PD-AAQ-478
ISN 38692
931 0003

March 28, 1979

49

ACTION MEMORANDUM

TO: DAA/DS/DT, Dr. John I. Bruce

THRU: DS/UD, William R. Miner

FROM: DS/UD, John W. Dickey

SUBJECT: Unsolicited Proposal from the Urban Institute on "User-Side Assistance for Transportation in Developing Countries: An Exploratory Study"

Problem: Your approval is needed for this activity.

Background: The Urban Institute has submitted an unsolicited proposal to do an exploratory study on user-side assistance for transportation in developing countries. For over a year now our Office has had a growing concern for the way in which many services are provided to the poor, both within small urban areas and in their rural hinterland. A different approach to the traditional "supply-side" alternative in which funds are allocated to the providers of services (e.g., to a public bus company) is to offer resources to the potential users (e.g., transit riders) and let them purchase services in a competitive market. This looks to be a particularly fruitful approach for passenger transport since in many countries there are a variety of highly competitive transit service providers (e.g., the jeepneys in the Philippines), which serve not only in small towns but go out to the very limits of any passable road in rural areas. If the poor could purchase vouchers for such services at a reduced price, they then might be able to expand their access to work, shopping, health, and education substantially beyond its current limits.

Since this idea of user-side assistance is relatively new, even in the U.S., the Urban Institute plans in this study to do exploratory work that will help DS/UD in project formulation for possible further feasibility studies and demonstrations. This exploratory work will involve:

1. Formulating a framework for analysis of user-side programs;

2. Selecting an area for a brief case study;

3. Collecting secondary data;

4. Analyzing the likely travel demand and its impacts as well as potential institutional/administrative issues and problems;

5. Estimating the benefits and costs; and

6. Assessing the transferability of the findings.

The final product would be a monograph aimed at a fairly broad audience.

Recommendation: I recommend that you approve this unsolicited proposal of the Urban Institute and that $41,456 of small activities funds be used for this project.

Attachment:
A/S, Urban Institute Proposal

APPROVE: _____

DISAPPROVE: _____

DATE: _____

CLEARANCE:
DS/PO:RSimpson _____ Date _____

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

931-0003

369614

JUN 12 1979

CERTIFIED A TRUE COPY THIS
27 DAY OF June
BY M. Solomon

Mr. Ulrich F. W. Ernst
Urban Institute
2100 M Street, N. W.
Washington, D. C. 20037

Subject: Grant No. AID/otr-G-1746

Dear Mr

Pursuant to the authority contained in the Foreign Assistance Act of 1961, as amended, the Agency for International Development (hereinafter referred to as "A.I.D." or "Grantor") hereby grants to the Urban Institute (hereinafter referred to as the Grantee) the sum of $37,687 to provide support for a program entitled "Small Activities - User-Side Assistance for Transportation" as more fully described in the attachment to this Grant entitled "User-Side Assistance for Transportation in Developing Countries: An Exploratory Study".

This Grant is effective and obligation is made as of the date of this letter and shall apply to commitments made by the Grantee in furtherance of program objectives during the period July 1, 1979 to November 11, 1979.

This Grant is made to the Grantee on condition that the funds will be administered in accordance with the terms and conditions as set forth in Attachment 1 entitled "Program Description," and Attachment 2 entitled "Standard Provisions," which have been agreed to by your organization.

Please sign the Statement of Assurance of Compliance, enclosed herein, and the original and seven (7) copies of this letter to acknowledge your acceptance of the conditions under which these funds have been granted.

Please return the Statement of Assurance of Compliance and the original and six (6) copies of this Grant to the Office of Contract Management.

Sincerely yours,

L. E. Stanfield
Grant Officer
Chief, OTR Branch
Central Operations Division
Office of Contract Management

Attachments

1. Program Description
2. Standard Provisions
3. Statement of Assurance of Compliance

ACCEPTED:
URBAN INSTITUTE

BY: Herbert C. Evans

TITLE: Controller

DATE: June 25, 1979

FISCAL DATA

Appropriation:	72-1191021.6
Allotment:	946-36-099-00-20-91
PIO/T No.:	931-0003-3698140
Total Grant Amount:	$37,687
AID Technical Office:	Bureau for Development Support - Office of Urban Development

A. Purpose

The purpose of this grant is to explore the conditions for and effects of a user-side assistance program in transportation for the urban/rural poor.

B. Specific Objective

The specific objective of this investigation is to work with a case study context to formulate a framework for a prefeasibility analysis of user-side assistance in transportation and to produce a monograph.

C. Implementation

As described more fully in the proposal entitled "User-Side Assistance for Transportation in Developing Countries: An Exploratory Study", which hereby forms a part of this grant by reference the Grantee will organize a study group to develop a case study using the Bicol River Basin (Philippines) data to carry out the following six steps:

1. Formulate a framework for analysis;
2. Select subarea(s) for specific studies
3. Collecting secondary data;
4. Analyze institutional problems and solutions
5. Estimating the benefits and costs; and
6. Assess transferability of findings.

The research will include a short visit to the Philippines to discuss strategy and collect a small amount of additional data. Conclusions and recommendations will be pulled together in a monograph which will be distributed by A.I.D.'s Office of Urban Development.

D. BUDGET

The funds shall be used to finance the following items:

Salaries		$13,754
Fringe Benefits 34.5%		4,745
Overhead		8,140
Travel & Per Diem		5,250
International	5,000	
Local Travel	250	
Other Direct Costs		600
		$32,489
G&A		5,198
GRAND TOTAL		$37,687

The Grantee may not exceed the total amount of the Budget. Adjustments among the line items are unrestricted.

E. Reporting

1. The Grantee shall submit five (5) copies of an interim report at the point where work has been completed on the framework stage of the grant (one and one-half months after initiation). This report will be delivered to DS/UD at: Office of Urban Development, Agency for International Development, U. S. Dept. of State, Washington, D. C., 20523.

2. The Grantee shall submit five (5) copies of a draft final report to DS/UD, no later than four (4) months after initiation of the project. A month then shall be allowed for DS/UD review of the draft report. The Grantee shall submit fifty (50) copies of the final report to DS/UD six (6) months after initiation of the project.

3. The Grantee shall submit to the Grant Officer, AID/W, one copy of a final fiscal report indicating all expenses incurred under this

Grant, no later than the completion date of this Grant.

F. Special Provisions

1. The following numbered Standard Provisions are not applicable to this Grant: 6, 7A, 7B, 9, 11, 12A, 12B, 12C, 13, 15, 16 and 17.

2. Attachment 2 (Supplement) is hereby incorporated into the Grant.

3. Payment under this Grant will be in accordance with Attachment 2, Standard Provision 7C entitled, Payment Reimbursement.

