier by being able to directly count the number of van- and buspools and poolers. As displayed in Table 2 (p. 48), Lexington has 114 vanpoolers and 40 buspoolers directly attributable to the Lexington Ridesharing Project. As noted in the Workbook, ". . . carpools are hard to count, so the number must be computed from things which are easy to count. Some of the new poolers are a function of match lists produced; certain other poolers are indirectly

induced to carpool by increased awareness [due to program publicity] . . ." (1984, p. 16). These were the barometers used to estimate the number of carpoolers.

The results of this table show that Lexington had 3634 direct poolers (those involved in ridesharing directly through the Project) and a total of 6441 program poolers (including those who were indirectly influenced by Project activities). With the 1980 Census figures showing 18,245 poolers in Fayette County, Schaars concluded that nearly 30 percent of those pooling in 1984 had been influenced by the Project (Schaars, April 11, 1984). Another encouraging statistic in the data is the fact that 100 percent of the Program vanpoolers have begun in the past twelve months, highlighting the current momentum of that portion of the Project's effort.

The same methodological techniques were performed for the *services-to-mode cost translation* performed in Form Three as were performed in the previous table, except that they were computed for budget appropriations of the \$46,610 budgeted for Fiscal Year 1984. Of this, \$29,593, or 63.5 percent, was slated to be spent on carpool activities while the great majority of the remainder (\$15,831—34.0 percent) went to vanpool costs. These figures, as well as the ones from Form Two, were applied to the performance rating process in Evaluation Form Four—Mode Results.

This fourth table evaluated the dollars-per-pooler expenditures for all three types of poolers. With a cost of \$4.71 per pooler the Lexington Project ranked in the 90th percentile nationwide for carpooling. On the other hand, with a vanpool cost of \$128.70 per pooler

Lexington's rating was only in the tenth percentile. Part of this poor showing in vanpooling can be attributed to the newness of the program and the costs of the vans themselves. Van payments were higher in Fiscal Year 1984 than they will be for any year in the foreseeable future (Schaars, March 21, 1984). Carpool efficiency should maintain its high mark if Schaars is able to tie the numerous IBM poolers into the Lexington program with little costs. Buspooler costs, at \$29.70 per participant, fell in the average fiftieth percentile.

The *mode-to-transportation translation* in Form Five produced figures such as round trips saved per day, saving in vehicle miles travelled (VMT) per day, month and year, and passenger mile service for the same three time frames. These data were used in the last table to compile a percentile for *transportation results*.

This final Evaluation Form apportioned the budget in terms of desired pooling goals and outcomes instead of the services-provided descriptions that had characterized earlier budget descriptions. Project Coordinator Schaars asserted that the major desired outcomes of the Lexington Project were saving gas and saving commuter dollars, each comprising 30 percent of the budget (Schaars, March 21, 1984). Unlike many cities, especially larger ones, pollution abatement is not a major goal of the Lexington Project. Lexington has always been blessed with clean air, in great part due to its exclusively clean/light industry base (Sturgeon, October 28, 1983).

The results of this table seem questionable for at least two reasons. First, all of the percentiles for all the budget subheadings scored at or above the 90 level, admirable if it were true, but hardly probable. Even in the Workbook's example problem four of the six categories also scored in the nintieth percentile. This suggests that the comparative standards may need to be adjusted. A second inconsistency in Form Six's evaluation of Lexington is found in the gallons-of-gas-saved estimation. Properly using this methodology produces a figure of just over one million gallons of gas saved yearly by the program. However, 1980 Census figures estimated that 2.8 million gallons were saved yearly. A possible explanation of this discrepancy is that the latter figure takes into account the larger number of all SMSA poolers.

Since all the subcategories scored in the ninetieth percentile, the summary score for the sixth Evaluation Form was 90. When this was averaged with the earlier scores of 43.8 and 61.1 the final percentile was 65.0. This score ranks the program above roughly two-thirds of those around the nation.

CHAPTER V

CONCLUSIONS AND SUMMARY

This final chapter will present the conclusions drawn about the Lexington Ridesharing Project, discuss possibilities for improvement and expansion in the program, explore possibilities for future study of Lexington's Project or of ridesharing, and provide a summary of this research effort.

Research Conclusions

The documented data and expert opinions obtained from transportation officials as well as the findings of the Texas A & M statistical evaluation technique all led to the same conclusions about the Lexington Ridesharing Project. These are:

1. Ridesharing in Lexington, under the sponsorship of the Chamber of Commerce, began with a record of inconsistent leadership in an eventually discontinued effort.
2. Some of the performance differences between the Lexington and Knoxville programs can be attributed to Knoxville's successful beginning, their more cooperative major employers and their stronger ability to perform in spite of problems such as turfism. Inherent structural differences could also have an effect.
3. Today the Lexington project is overcoming some of the earlier problems and is now a viable, ongoing effort.