G. Overhead Rates

Pursuant to Standard Provision No. 5A entitled, "Negotiated Overhead Rates" a rate or rates shall be established for each of the Grantee's accounting periods during the term of this Grant. The rate for the initial period shall be as set forth below:

	Rate	Base	Period	
On-site	44%	Salaries (Research Programs)	FM:	7-1-79
			TO:	Until Amended

[redacted]

USER-SIDE ASSISTANCE FOR TRANSPORTATION IN DEVELOPING COUNTRIES: AN EXPLORATORY STUDY

March 26, 1979

Proposal Submitted to:

Department of State
Agency for International Development
Room 320, RPC
Washington, D. C. 20523

Transportation Studies Program

THE URBAN INSTITUTE
2100 M Street, N.W., Washington, D. C. 20037

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INTRODUCTION

Improved mobility, both in a local and in a regional context, is an essential ingredient of socioeconomic development. In many developing countries, necessary advances in agricultural productivity depend on improved access to regional service centers, both for product and producer. The construction and upgrading of roads therefore has usually been a high-priority component of any development effort.

But benefits from road improvement do not accrue equitably to all members of the rural population. Frequently, the lowest income categories -- who could presumably benefit most from increased mobility -- lack the means of making use of new or better opportunities for access to markets, employment and education. It is therefore reasonable to ask whether complementary policy efforts can be developed to enable low income groups to improve their mobility more effectively. One option involves mechanisms designed to allow low-income groups to purchase transportation services at a reduced rate.

Such user-side assistance has proved to be a feasible means of improving the mobility of needy population groups in a number of United States applications. The Transportation Studies Program of The Urban Institute proposes to explore the feasibility and likely impacts of a user-side assistance scheme for transportation purposes in small and medium-sized urban areas and their hinterlands in the context of a developing country.

For a developing country, a user-side assistance scheme in transportation could become an essential ingredient of agricultural development policies. The likely benefits to recipients include increased net revenue for agricultural crops, access to educational and other public services, and opportunities for part-time employment outside the agricultural sector. The generation

of such benefits may allow for treating the assistance as "seed money" which could be phased out gradually over some period of time. It is this emphasis on the investment element that would distinguish an application of the user-side assistance approach in developing countries from those in developed countries, where it has been primarily a mechanism for an earmarked income transfer.

On the surface, it would appear that the institutional environment in many developing countries is well suited to such an approach for providing focused transportation assistance. There is often a greater diversity of private and public transportation modes in these countries than in the developed countries, and a user-side assistance program could be designed to allow transportation users to take advantage of any of a number of readily available options.

The proposed study is designed to explore the conditions for and effects of a user-side assistance program through a case-study approach focusing on one or two areas in developing countries for which needed data are available. The proposal begins with a brief discussion of the major characteristics of user-side assistance in transportation. The discussion draws on the experience in the U.S. to highlight some of the relevant aspects. The proposal then touches briefly upon some characteristics of transportation in developing countries that should be considered in the analysis. The Bicol River Basin in the Philippines is used as an example to illustrate the environment for any assistance program in transportation.

Following this background material, a proposed work statement is outlined. The proposal concludes with a description of the proposed staff, a brief overview of the background of the Transportation Studies Program of The Urban Institute, and a budget.

USER-SIDE ASSISTANCE

User-side assistance in transportation has evolved from the experience with various forms of public assistance to needy population groups in developed countries. The main concern in these countries has been the income transfer function of such an approach, earmarked for a particular purpose. The investment aspect, that is, the secondary effects of improved mobility for recipients in terms of education, employment and social service utilization, is usually accorded a minor role in the public debate. While these benefits are mentioned, they are often not fully explored.

In a developing country, though, these secondary impacts would be of primary interest. Particularly in a rural region, a user-side assistance program for transportation would have to be designed to yield the greatest overall benefit in terms of improvements of agricultural productivity. Adapting the user-side assistance approach to this role as a tool of development policy requires considerable conceptual development. The Urban Institute has played a major role in the development of the user-side assistance approach in transportation in the U.S.* This background, together with our experience with problems of developing countries, is essential for the task at hand.

While the emphasis on the investment aspects of the user-side assistance approach requires a re-thinking of the concept, it is useful to explore the characteristics of this concept as it has evolved out of the public assistance context. This discussion must necessarily focus on developed countries, because conceptual development and application have been largely limited to these cases.

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* Kirby, Ronald F. and Robert G. McGillivray, "Alternative Subsidy Techniques for Urban Public Transportation," Transportation Research Record 589, 1976. Kirby, Ronald F. and Francine L. Tolson, "Improving the Mobility of the Elderly and Handicapped Through User-Side Subsidies," Transportation Research Record 660, 1977.

Any public assistance program to certain groups of the population who are considered in need because of low incomes or other factors can assume one of three forms. First, the individuals or households concerned may be given a cash income supplement which could be used in any way the assistance recipient desired. Negative income tax schemes or unemployment insurance payment are examples of this type of public assistance program.

The other two forms of public assistance are of a more categorical nature, designed to increase the quantity or improve the quality of some essential good or service consumed by the target group. One option is to supply such goods or services directly or through a contractual arrangement with a private provider, free of charge or at a reduced rate. Examples of such assistance are public housing, the distribution of surplus agricultural products, or urban transportation services. In this provider-side assistance, the financial subsidy goes to a particular provider who then supplies the goods or services to the eligible population. Recipients have little choice of the type of consumption item obtained or the provider.

An alternative is user-side assistance which is designed to give the target group the opportunity to purchase more of the good or service believed to be needed, rather than supplying it directly. Basically, the recipient is given a certain amount of assistance in some means of exchange (vouchers, coupons, reduced rate tickets, special credit cards, and, under very special conditions, possibly even cash) to purchase the good or service of concern from any of a number of providers. If vouchers or similar mechanisms are used, the assistance program requires the cooperation of providers who are willing to accept the particular means of exchange in lieu of cash and go through the trouble of redeeming them. If it is feasible to monitor the consumption of the respective good or service directly to ensure that the desired consumption standards are met, user-side assistance may employ

cash subsidies. However, the only practical example for this approach is the housing allowance program. It is relatively easy to make sure that families in the program are living in units that meet some minimum quality standards.

Aside from housing allowances of the type employed in the Section 8 housing program, examples for user-side assistance programs in the U.S. include food stamps, educational assistance under the GI Bill, Medicare and Medicaid, and educational vouchers. User-side assistance approaches have also been employed in efforts to improve the mobility of special population groups in the U.S., as discussed further below.

Issues in User-Side Assistance

Three chief advantages have been cited for user-side assistance as compared to the provider-side approach. First, from the standpoint of the recipient, user-side assistance typically offers a greater measure of consumer sovereignty by allowing for a choice among a number of services from a range of qualified providers. Second, user-side assistance can always be specifically targeted to the intended beneficiaries. By contrast, only some forms of provider-side assistance are amenable to restricting the service to selected groups. For example, general subsidies to a bus transit system benefit all users. Nobody can be excluded from riding the bus at established fares. Greater flexibility to focus the assistance is particularly important in transportation, where efficiency criteria for pricing tend to conflict with welfare criteria. User-side assistance schemes could be used, for example, to mitigate any burdens of efficient pricing approaches affecting disadvantaged groups.

Third, user-side assistance programs can minimize the impact of public intervention on competitive conditions in the sector affected. Such

programs can be organized in such a way as to permit and encourage competition among providers. If users can choose among providers and new providers are free to enter the market, competition is strengthened. Under a provider-side assistance scheme, the infrequent selection of one or a few providers to qualify for assistance for specified services can lead to a market with monopolistic or collusive elements, and consequently higher costs.*

There are also some disadvantages of the user-side assistance scheme that have been mentioned in the discussion of assistance approaches. First, there is the need for some form of eligibility test. Particularly when the assistance program is geared toward low-income groups, the required means tests may imply considerable invasions of privacy for the recipient group. However, certification is an indispensable component of any targeted assistance program. Proper design can keep the impact on recipients to a minimum. It may also be possible to operate the program in conjunction with other government programs requiring disclosure of income or wealth.

Second, it has been argued that user-side assistance involves higher administrative costs than comparable provider-side assistance programs. The evidence on this issue is somewhat inconclusive, since programs are not always directly comparable. For example, in the experimental housing allowance programs there was a greater emphasis on helping recipients to make full use of their increased consumer sovereignty. Thus, the program included counseling and other forms of participant services. The costs for these services would presumably be absent in a similar provider-side program.

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* The first and third advantages are of course closely related. However, the first is more a psychological benefit for the assistance recipients, although greater consumer sovereignty is essential in creating and maintaining competitive markets.

Advocacy groups for recipients have cited a third drawback associated with voucher-type schemes in income-conditioned programs, the stigma attached to the use of "funny money" in the open market. Under a provider-side approach, it may be possible to keep reliance on public assistance confidential. User-side assistance through vouchers or similar means "labels" participants for third parties. This problem may affect program participation.

Another issue is common to any form of categorical assistance, of either the provider-side or the user-side type. It refers to the effectiveness of the program in increasing or improving consumption of the good or service intended. The elasticity of consumption with respect to the assistance is typically less than unity, especially in the case of necessities. Categorical assistance in areas such as food and housing does not lead to increases in consumption equal to the amount of assistance received. Rather, recipients use the assistance to free up resources for other purposes. The relative magnitude of this income effect of a categorical assistance approach is a legitimate concern in the evaluation.

User-Side Assistance in Transportation

User-side assistance schemes for transportation expenditures are rather uncommon, both in the U.S. and abroad. In the U.S., most federal support of urban public transportation is in the form of provider-side assistance, both for transit capital investments and for operating expenditures. Policies in other countries are similar. There are a few local and state programs with user-side assistance components, usually reduced-fare tickets with the difference between the reduced and regular fare being paid by the public agency. There are also some federally sponsored demonstrations of user-side assistance for users of taxicabs and bus transit.

It is useful to look at some preliminary findings from one of these demonstrations to sketch the potential of user-side assistance schemes in transportation.

As part of our work for the Urban Mass Transportation Administration, Urban Institute staff have developed a program of user-side assistance demonstrations. The first project in this program began operation in December 1975 in Danville (Illinois), an urbanized area with a population of 42,690. The project was designed to assist handicapped persons and persons aged 65 or older in using shared-ride taxicab services.

Participants in the program received "charge slips" enabling them to purchase up to $20 worth of taxicab rides per month at a discount averaging about 75 percent. In January 1977, the city granted an increase in taxicab fares. At the same time, the discount rate for program participants was lowered to 50 percent (of the new fares). These two changes together had the effect of approximately doubling user payments for the average taxicab trip.

By the end of 1976, after about a year of project operations, trips subsidized under the program accounted for about 30 percent of all taxicab trips. The results of a survey of participants suggested that about half of all project trips were "new," in the sense that they would not have been made without the subsidy. The other half were simply trips that would have been made anyway at a higher cost to the user.

Fraudulent use did not appear to be a problem, although some overuse did occur. A small number of participants, some of whom were eligible for the program on the basis of emotional disabilities, used more than the $20 of vouchers permitted each month. The project relied on monitoring of use after the fact, which does not preclude such abuse. In some instances,

informal comment from project staff was sufficient to alert users to the possibility of overuse and prevent it. In other cases, these comments were not enough.

Project costs appeared reasonable. Startup administrative costs of $14,000 amounted to 7 cents per trip, averaged over a two-year period. The monthly administrative costs amounted to 20 cents per trip on the average. Without the costs of data acquisition and processing, administrative costs would be about half, or [illegible] cents per trip. The direct assistance payments amounted to $1.02 per vehicle trip and $0.85 per passenger trip.

Trip making differed across different categories of project participants. Through June 1976, handicapped participants under 65 years of age averaged 6.[illegible] person-trips per month, while the elderly averaged 3.7 person-trips per month. Participant groups also differed with respect to their response to the doubling of their trip costs as a result of the fare increase and the reduction of the discount. The handicapped, both the elderly and those under 65 years of age, reduced their trip rates by 50 percent more than the non-handicapped elderly. Handicapped users apparently had higher fare elasticities than non-handicapped elderly participants.

Given the focus on special user groups, the Danville demonstration project can provide only some rough indications of the potential and problems of any user-side assistance schemes in transportation in the context of a developing society. Overall, the project has demonstrated the feasibility of such a scheme. It has shown that it is possible to use public assistance to encourage the utilization of privately provided transportation services, rather than to introduce competing services provided by the public sector. The project has also shown that administrative costs without the costs of data collection and processing -- can be kept to a fairly reasonable one-sixth of total project costs.

This level of administrative costs may be partially attributable to the characteristics of the user group. Typically, they did belong to the group of the economically needy. Roughly 90 percent of all participants lived in households with an income of less than $5,000 per person per year. However, economic need was not the criterion for acceptance into the program. The two criteria, age and handicapped status, raise few problems with regard to eligibility determination. If other criteria, such as income were used, administrative costs might be higher because of the need for conducting some form of means test.

APPLICABILITY TO DEVELOPING COUNTRIES

Examining the applicability of user-side assistance programs in transportation to developing countries requires some focus. Generally, the needs and opportunities vary greatly across countries and across regions within the same country. While the transportation problems of major cities rival or surpass those of a city of comparable size in North America or Europe, the challenges in provincial cities and regional service centers may be completely different. Even so, a few general observations can be made before examining a specific problem of interest in greater detail.