According to an evaluation method devised by the Texas A & M University, the Lexington Project performs better than 65.2 percent of those around the nation.

4. Much of this progress is due to the steady, consistent leadership ridesharing activities have enjoyed, in general, and the Project leadership of David Schaars in particular.

As recounted in the history of ridesharing in Lexington in Chapter II, the program suffered from a lack of consistent leadership and was discontinued after an initial failure under the direction of the Lexington Chamber of Commerce. As well as citing the normal problems of attempting a new idea for the first time in an area, officials at the Chamber blamed some of the inherent demographics of the Lexington population for the pioneer program's failure, as Ed Sturgeon's statement on page 40 of this thesis related. Even when the gas shortage of 1973 began, most Lexingtonians still did not feel compelled to rideshare because of the availability and convenience of their private autos and their comparatively short commuting times. Even after seven years of phenomenal growth in Fayette County, the 1980 Census showed that the average commuter took only 17.6 minutes to travel to work, with 70 percent of the 95,000 member work force taking between 10 and 30 minutes to get to work (1980 U.S. Census).

The examination of worker affluence when comparing Lexington with Knoxville reinforces this contention. Knoxville, whose ride-sharing program has been successful from the beginning, showed a median household income of \$18,462 in 1980, while Lexington's was

\$19,821 (1980 U.S. Census). The higher predominance of blue collar workers in Knoxville is reflected in Census statistics which indicate that 28.9 percent of Knox County's workers are industrial operators while only 20.3 percent of Lexington-Fayette's population is thus classified. Technical workers comprise 33.6 percent of Lexington-Fayette's total while 29.5 percent of its workers are professional. In comparison, the respective figures for Knox County are 32.3 percent and 24.7 percent (1980 U.S. Census).

While these differences in income and work-force characteristics are significant, the linkage between these features and the performance of a ridesharing is unproven. Thus while the factors of having inconsistent leadership and dealing in a new area have merit as explanations for the Chamber program's failure, the demographic differences of the potential ridesharers cannot be part of the explanation.

Among the reasons for the performance differences of the ridesharing programs of Lexington and Knoxville was Knoxville's stronger beginning experiences, their better talent for garnering employer cooperation and their ability to sidestep any turfism problems that might have otherwise developed.

Knoxville's ridesharing efforts, through programs under TVA and the Knoxville Commuter Pool received strong federal funding from the outset of their projects, were operated under consistent leadership and have operated continuously to this day. As recounted earlier Lexington cannot boast such a stellar record. After its first effort failed for lack of consistency, Lexington was without a sponsored

program for over a year before the Lexington Ridesharing Project began in April, 1979. Knoxville also had an excellent early record of sponsoring a vanpooling program which took the risk away from the van operator, a system which Lexington is using as it now institutes its own vanpooling program.

Knoxville also has a better record of encouraging its largest area employers to actively support and participate in ridesharing activities. While the Lexington Ridesharing Project has always received "marginal" support from the University of Kentucky, and is only now beginning efforts to bring the International Business Machines' program in with the Project effort, Knoxville has traditionally had good support from TVA, the Oak Ridge industries and other major area employers.

Despite the rivalries among transportation entities that may or may not exist in Knoxville, they have been able to furnish the ridesharing needs of the public and have been able to mask any differences that have occurred. Lexington's rivalries have come to the forefront on more than one occasion and continue today with apprehension being expressed at the designation of Lex Tran as Lexington's transportation broker.

Other characteristics that set Lexington apart, not only from Knoxville, but also from the rest of the nation (and were not included in Chapter IV's discussion of documented data), are found in its transportation network's pattern. To Lexington's disadvantage is its distinction of being one of the largest cities in the nation

without a cross-town freeway. It has neither an elevated, sunken, or limited-access facility inside the circumferential bypass, New Circle Road. To its advantage Lexington is also one of the largest cities in the nation not on a river or sea. Thus traffic patterns are not hampered by a need for crossing bridges. Although some would disagree that it is advantageous, Lexington also benefits from its "spokes of a wheel" street system. Lexington is the oldest city west of the Allegheny Mountains (Wright, 1982). Its original layout was the traditional American grid pattern with roads leading out of town straight to surrounding villages which lay at nearly all eight compass points. Thus as the city grew the grid pattern had to be fitted around a system of major roads that all began downtown and progressed directly away from the city. Hence, the road system today resembles a wheel, with New Circle Road being the "tire," and major roads representing the "spokes" leading to the "hub" downtown. See Figure 1.

Knoxville's situation, representing the norm in American cities, diametrically opposes that of Lexington. It lays on a river, which hampers north-south movement, and it combines a basic grid system with inner city freeways in a network with a strong east-west alignment. These basic infrastructure differences along with the previously mentioned demographic differences contributed to the slow adoption of ridesharing in the Bluegrass.