Public transportation in both urban and rural areas is relatively more important in developing than in developed countries. For example, for Central American countries Churchill* has estimated that 60-80 percent of all urban passenger trips is made on public transportation of some form or

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* Churchill, Anthony, Road User Charges in Central America. (World Bank Staff Occasional Papers Number Fifteen). Washington, D.C., International Bank for Reconstruction and Development, 1972.

another. Some of the public transportation services are provided by buses and trucks. In addition, there is usually a variety of services employing smaller vehicles. Churchill notes that shared-ride taxicab services are usually available in the more populous parts of Central America. In the Philippines, as well as in the Middle East and in some Latin American countries, variations of jitney services are quite popular, a service form that is relatively rare in the United States or other developed countries. Jitney services are a modified form of shared-ride taxicab services, with vehicles operating on fixed or semi-fixed routes, but without mandatory stops or regular headways. Jitneys are hailed by prospective customers who then tell the driver where they want to get off. In some cases, jitneys may deviate from their route for a block or two, either as part of the service or for a surcharge.

The jitneys, such as the "jeepneys" in the Philippines or the "dolmuş" in Turkey, illustrate perhaps best the major differences between developing and developed countries in terms of public transportation services. In the U.S., these forms of public transportation have been largely regulated out of existence, mostly to protect the providers of transit services. In contrast, regulatory constraints are much less common in this area in developing countries, at least in terms of market entry. Low opportunity costs of labor, at least in rural and semi-rural areas, make jitneys a relatively attractive undertaking for local entrepreneurs. While there are some regulatory efforts in the area of rate setting, there is typically considerably more negotiation of fares than we are accustomed to in the United States.

Another factor that may be of interest in exploring the feasibility and likely impacts of a user-side assistance scheme is the degree of competition even in more traditional forms of public transit. For example, in Cairo (Egypt), the public sector is operating a dual transit system. The tradi-

tional transit service is offered on old buses at extremely low fares that have led to overcrowding. Since political considerations precluded an increase in fares for the existing services, the government introduced a first-class system with new buses (purchased with USAID assistance) at a much higher fare. The new buses offer more comfortable service with less crowding on essentially the same routes as the "second-class" service.*

Similar instances may involve transit competition between privately owned small bus systems and publicly owned large bus operations. These instances of competition are not uncommon to urban areas in developing countries, such as Kuala Lumpur (Malaysia). They offer the necessary diversity and ease of entry for an effective operation of a user-side assistance scheme. However, it should be emphasized again that such conditions are by no means universally valid for developing countries as a whole. In exploring the feasibility and likely impacts of a user-side assistance program in transportation, the specific characteristics of the area must be carefully studied. The most relevant factors include the institutional framework -- especially regulatory constraints and enforcement as well as the economic characteristics of providers and user groups.

The analysis must also account for the specific investment-related concerns of transportation policies in different parts of a developing country. The issues are quite different between often over-populated urban areas and rural towns and their hinterlands. Transportation policies in a rural context are dominated by an overriding concern of any

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* There are about 1500 of the old and 400 of the new buses. Consequently, the service density for the first-class service is less than that for the cheaper service.

development policy, to improve agricultural productivity. Increased mobility for the rural population can contribute to this goal in several ways.

First, it enables agricultural producers to become more efficient in marketing their crops, thereby increasing their net revenue. Second, improved access to regional service centers can siphon off some of the excess agricultural labor, at least temporarily, without necessitating permanent moves. Third, greater mobility can contribute to the formation of human capital in agriculture by providing access to educational and training facilities. Fourth, increased contact among agricultural producers and others involved in this sector is likely to speed up the diffusion of agricultural innovative practices. Finally, improved mobility is also likely to lead to a better utilization of social, primarily health, services.

While this proposal cannot present a detailed empirical discussion of all of these aspects that are relevant for the proposed study, an example may illustrate conditions. It also illustrates the availability of data needed for the analysis.

In the Bicol River Basin in the Philippines, the USAID has been involved substantially in a program designed to upgrade the road system in a rural area with "significant but largely unrealized agricultural potential The Rural Roads Project is designed to provide better access to regional service centers, which appears to be one of the key ingredients for increased productivity in agriculture. Specifically, rural roads are seen to perform a number of vital functions:

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* Project Paper. Rural Roads Project II. FY 1979 - FY 1981. Office of Provincial Development, USAID/Philippines, August 1977, p. 6. This document presents a detailed overview of the design and implementation of the project.

(1) bringing farmers into the orbit of a growth market-oriented economy, (2) accommodating social interests and cultural practices of the project beneficiaries, (3) providing access to off-the-farm seasonal employment, and (4) conversely, allowing access into rural communities for governmental line agencies and social development programs.*

Improvement and expansion of the rural road network are essential for fulfilling these functions satisfactorily.

The empirical basis for estimating the benefits of improving and expanding the rural road system is limited. Many of the estimates are based on comparison of projected vehicle operating costs on different types of road surface. On dirt roads of poor quality, both passenger and cargo vehicles are assumed to be able to operate at a top speed of 20 km/h. At that speed, the operating cost per km was estimated as 84¢ for passenger and 168¢ for cargo vehicles.** For roads that have been upgraded to good gravel conditions, the operating speed was projected to increase to 80 km/h for both types of venicles. The operating costs per km at that speed were estimated as 37c for passenger and 76c for cargo vehicles. With an assumed mix of 65 percent of all vehicle trips made by passenger vehicles, 35 percent by cargo vehicles, the average cost savings associated with the upgrading of one km of road were calculated as ₱89.69 per vehicle per year.

These changes in transport costs affect different groups of households in varying ways. As Table 1 shows, the demand elasticity (with respect to changes in the effective transport cost) for the low income categories is substantially below that for higher income groups. It should also be noted that the lower income groups rely almost exclusively on public transportation for their travel. Since there is little reason to suspect any other causes for the differences among income groups in their expected travel response to reductions in transportation costs, it is likely that the mobility of the

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* Ibid., p. 9

** Estimates in Philippine pesos (₱) or centavos (¢) for 1975. The source consulted did not provide information on the cost elements considered.

Table 1

Elasticity of Demand for Transport Services

by Income Class and Per Capita Income

Family Income[a]	Per Capita Income[a]	Demand Price Elasticity	
		Total Passenger	Public Transport Passenger
1000-2000	175-350	0.5	0.5
2001-3000	351-525	1.0	1.0
3001-4000	526-700	1.3	1.3
4001-5000	701-875	1.7	1.4
5001-6000	876-1050	2.2	1.4
6001-7000	1051-1225	2.2	1.2
7001-9000	1226-1575	2.2	0.9
9001-12000	1576-2100	2.2	0.6
12001 +	2101 +	2.2	0.5

[a] Presumably in ₱

Source: Project Paper. Rural Roads Project II. FY 1979 - FY 1981. Office of Provincial Development, USAID/Philippines, August 1977, p. 87

low income groups is in fact hampered primarily by their (in)ability to pay. A user-side assistance scheme may be effective in increasing their ability to pay and enhancing their prospects of realizing the full benefits of the improved road system.