The third conclusion made from the data obtained is that ridesharing in Lexington is overcoming some of its earlier problems and has become a good program, considering the moderate population

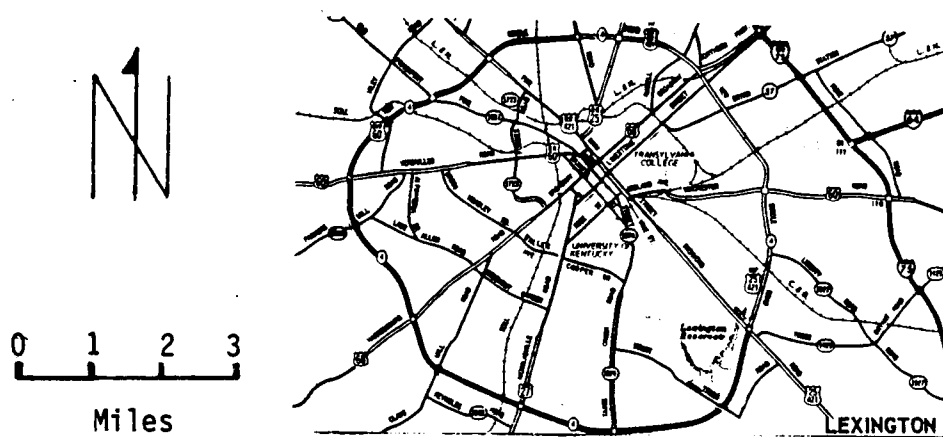


Figure 1

Lexington Showing Wheel and Spokes Pattern

of the metropolitan area and funding levels. The Texas A & M methodology, which rated the Lexington Ridesharing Project in the 65th percentile (better than 65.2 percent of all programs in the United States), and the evaluations of the Project by transportation officials interviewed led to this conclusion.

The Texas A & M evaluation methodology rated three different segments of the Project in order to yield the final comprehensive score of 65.2. The *service* score was 43.8, the *mode results* rating was 61.9 and Lexington's program rated in the 90th percentile in *transportation results*.

In the *service* category, where Lexington scored worse than half of the nation's programs, the previous problems of the Project's roots were most apparent. Because the successful era of the program started fairly recently, Lexington is still building its file and the matching success rate has not caught up (Schaars, March 21, 1984). Thus Lexington only rated better than 10 percent of the programs in

the area of "Matching Services." As mentioned earlier, this *service* score, Lexington's poorest of the three, should improve when, or if, Schaars is able to operationalize the RSS computer and if he is able to incorporate large numbers of IBM pools and poolers at a minimum of cost.

Lexington's rating of 61.9 for Mode Results reflected high marks (90th percentile) for dollars spent per carpool passenger (\$1.71), low marks (10th percentile) for dollars spent per vanpool passenger (\$128.70) and an average 50th percentile for dollars per buspooler (\$29.70). The poor performance in the category of dollars-per-vanpooler reflects the fact that the program just began this year. Thus start-up costs and first-year van and maintenance costs are especially heavy and manifest a poor performance score. Because 63.5 percent of Lexington's budget is spent on carpooling activities (versus 34 percent for vanpooling and only 2.5 percent for buspooling), the high score for carpooling carried a higher weight than the low score for vanpooling yielding the final 61.1 rating.

As mentioned before, the 90 score obtained from the third evaluation table may be of questionable validity. All of the components scores for *transportation results* were 90 in the Lexington evaluation and four of the six in A & M's example evaluation were also 90. These scores raise some concern that the methodology or the base comparison standards may need to be re-evaluated. However, as the methodology currently stands, Lexington is rated better than 90 percent of the programs in the United States.

The comments of the transportation officials seemed to be in concurrence with the results obtained from utilizing the Texas A & M methodology. With comments such as, "Lexington's program gets more 'bang for the buck' than other programs in Kentucky and nationwide programs of similar size" (Sampson, December 22, 1983), "the project serves Lexington well" (Sparer, January 31, 1984) and "the Lexington program is good for a city our size" (Terwilleger, January 31, 1984), characteristic of their opinions, the transportation officials were complementary of the program.

Another indication of possible progress in the performance of the Ridesharing Project (or at least a strong indication that the Project is not regressing) were the results of the 1980 and 1982 Ridesharing Project Surveys, displayed on pages 48 and 49. The latter survey showed indications of improvement over the 1980 poll in all categories: more carpoolers, less lone drivers and a higher average carpool size. It also showed that the majority of those that were not pooling wanted to, but couldn't due to conditions out of their control.

Much of the recent progress in ridesharing in Lexington can be attributed to consistent leadership in the field by the Lexington Ridesharing Project, and in particular the excellent job done by the Ridesharing Coordinator, David Schaars. This is the fourth and final major conclusion drawn by this research effort.

Under the leadership of the Chamber of Commerce the ridesharing effort was coordinated by five different people in only three years.

A poorly operated effort with almost no continuity between directors resulted. Since its April 1979 beginning the Lexington Ridesharing Project has had only two coordinators and David Schaars, currently holding that position, has run the Project for three-and-a-half years. This continuity has assured coordination of effort and the ability of the Ridesharing Project to institute long-term programs.

The period from January 1983 to the present, May 1984, has seen a level of progress in the Project that warranted Coordinator Schaars being nominated for the 1984 Administrator's Ridesharing Award given by the Federal Highway Administration (FHWA). The accomplishments of Schaars in the past year that earned him the nomination included placement of the TSM demonstration vanpooling project at UK, negotiating the cooperative effort between Lex Tran and the Urban County government that allowed the beginning of the area-wide vanpooling project, acquisition of the RSS matching computer program, coordination of the Urban County government bus-pass program, and coordination with Lex Tran on a Dial-a-Ride taxi program for rural Fayette County.

The consistent leadership of the Project as well as expansion into new pooling modes and coordination techniques has allowed ride-sharing in Lexington to "blossom" in the recent past. With continued momentum and constant funding levels the Lexington Ridesharing Project could become one of the nation's premier small-city programs in the near future. The outlook for the future of the Ridesharing Project, including possibilities for expansion, follows.

Future Program Improvement

Components of the Ridesharing Project that warrant investigation for possible future improvement fall into two general categories: features of ridesharing programs whose performance in Lexington has traditionally lagged and organizational weaknesses. The first group includes vanpooling and employer contacts. The latter organizational problems will be more difficult to correct. These include the shortage of manpower and the confused hierarchical structure and responsibility assignments.

Insuring continuity in the current momentum in vanpooling and employer contacts is the form that "improvement" in these two areas should take. In only its first seven months 114 vanpoolers joined the vanpooling program and more vans are on order. This is an excellent start for the new program, and this rate of progress would be a good goal to set for future years. The same approach holds true for employer-based ridesharing.

Fayette County's two largest employers are still not in the mainstream of the Lexington Ridesharing Project. The University of Kentucky has made limited efforts at encouraging carpooling among its 8500 employees. Parking permit and space incentives have been the only organized programs (Agent, January 31, 1984). Vanpooling at UK was begun as a Federal Demonstration Project and has now been absorbed by the Lexington vanpooling effort. The potential for increasing area-wide pooling through a concerted organizational effort at UK is enormous and should be strongly encouraged.

The county's second-largest employer, International Business Machines, has allowed David Schaars, the Lexington Ridesharing Coordinator, to be the first outsider to approach its employees ever for any purpose, indicating IBM felt strongly enough about ridesharing to break precedent (Schaars, April 11, 1984). If the IBM and Lexington programs are eventually merged, with currently all-IBM pools accepting riders from other area employers and vice versa, it would be a great accomplishment. IBM lies in the heart of Lexington's northwestern industrial complex with other major industries such as Trane and Square D within a mile. Therefore, the potential for cross-pooling and the elimination of duplicate pools and single commuters is great.

The organizational deficiencies, a lack of manpower and hierarchical and decision-making uncertainties, have combined to be one of the major reasons that Lexington has been unable to acquire the hardware needed to begin operation of the Ridesharing System computer matching program. Once the software is operational the lack of personnel may hamper its expeditious operation and application to the matching problems in Lexington. A budget increase would be necessary to bring on another employee but the past performance of the Lexington Project would seemingly warrant increased support to continue its improvement.

The hierarchical and organizational problems will be more difficult to solve. Although the turfism problem has lessened in Lexington and most of those interviewed discounted its effect on ridesharing, Lexington is still without a comprehensive third-party transportation broker. The Ridesharing Project operations are also

complicated by being under the jurisdiction of the Mayor's office while utilizing office space and clerical help from the Lexington Transit Authority. The dichotomy also exists in the operation of the van-pooling component, with Lex Tran functioning untraditionally as a co-sponsor. Should these problems be successfully addressed and no new major ones surface, the future for ridesharing in Lexington could be bright.

Recommendations for Future Expansion in Lexington Ridesharing

As well as pursuing the employees of the larger firms in Fayette County, which is currently being undertaken, the Ridesharing Project should investigate the numbers of commuters coming into and leaving Fayette County. This group would be especially likely to utilize vanpooling as a commuting means. The 1980 Census showed that only 18,245 of the 52,634 Fayette County Poolers do not cross the county line. If the non-poolers exist in the same ratio, there is a great potential for expansion of ridesharing to this group. The resident-employee linkages between Frankfort and Lexington should especially be investigated among the 20,000 employees of the Commonwealth in Frankfort.