Other conditions for the implementation of a user-side assistance program would appear rather favorable. First of all, there seems to be adequate supply elasticity. Limited data from an evaluation of the impacts of road improvement allow for that conclusion.* In one case, a dirt road in bad to very bad condition was upgraded to a road with all-weather pavement. The improvement reduced the transportation cost from the end-point of the road to the local market junction on the national highway from about ₱3 to ₱1.20 for passengers, and from ₱70 to ₱30 per ton of shelled corn. In addition, jeepney service to the barrio affected increased from once a day to four times a day. Jeepneys, the ubiquitous form of public transportation in both urban and rural areas in the Philippines, are a key element of any user-side assistance scheme. Often operated by farmers, they tend to have a high market share of both passenger and cargo traffic.

Another requirement for a successful operation of a user-side assistance program would be the institutional infrastructure required to process the vouchers collected by public transportation providers and reimburse them in cash. The information that we have obtained for the Bicol region thus far would suggest that this may be an area of weakness for the program, since control over the jeepney services under martial

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*The information in the following paragraphs is taken from: Department of Local Government and Community Development, Rural Roads Program. Evaluation of Selected RRP I Subprojects. May 1977 (Annex L of Project Paper for RRP II)

law in the Philippines has not been strong. There have been reports of widespread price gouging by jeepney operators, charging as much as seven times the rates permitted by the government. This pattern would suggest that it may be difficult to establish and maintain the kind of contacts required to assure the necessary cooperation with transportation providers. However, this problem may not be relevant because of the effects of the prospect of an effective increase in ridership as a result of the assistance program. The question requires further analysis.

The example of the Bicol region, as it has been sketched here in very broad outlines, suggests two things. First, the data would seem to be available to explore the feasibility and likely impacts of a transportation user-side assistance program in the context of a developing country. Secondly, the cursory examination of these data indicates that such a program may in fact be a viable policy option for improving the equity of the distribution of benefits from road construction and improvement in rural areas in developing countries. There is no obvious reason that such a program would not work, nor is there any indication that would not be needed. It is conceivable that similar conditions exist in other countries or regions for which similarly detailed data on the transportation system, both demand and supply side, are available.

STUDY PLAN

Given the need for using specific reference points, it appears that the exploration of the feasibility of user-side assistance programs for transportation in small urban and rural areas in developing countries should rely on a case study approach. The disadvantages of this approach are well-known. It is difficult to generalize from the findings for one

particular area in one particular country to other countries, let alone a group of countries. However, in the present context, this drawback may not be all that critical, since the emphasis is on exploration at a fairly high level of generalization. This exploration will of course look at the factors that are deemed to be essential in determining the outcomes of the analysis to see whether they are unique to the country and region chosen for the case study, or whether they can be regarded as representative of conditions in other developing countries.

Given this general framework for the study, the following study elements can be distinguished:

1. formulate framework for the analysis
2. select area(s) for case study
3. collect data
4. analyze institutional problems and solutions
5. estimate benefits and costs
6. assess transferability of findings

The findings of the study would be reported in a monograph aimed at a fairly broad audience.

Formulate framework for the analysis. The first step in the proposed study is the specification of the formal structure for the analysis. The case studies envisioned at this point are basically simulations of a transportation user-side assistance program under conditions corresponding to those in a particular region in a developing country. It is useful to formalize the elements of this simulation to identify data needs and specify the analysis plan prior to completing the data collection.

The analytical framework would include the description of the charac-

teristics of the user-side assistance scheme to be studied (eligibility criteria, administrative approach) as well as the benefits and costs to be included in this assessment.

Select area(s) for case study. Several criteria are relevant for the selection of an area as a reference point for exploring the benefits and costs of a simulated user-side assistance program. They range from minimum standards for both the physical and institutional infrastructure to data availability.

We propose to focus on one or two areas in developing countries that are essentially rural in character, with an agricultural sector in transition from subsistence to cash crop operations. The area should have one or more regional service centers for trading, storage and processing of crops. These service centers might also provide off-the-farm employment in seasonal patterns.

The area(s) should also have a fairly well-developed road system that provides access to the regional service centers for a substantial proportion of the target group for the user-side assistance scheme. The degree of coverage of and access to the roads in sufficiently good conditions may vary, though.

There should be an active system of public transportation services of various forms, including buses, paratransit vehicles, and more informal ridesharing arrangements. Another form of public transportation may be the railroad. The services offered by public transportation providers can be on specific routes on fixed schedules or demand-responsive. Fares may be flat, distance-related or time-related. There should be indications of adequate supply elasticities to respond to changes in demand. Otherwise, a user-side assistance scheme could contribute to inflation or price gouging.

Markets for transportation services include both passengers and smaller items of freight. Full cargo operations (for agricultural produce shipped for storage and processing) presumably falls outside the realm of the user-side assistance scheme.

A key requirement for the area is that there should be sufficient data available to simulate the operation of the program. Such data would include information about passenger and freight traffic in the area broken down by relevant variables (such as farm size and income) and on some kind of origin and destination basis. It is also essential to have good and recently-collected data showing the response to changes in travel costs. Beyond that, it would be helpful to have information on secondary impacts, such as changes in income associated with changes in travel behavior.

At this point, we assume that the Bicol region in the Philippines would be one of the areas used for the study. It appears to meet most of the requirements in terms of transportation characteristics and data availability. In addition, it has been an on-going USAID project for several years, so that there are a number of experts with direct local experience in the Washington area. Interviews with these experts on specific points can help supplement available quantitative data with the essential qualitative background.

It may useful, though, to look for another area with similar characteristics in another region. A search involving both a literature review and contacts with experts in the field is currently underway to identify other candidates for inclusion in the study. While a single area focus would be sufficient to answer many of the questions with respect to feasibility and impacts, a second area would provide a better handle on the transferability issue.

Collect data. The data collection task overlaps to some extent with both the specification of the analysis framework and the selection of study area(s). Given the exploratory nature of the proposed study, data availability determines both the degree of detail in the analysis and the suitability of the particular area for consideration in the study. Thus, there must be some feedback.

The data collection is likely to proceed in stages. The approach can best be illustrated for the Bicol region with our actual experience. The first step was to contact the individuals at USAID familiar with the Rural Roads Project and to obtain the general reports on the project and the area. These reports already provided substantial detail on many of the questions regarding the context of the analysis. Transportation data were taken from a report prepared by a consultant team. The next step would be to track that report and any backup data that may be available. Finally, there would be additional interviews with local experts familiar with the conditions in the selected area.

We propose to complete the data collection effort with a field trip to one of the selected areas, most likely the Bicol region in the Philippines. This approach appears necessary to familiarize staff with the specific environment in which a user-side assistance program would take place, and to procure essential information, particularly on the characteristics of the institutional infrastructure.

This information could be organized to describe the physical, institutional and transportation features of the region used in the analysis.