Advertising is another area where expansion in the future could benefit the program. Although new advertising billboard designs and updated information highway markers are currently being installed (and these are positive steps) the advertising of the existence of

the Ridesharing Project should be greatly expanded. Major employers' support should be cultivated and posters could be placed in the commons areas of all these firms. In the past, radio spots have been the traditional advertising medium. With the cooperation of the Herald-Leader, public service announcements (PSAs) or paid advertising in that dominant Central Kentucky paper could greatly increase local awareness of the program.

Another area for possible expansion of ridesharing and emphasis on increased awareness would be to follow the example of Louisville's program by increasing awareness and contacts with the business leaders through local civic organizations. As is Louisville, Lexington is a trendy, fashion-conscious city. If the leadership of the business community could make ridesharing the "thing to do," much of the current stigma and bias against the idea that exists now could be eroded (Sturgeon, October 28, 1983). The Chamber of Commerce as well as such locally-influential groups as the Rotarians, Lions and Kiwanians would be utilized in this effort.

Suggestions for Further Research

Continued research into the performance levels of ridesharing programs is warranted and should be encouraged. For dynamic, growing programs like Lexington's this is especially true. Survey research efforts that could be beneficial to the Lexington Ridesharing Project include another survey of matchlist registrants continuing the series begun in 1980 and repeated in 1982, and a county-wide survey of

citizens to monitor public awareness, acceptance and perception of performance levels. Other worthwhile research projects could include a more in-depth comparison of Lexington's program with similar programs and continued monitoring of Lexington's percentile score including updates of the methodology acquired from Texas A & M.

The survey research projects mentioned for further investigation possibilities are both in the consideration stages by appropriate agencies. The Lexington Ridesharing Project Coordinator, David Schaars, is considering a repeat of the matchlist participant surveys that were conducted in 1980 and 1982 (Schaars, April 11, 1984). This survey would be conducted in a manner consistent with the earlier two in order that comparisons would be facilitated and that the historical progression of pooling and matching could be recorded.

The area-wide survey may be conducted by the University of Kentucky's Survey Research Center as part of their traditional spring Fayette County poll. As part of the research effort for this thesis the author contacted the UKSRC to inquire about possible inclusion of some ridesharing-oriented questions on the Fayette County poll, anticipated to be conducted in March or April. The response was encouraging for the possible inclusion of the questions but the UKSRC did not anticipate conducting the poll until May or June, too late to be of benefit to this thesis (Johnson, March 7, 1984). The questions may still be included on the poll if they are deemed to be of general interest or value.

Continued, more vigorous examinations of the Lexington program such as this one would also be warranted. This effort could take the

form of conducting extensive comparisons of Lexington's program with those around the Commonwealth and those around the nation of similar size, stature and age. Another form this research project could take would be to regularly update the percentile score Lexington receives using the Texas A & M methodology. This would necessitate maintaining contact with the College Station authors to be able to include changes in the methodology when it is updated. Changes in the Lexington composite score as well as future sub-percentiles could be calculated and used as a basis for directed improvement efforts. Another side issue that could be monitored would be Lex Tran's performance as the transportation broker.

Final Summary

Through data and educated, expert opinions gleaned from officials in transportation in Central Kentucky, and by a new evaluation technique published by Texas Agricultural and Mechanical University, the value and performance of the Lexington Ridesharing Project was assessed and described by this thesis. The thesis began by describing ridesharing's history, first in the United States as a whole and then in Lexington. The latter Lexington history section also had an accompanying, briefer review of ridesharing in Knoxville, a city whose program is among the best in the nation and which was used for limited comparisons to Lexington.

The third chapter, Methodology, discussed the interviews and other forms of evaluation research conducted and described the technique used in the mathematical evaluation developed by the Texas

A & M Transportation Institute. The specific mathematical formulations and computation techniques for this evaluation appear in Appendix A.

The next chapter of the thesis displayed the data acquired from the previously mentioned sources and techniques. These data were analyzed and evaluated to form the conclusions and findings discussed in the fifth chapter. By independent means the two evaluation approaches came to the same conclusions. Namely, that Lexington has a good, solid program that has come a long way in the last two years. Although the program still shows areas of weakness that need concentrated effort for improvement, the program is showing steady improvement.

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APPENDICES

APPENDIX A

CALCULATING METHODOLOGY

Unlike the methodology chapter which generally described the process by which the data needed for the evaluation were generated, this appendix describes, in a step-by-step manner, the specific mathematics involved for the calculations. It will treat each step and evaluation form separately and sequentially.

The first step, as also described in the methodology chapter, was the collection of the pertinent raw data needed to perform the mathematical evaluation. Information obtained from the Ridesharing Director, David Schaars, included budget figures (divided by *service* categories, *transportation results* categories and by mode type), actual numbers of vanpoolers and buspoolers and numbers of matchlists processed, workshops held and employers contacted.

The second step, actually designated "Step One" in the Workbook, determined the cost of providing each one of the array of services provided by the program (Maxwell et al., Workbook, p. 13, 1984). This table, Evaluation Form Number One, can be found in Appendix B. The dollars spent on the various tasks, as they were determined by the Ridesharing Coordinator, were entered into columns A, C and D (dollars allotted to labor, other direct costs and indirect costs, respectively) and summed in column E ("totals"). The dollars amount figures were accompanied by their calculated percentages of the total budget amounts. These percentage figures appear in columns B and F. In column G the numbers for matchlists processed, workshops held, employees contacted (through their employers) and new vanpools formed were entered in rows one through four, respectively.

The "ratio" expression, displayed in column H, was calculated by dividing the total budget (column E) by the services provided numbers (column G), for each service-type category. These calculated ratios were compared with national averages, or in this case the best estimates of these as computed by Texas A & M, found on page 33 of the Workbook. This yielded a percentile score which, when multiplied by the percent of the budget spent for that task (column F), provided an adjusted percentile in column J. The percentiles were tallied giving the first of three comprehensive percentiles which would be averaged for the final program evaluation percentile.

The next form to be completed involved translating the *services-to-mode results*. This form, Evaluation Form Number Two, in Appendix B separately evaluated carpools, vanpools and buspools. It utilized one of three different computation methods depending on whether the data available were an actual count of patrons and services involved, estimates of these data based on a survey, or an estimate based on other known parameters adapted by the use of conversion factors. In Lexington's case old and new vanpoolers and buspoolers could be directly counted while carpoolers had to be estimated using the conversion factor. Therefore, the only calculations required in columns K through W (the entire top portion of the Form) were in the carpooling section. Service performance figures were taken directly from column G of Evaluation Form One, and placed in column M (services) here. These numbers were then multiplied by the services-to-poolers conversion factors (provided by Texas A & M) in

column N, by row, to obtain the data-based estimates of the numbers of carpoolers. These results were displayed in column O.

In the lower part of the table the actual numbers of old and new buspoolers and vanpoolers were entered in columns A and C while the figures for estimated carpoolers were manipulated once more by a factor of 50 percent by column B. After subtracting dropouts in column D, the numbers of direct poolers were displayed in column E. More manipulations and conversions in columns F through I, differing for each pooling mode, produced the number of program-attributable poolers, which was displayed in column J.

Evaluation Form Three in Appendix B calculated a *services-to-mode* cost translation. The figures for dollars budgeted by service category, from column E of Form One, were entered into column A and the relative percentages for each category spent on carpooling, vanpooling and buspooling were entered in columns B, D and F, respectively. As before, these percentages were determined by consultation with Lexington's Ridesharing Coordinator. The percentage figures were multiplied by the dollar figures to yield the total amounts spent for car-, van- and buspooling.

Figures from Form Three were utilized in the next task, completing Evaluation Form Four (Appendix B). This table evaluates *mode results* and produces the second of the three percentile indexes. Total costs for each type of pool were taken from row seven of Form Three and entered on column A of Form Four to begin the process. Their respective percentages were entered in column B. The number of

poolers for each type was entered in C, having been obtained in column J of Form Two. Figures in column D, dollars per pooler, resulted by dividing the cost per mode by the number of passengers per mode. This calculation was performed separately for the three modes. These figures were compared with standards furnished by the Workbook, to provide comparative percentiles. These modal percentiles were then multiplied by the respective percentages of the budget each mode received to produce adjusted percentiles which were then tallied in column F. This tally of the adjusted percentiles became the second evaluative percentile, 61.9 in Lexington's case.

A mode-to-transportation translation was calculated in Evaluation Form Five in Appendix B. The same figures for the numbers of car-, van- and buspoolers in the program as were used before were entered in column A. National standard vehicle occupancy rates by mode type were recorded in column B. By dividing the numbers of poolers in A by the average occupancy in B for each mode, the number of pools in operation was calculated, and then displayed in column C. Column D, dollars per pool, was calculated by taking the dollars spent per mode from row seven of Form Three (also the same as Form Four's column A) and dividing these numbers by their respective pool numbers. The standard original vehicle occupancy of 1.5 persons per vehicle was entered in column E and was divided into the number of poolers in column A to yield average round trips saved per day in column F. Figures for the average round trip miles, per pooler, were obtained from Schaars and entered in column G. These figures

were multiplied by the figures in column F to yield figures for the "Daily Savings in Vehicle Miles Travelled" displayed in column H, which were in turn multiplied by the average pool vehicle occupancy (column B) to provide passenger mile service per day in column H. Multiplying downward by the average 21.75 work days in a month and twelve months in a year gave calculations for the mileage saved for these time periods for the entire body of poolers.