Analyze institutional problems and solutions. The major institutional background questions are the regulatory and administrative provisions for the operation of public transportation services in the area, the taxation

of providers, insurance requirements, administrative agency oversight of subsidy procedures, and any problems with corruption or crime that may affect the program. Depending on the parameters of the user-side assistance scheme, it may also be necessary to include the characteristics of the financial intermediaries -- primarily banks and similar institutions -- in the analysis. Financial intermediaries may play a role in redeeming the vouchers used in the program.

The regulation of providers may be the domain of a government agency or several agencies. If the providers are part of the private sector, the authority to operate typically must be obtained from a regulatory authority. In addition, regulation may cover services provided, the fare structure, entry of additional providers, safety and liability in case of accidents. These aspects may be circumscribed by legislation or administrative fiat. If providers are public, regulations with respect to services, fares, safety and liability are also relevant. In this case, enforcement is not a major issue.

However, if the market for public transportation services is dominated by the private sector, as is not uncommon in developing countries, enforcement may be a key issue. The discussion above alluded to the apparent difficulties the government has had in enforcing rate regulations in the Philippines. Similar problems are likely to apply in other areas of concern. (It should be noted that these problems are not necessarily unique to developing countries.) While the user-side assistance scheme cannot be expected to address these problems, it is appropriate to examine their implications for the implementation of the program.

Any user-side assistance program must be the responsibility of a local agency. Suppose the assistance were in the form of vouchers that are signed at the time of use. The administering agency must locate and

screen eligible participants. Providers must be reimbursed. A method for ensuring that only eligible users participate -- such as photo identification cards -- must be devised. If there is a budget limit on the subsidy per participant, such as a monthly ceiling, a method for preventing overuse and enforcing this restriction must be developed. These requirements may constitute a considerable burden on a local agency in a rural area of a developing country. The analysis should investigate whether the existing public sector infrastructure is likely to be up to the task, and whether the program might be administered as an adjunct to on-going programs, such as agricultural extension programs. This assessment will proceed in two steps: the formulation of a set of criteria, followed by an examination of the characteristics of institutions in the area. The examination of existing conditions will be a major concern of the proposed field trip.

A final aspect may be the likely impacts of corruption or crime. For example, in Manila tongs reportedly exact road fees from jeepney operators doing business on their turf. Similarly, corruption is not uncommon in social agencies handling assistance payments to the poor. Again, the analysis of these aspects should focus on the ways in which they affect implementation of the program. The evaluation of the problems and solutions under a user-side assistance program should refer to the likely patterns under a different program with similar objectives.

Estimate benefits and costs. The precise list of cost and benefits to be considered in the analysis will be specified in the study design. Basically, the benefits of the program would accrue both to the supply and demand side.

On the supply side, benefits may be in the form of increased business and possibly a more clearly defined regulatory environment. However, if institutional problems are solved and competitive conditions prevail with free market entry, benefits to providers of public transportation services are primarily macroeconomic (output and employment related) rather than necessarily accruing to existing providers.

If there is a substantial increase in the demand for travel as a result of the assistance program, improvements in the road network may be required to relieve more congested conditions for current users. Either congestion or road construction may be counted as costs to the public. There may also be increased costs for road maintenance. However, it is reasonable to assume that such costs will play a role only in the case of a major program.

The analysis will focus on demand-side benefits for participants. Assistance recipients benefit from the program in two ways. First, there are income benefits, both direct and indirect. The direct income benefits are the result of the substitution of discount trips under the program for trips that would have been made at full fare. Indirect income benefits are associated with the improved mobility. Mobility benefits are increases in travel attributable to the assistance. These increases can be estimated on the basis of data such as the ones shown in Table 1 which compare demand elasticities for different income categories. It would be reasonable to assume that the assistance enables the recipient to adopt a travel behavior similar to that of higher income groups. Based on this assumption, the trip rates for the recipient group could be projected.

The estimation of mobility benefits forms the basis for assessing the investment potential of such a program. As noted above, benefits of improved mobility in a rural area of a developing country fall into five major categories:

- increased revenue from crop sales through better access to regional markets
- increased allocative efficiency for agricultural labor by providing access to employment opportunities in regional service centers
- improved formation of human capital through access to educational and training facilities
- improved diffusion of innovative agricultural practices through increased contact among different types of agricultural producers
- increased utilization of social services provided in regional service centers

For some of these benefits, quantitative estimates can be developed. For example, the evaluation of some components of the Rural Roads Project in the Bicol region provides some estimates of the net revenue effects of improved access to crop markets. These estimates and appropriate data for other categories may be used to generate specific benefit estimates. However, in some categories, such as human capital formation, benefit assessments may have to be qualitative.

The cost estimation is relatively simple for assistance costs. These costs are the result of the discount rate under the program, the given rate structure for public transportation and the projected travel behavior of the participant group. Estimation of administrative costs may be more difficult. It may suffice in this context to use the experience with U.S. programs of this nature as a guide, adjusting the cost elements for differences in relative wage rates and similar factors.

Assess transferability of findings. Part of the study should be an assessment of the degree to which the conclusions of the analysis can be generalized to other regions and other countries. Since it is virtually certain that the information on the "universe" will be much more general than for the case study areas, this assessment must rely on educated judgment, bolstered perhaps with some relevant data.

Prepare and revise final report. The final report will describe all findings of the study. Following a review by USAID staff, the revision will respond to all comments and suggestions.

Table 2 provides an overview of the proposed work schedule. The schedule is based on an assumed starting date of April 1, 1979.

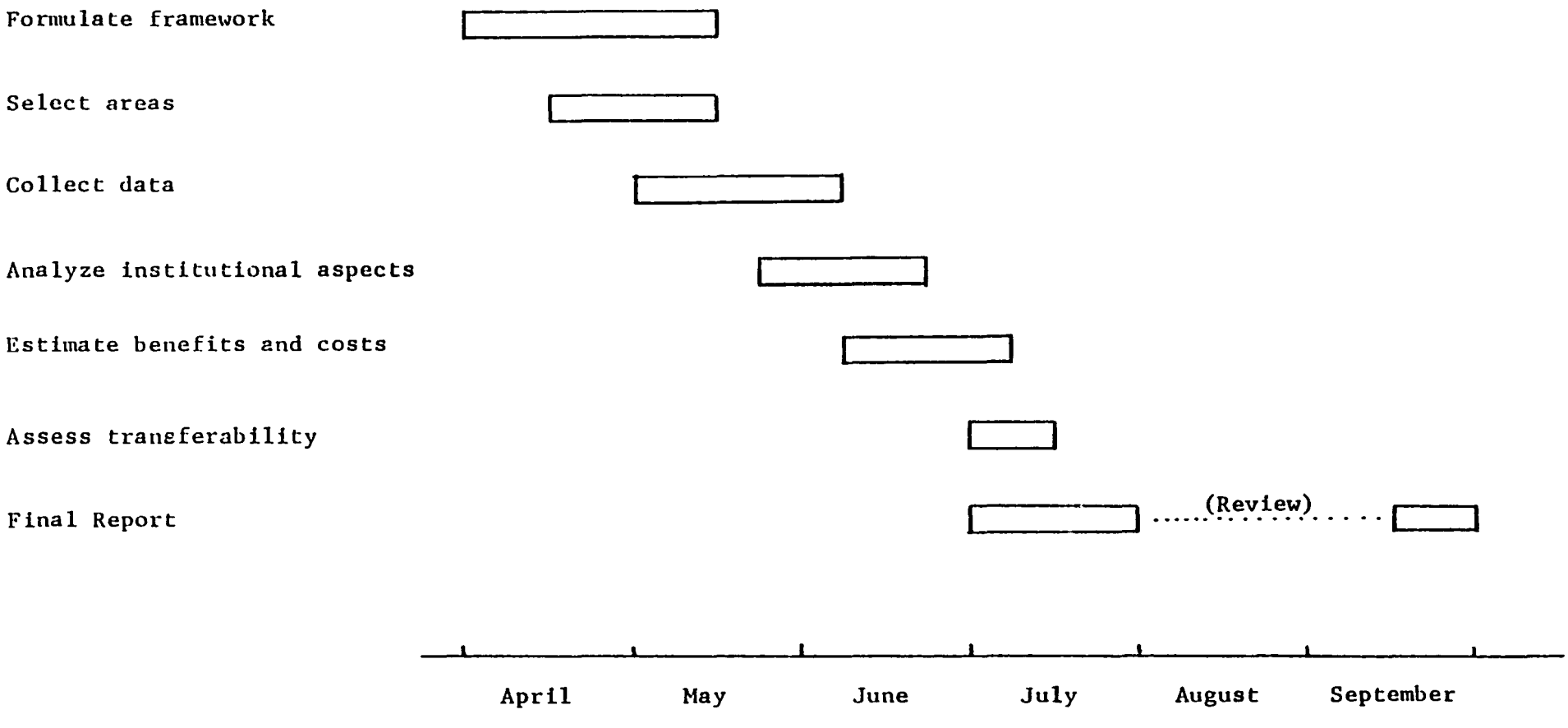
PROJECT STAFFING

Overall, the proposed project will involve all senior staff of the Transportation Studies Program of The Urban Institute who have been involved in the design and analysis of user-side assistance demonstration projects.

The proposed project director is Ulrich Ernst. Mr. Ernst holds a Ph.D. in economics from Indiana University where he specialized in development planning and statistical analysis. Prior to joining The Urban Institute, he taught development planning and statistics at The Ohio State University and worked for a number of years for a social science research organization. In that position, he was responsible for the development of the evaluation design for the Administrative Agency Experiment, a component of the Experimental Housing Allowance Program. He also participated in the actual evaluation, particularly with respect to eligibility determination.

At The Urban Institute, Mr. Ernst has worked in the area of transit pricing policies, focusing on the design and implementation of demonstration projects in this area. A particular concern has been the potential of short-term transit policies with respect to contributions to urban development. He is currently engaged in an analysis of the experience with taxi feeder service to regularly scheduled transit.

Table 2. Work Schedule



Other senior staff include Robert McGillivray, Ronald Kirby, Kiran Bhatt and Michael Kemp. Mr. McGillivray holds a Ph.D. from the University of California at Berkeley, where he contributed significantly to the development of methods that were essential in the emergence of the disaggregate travel demand analysis. He has also played a key role in the development of the user-side assistance approach in transportation, in close cooperation with Ronald Kirby. His recent work includes a paper on the possibility of employing a user-side assistance scheme for addressing the problems of the intercity bus industry in the U.S., and the lessons on demand elasticities for certain paratransit modes that can be learned from the demonstrations of user-side assistance.

Ronald Kirby is the Program Director of the Transportation Studies Program. After obtaining his Ph.D. in applied mathematics from the University of Adelaide (Australia), he spent a few years with consulting firms in Australia and the U.S. working on travel demand forecasting and other transportation planning projects. At The Urban Institute, he directed a major study of the potential of various forms of paratransit in contributing to the solution of urban mobility problems. Out of that effort came a book that has achieved widespread distribution and has influenced the public debate in urban transportation substantially. He has also contributed significantly to the development of the user-side assistance concept in urban transportation, focusing on special user groups. He designed and helped implement the demonstration projects in this area. Recently, he has served as a consultant to the World Bank on a mission dealing with urban transportation in Cairo (Egypt).

Kiran Bhatt holds a Ph.D. in transportation systems analysis from the Massachusetts Institute of Technology. His expertise lies in the area of the analysis of supply and cost characteristics of different forms

of urban transportation services. He is also an acknowledged authority in the application of road pricing concepts in an operating environment. Michael Kemp brings to the project a solid background in the analysis of certain paratransit modes that are relevant to the questions studied here. He was the author of the sections on jitneys and taxicabs in the book on paratransit services mentioned above. His current research efforts focus on transit pricing and service policies, and their implications for demand. He is also involved in informal consulting arrangements regarding efforts to relax regulatory constraints on the taxicab industry.

Francine Tolson would also be involved in the project. Her background includes in-depth exposure to the administrative problems involved in implementing user-side assistance programs in the transportation area. She has been responsible for much of the technical assistance to sites in the UMTA demonstration program.

ORGANIZATIONAL BACKGROUND

The Urban Institute is a private, nonprofit policy research and analysis organization. It was established in 1968 to fill a perceived gap in the nation's capability for producing relevant and timely research that would bear directly on urban policy problems. Through its work over the last decade, the Institute has become nationally known and respected as an objective and nonpartisan source of information and analysis for informed policy deliberation and debate. In addition to stringent quality standards, the Institute has also emphasized the utilization of its research in the urban policy making process. Institute staff typically work closely with decision makers at different levels of government; these efforts are supported by an extensive system of disseminating the results of research efforts to policy makers as well as fellow researchers.

Much of the Institute's work is sponsored by agencies of the federal government. Its location in Washington, D. C. enhances its ability to be responsive to the needs of government sponsors through regular interaction between Institute and agency staff members, at the stage of defining tasks, during the conduct of the research or technical assistance projects, and in the dissemination of findings to interested parties.

The Urban Institute currently conducts research in ten broad program areas, each focused on a particular policy area of interest or on a general approach to the solution of cross-cutting problems. Current Institute research programs, in addition to the Transportation Studies Program, are Housing, Public Finance, Urban Development, Human Resources and Income Security, Women and Family Policy, Social Services, Health Policy, State and Local Government, and Government Organization and Management. In addition, a Cable Television Information Center conducts studies and provides advice to local governments on the regulation and operation of cable systems.