The sixth and final evaluation form, which can be found in Appendix B, began as the first one did, with an apportionment of the budget into separate goal components, in order to reach an evaluation of *transportation results*, and the last of the three percentile numbers. Column A displayed the percentages of the budget assigned to each goal as determined by the Ridesharing Coordinator. Column B displayed the total yearly budget figure of \$46,610 divided by twelve to give monthly figures. These were multiplied by the percentages in A to furnish numbers representing dollars per result spent per month. The Vehicle Miles Travelled (VMT) per month were obtained from column H of Form Five, and the conversion factors are standards calculated by the Texas A & M authors. Multiplying column D (VMT per month) by column E (the conversion factors, different for each mode) yielded number (of "results") per month in column F. Column C (dollars per result) was divided by column F (the results per month) by row to yield a "ratio" in column G. This ratio was compared with standard numbers to give a percentile in column H. As in other forms these percentiles were multiplied by the percentage of the budget

spent for each goal to provide adjusted percentiles in column I. These adjusted percentiles were tallied to give the third evaluative percentile.

Of the entire Texas A & M methodology, this is the only set of numbers which seem rationally suspect. In Texas A & M's example two-thirds of the categories performed at the ninetieth percentile (or better than 90 percent of the country) and in Lexington's case all categories were in the ninetieth percentile.

In any case, this third percentile was tallied and then added to the other two and divided by three to produce a final comprehensive percentile index. The Workbook's example program scored in the seventy-sixth percentile. Lexington's program ranked better than 65.2 percent of those in the United States.

APPENDIX B

EVALUATION FORMS

Blank forms obtained directly from the Workbook.

Evaluation Form # 1

PHASE I - SERVICE

	A Labor		B %		C Other Direct		D Indirect		E Totals		F %		G #s		H Ratio		I Percentile		J Adjusted Percentile	
	\$				\$		\$		\$											
1. Matching Services	6 555		32.1		7 500		0		14 055		30.2		1500		9.37		10%		3.0%	
2. Formal Workshops	5 975		29.3		1 500		0		7 475		16.0		48		155.7		70%		11.2%	
3. Technical Contacts	2 150		10.5		1 000		0		3 150		6.8		960		3.28		80%		5.4%	
4. Providing Vehicles	650		3.2		0		0		650		1.4		8		81.2		90%		1.3	
5. Increasing Awareness	4 380		21.5		16 200		0		20 580		44.1		---		---		(50%)		22.1%	
6. Increasing Attractiveness	700		3.4		0		0		700		1.5		---		---		(50%)		0.8%	
7. Transit Services	0		0.0		0		0		0											
8. Totals	20 410		100%						46 610		100%						Sum of Adjusted Percentiles		43.8%	

9. Less Transit Costs 0

10. Total Rideshare Costs 46 610

Evaluation Form # 2

SERVICES - TO - MODE RESULTS TRANSLATION

	CARPOOLERS					VANPOOLERS*					BUSPOOLERS*				
	K Number	L Survey	M Services	N Conversion	O Pools	P Number	Q Survey	R Services	S Conversion	T Pools	U Number	V Survey	W Pools		
1. Matching Services	1500			(0.17)	255				--						
2. Formal Workshops	48			(14.2)	682				(45)						
3. Technical Contacts	960			(0.43)	413				(4.0)						
4. Providing Vehicles	---			--					(11.2)						
5. Increasing Awareness	1000			(0.13)	130				(0.6)						
6. Increasing Attractiveness				--					--						
7.	Total New Carpoolers = 1480					Total New Vanpoolers = 114					Buspoolers = 0				

	A (Old X Y1)		B + New		C - Dropouts		D = Direct		E Pools		F + (Conversion X New)		G + (Old X Y2)		H = Program		I Pools		J	
	4500	2250	1480	250	3480	(0.75)	1110	4500	1688	6278	(0.075)	9	0	0	123	40	40	40	40	40
8. Carpoolers																				
9. Vanpoolers	0		114	0	114															
10. Buspoolers	66		0	26	40															

11.	Total Direct Pools = 3634	Total Program Pools = 6441
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Note: Y1 = Conversion Factor 1 = 1/2 or your survey generated number
Y2 = Conversion Factor 2 = 3/8 or your survey generated number

*Computations unnecessary here; direct counts obtained from Lexington Area Ridesharing Project.

Evaluation Form # 3

SERVICES - TO - MODE COST TRANSLATION

New Direct

1. Matching Services
2. Formal Workshops
3. Technical Contacts
4. Providing Vehicles
5. Increasing Awareness
6. Increasing Attractiveness

A	B	C	D	E	F	G	H
Total	Carpool	Vanpool	Buspool	Total			
\$	%	\$	%	\$	%	\$	%
14 055	75	10 541	25	3514	0	0	100
7 475	35	2 616	65	4859	0	0	100
3 150	50	1 575	45	1418	5	157	100
650	0	0	100	650	0	0	100
20 580	70	14 406	25	5145	5	1029	100
700	65	455	35	245	0	0	100
\$ 46 610		\$ 29 593		\$ 15 831		\$ 1186	
Total Costs		Carpool Costs		Vanpool Costs		Buspool Costs	

PHASE II - MODE RESULTS

	A		B	C		D	E	F
	Cost Per Mode \$		%	Number of Poolers		Dollars Per Pooler	Percentiles	Adjusted Percentiles
1. Dollars per Carpool Passenger	29 593		63.5	6278		4.71	90%	57.2%
2. Dollars per Vanpool Passenger	15 831		34	123		128.7 *	10%	3.4%
3. Dollars per Buspool Passenger	1 186		2.5	40		29.7	50%	1.3%
4.	Total Poolers =			6441		Sum of Adjusted Percentiles		
						61.9%		

*Includes cost of van payments, higher this year than any other.

Evaluation Form # 5

MODE - TO - TRANSPORTATION TRANSLATION

A	B	C	D	E	F	G	H	I
Number of Poolers	Average Vehicle Occupancy	# of Pools	Dollars per Pool	Original Vehicle Occupancy	Round Trips Saved per Day**	Average Round Trip Miles	Daily Savings in Vehicle Miles Traveled (VMT)**	Passenger Mile Service Per Day
6278	(2.85)	2203	\$ 13.43	(1.5)	4185	15	62 775	178 909
114	(11.2)	8	\$ 1979.87	(1.5)	82	40	3 280	16 740
40	(36.5)	2	\$ 593.00	(1.5)	27	60	1 620	32 400

1. Carpoolers

2. Vanpoolers

3. Buspoolers

4. Totals Saved per Day =

4294

67 675

258 049

X 21.75 = X 21.75 =

5.

Total Saved per Month =

1 471 931

5 483 541

X 12 = X 12 =

6.

Total Saved per Year =

17.7 mil.

65.8 mil.

**Note: This does not include miles driven to and from staging locations.

Evaluation Form # 6

PHASE III - TRANSPORTATION RESULTS

Per Month:	A Apportioned Costs %	B Total Cost \$	C \$ per Result	D VMT per Month	E Conversion Factor	F Number per Month	G Ratio	H Percentile	I Adjusted Percentile
1. Reduction of Vehicle Miles Traveled (VMT)	(100%)	3884	3884	- - -	- - -	1,472 mi	0.0026	90%	(Zero)
2. Gallons of Fuel Saved*	(25%)	3884	1295	1,472 mil	(0.0583*)	85	0.015	90%	27%
3. Tons of Pollution Abated	(25%)	3884	432	1,472 mil	(0.00015)	221	1.95	90%	9%
4. Commuter Dollars Saved**	(20%)	3884	1295	1,472 mil	(0.0785**)	115 552	0.011	90%	27%
5. VT Saved as a Measure of "Congestion Reduced" and "Commuter Mobility Increased".	(20%)	3884	864	- - -		186 793	0.0046	90%	18%
6. Parking Space Demand Reduction	(10%)	3884	432	- - -		4 294	0.101	90%	9%
7.	Sum of Adjusted Percentiles =								90%

A 67 675	Daily VMT Divided by	B 15.76	Round Trip Miles =	C 4294	Parking Demand Reduction X 2 =	D 8588	Car Trips Saved Daily X 21.75 =	E 186 793	Trips † per Month

Notes: * Based on 17.6 MPG average per automobile. **Based on gasoline cost of \$1.30 per gallon.
† Does not include feeder trips to and from staging areas.

9. Overall Program Percentile =	Phase I %ile	+	Phase II %ile	+	Phase III %ile	=	Program %ile
	43.8		61.9		90.0		65.2

VITA

Samuel Charles Hite, Jr., was born on October 29, 1959, and reared in Lexington, Kentucky. He attended Terre Haute South High School, graduating in 1977. While there he was part of a four-man team whose term project won the National Kemper Traffic Safety White Paper competition.

After two years of civil engineering education at Rose-Hulman Institute of Technology, he transferred to the University of Kentucky, graduating in 1982 with a Bachelor of Arts degree in Geography with a Concentration in Planning. While attending UK he was a member of Sigma Phi Epsilon fraternity and served three internships with the Lexington-Fayette Urban County Government. Two of these internships were with the Division of Planning, Transportation Section, and the third was with the Traffic Engineering Department.

He graduated from The University of Tennessee, Knoxville, Graduate School of Planning with a Master of Science in Planning in June 1984. While attending UT he was a Research Assistant, working on a project investigating alternative funding for transit systems, and co-editor of the Tennessee American Planning Association Newsletter. Hite currently resides in Lexington, Kentucky.