The total professional staff of The Urban Institute numbers over 150 researchers working on projects dealing with virtually all areas of domestic social policy. Over two-thirds of Institute researchers hold an earned doctorate or masters degree and over 90 percent of senior researchers hold an advanced degree. Degree fields represented on the staff include economics, political science, public administration, urban planning, business administration, sociology, psychology, transportation, engineering, mathematics, and operations research. Economists are the largest group, accounting for 50 of the 120 researchers with graduate degrees. Many staff members also have first-hand experience with government programs, having worked in government at the federal, state or local levels. The Urban Institute's reputation permits it to complement internal staff capacities by readily engaging academic consultants and other outside experts as appropriate.

Institute researchers are assigned to particular programs for organizational purposes, the assignments reflecting their individual areas of interest and expertise. However, they can be, and frequently are, called on to contribute to projects conducted by other programs when their particular skills and abilities are needed. In such cases, they are accountable to the program director in charge of the project concerned.

Program directors are both administratively and substantively responsible for research under their jurisdiction. They supervise the management of research projects by principal investigators and senior researchers.

In addition to customary support services, the Institute offers significant support to researchers in three areas:

- A specialized on-site library maintains a collection of relevant books and periodicals, conducts manual and computerized literature searches, arranges interlibrary loans of materials, and offers other information services.

- A computer services group supplies programmers and analysts to assist in the design and execution of complex computing projects, maintains a library of widely-used data bases and software packages, and has the hardware needed to access the many different computers regularly used by research staff.

- A publications office provides assistance to researchers in editing, preparing summaries and briefings, and disseminating the results of studies.

The Transportation Studies Program

The Transportation Studies Program was created in 1968. Over the decade of its existence, its staff have studied and written on key policy problems in urban and intercity passenger transportation. The areas of investigation have included elements such as:

- transit fare and service level policies
- automobile pricing disincentives
- public transportation subsidy and financing
- public transportation service innovations
- cost studies of alternative forms of urban public transportation
- transportation services in small urban areas
- interrelationships of transportation and metropolitan development
- highway cost allocation
- automobile gasoline conservation strategies
- the automobile's role in the U.S. economy

This broad range of substantive experience is a key asset in any of the ongoing work. The staff can draw effectively on this experience because of the Program's continuity. The average length of service at the Institute for the Program's seven senior staff members is close to six years.

As a result of this continuity, and aided by the relatively small size of the Program, interaction among projects and staff members involved in different projects is high. The approach of the Transportation Studies Program can therefore be characterized as a consistent and continuous research effort, rather than a series of compartmentalized studies. While the needs of the research sponsors determines changes in emphasis and depth, the current work can build on a solid basis in all aspects of urban transportation within the framework of the overall research program.

The staff of the Transportation Studies Program offers a deliberate diversity of academic and experimental backgrounds. This diversity, together with the Program's continuity, is a prerequisite for the development and effective dissemination of new and innovative policies in urban transportation.

We feel that the proposed research team provides the proper mix of skills and experience for conducting the study. Urban Institute staff have played a major role in the development and application of the user-side assistance concept in transportation. They also have an extensive background in the analysis of paratransit modes. An important early product of that work has been the book, Para-Transit: Neglected Options for Urban Mobility, published in 1975. The project will also benefit from the international composition of the staff (the project team includes five different nationalities), and their experience in the analysis of problems of developing countries.

The Transportation Studies Program of The Urban Institute currently is engaged in technical support grants for the Service and Methods Demonstration Program of the Urban Mass Transportation Administration, in the areas of paratransit and special user groups, automobile pricing disincentives, and transit fare and service level policies. This work involves the development of demonstration concepts, and technical support in the implementation of specific demonstration projects. Other current projects include the development of a comprehensive framework for cost and cost-effectiveness analysis in urban transportation for the Alternatives Analysis process, under contract to the Transportation Systems Center; the assessment of the use of new travel demand analysis techniques in urban transportation planning, for the Federal Highway Administration; and an evaluation of rural transportation demonstration projects, also for the Federal Highway Administration.

A list of working papers written by Transportation Studies Program staff is appended.

BUDGET

	Hours	Cost
Project Director	240	4,075
Other senior staff	400	7,430
Other research staff	160	1,397
Secretarial support	120	852
Total direct labor		13,754
Fringes @ 34.5%		4,745
Total compensation		18,499
Overhead @ 44%		8,140
Total labor and overhead		26,639
Two two-week trips to Philippines		5,000
Local travel		250
Office supplies, duplication		250
Library materials		350
Total direct costs		32,489
G&A @ 16%		5,198
Total cost		37,687
Fee @ 10%		3,769
Total cost and fixed fee		$ 41,456

APPENDIX: LIST OF WORKING PAPERS

Reports

URI 78000 (paperback) URI 87000 (hardcover) — Para-transit: Neglected Options for Urban Mobility, by Ronald F. Kirby, Kiran U. Bhatt, Michael A. Kemp, Robert G. McGillivray, and Martin Wohl, 319 pp., April 1975, $4.95 (paperback or $10.00 (hardcover).

URI 91000 — Para-transit: A Summary Assessment of Experience and Potential, by Ronald F. Kirby, 34 pp., December 1974, $1.95 (paperback).

Papers

URI 50005 (708-45) — "A Transportation Equilibrium Model," by Damian Kulash, 40 pp., 1971, $1.00.

URI 19000 (712-8-1) — "Residential Zoning and Equal Housing Opportunities: A Case Study in Black Jack, Missouri," by Ronald F. Kirby, Frank deLeeuw, William Silverman assisted by Grace Dawson, 34 pp., November 1972, $2.00.

URI 64000 (712-10) — "Discrimination in Mass Transit," by Damian Kulash and William Silverman, 53 pp., 1974, $2.25.

URI 66000 (1212-5) — "Road User Charges -- Some Practical Considerations," by Ronald R. Kirby, 17 pp., 1974, $1.25.

URI 67000 (1212-1) — "Parking Taxes for Congestion Relief: A Survey of Related Experience," by Damian Kulash, 47 pp., 1974, $2.25.

URI 68000 (1212-9) — "Parking Taxes as Roadway Prices: A Case Study of the San Francisco Experience," 46 pp., 1974, $2.25.

URI 69000 (1212-8-1) — "On Road Congestion Theory," by Robert G. McGillivray, 21 pp., 1974, $1.25.

URI 71000 (1212-2-1) — "Transit Improvements in Atlanta -- The Effects of Fare and Service Changes," by Michael Kemp, 46 pp., 1974, $2.25.

URI 79000 (1212-3) — "Reduced Fare and Fare-Free Urban Transit Services -- Some Case Studies," by Michael Kemp, 37 pp., 1974, $2.50.

URI 81000 (1212-6) — "Legal Issues Surrounding Roadway Pricing on City Streets and Bridges," by Rosanne J. Coit, 30 pp., 1974, $2.50.

URI 82000 (1212-8-2) — "Estimates of Optimal Congestion Tolls," by Robert G. McGillivray, 19 pp., 1974, $2.00.

URI 83000 (1212-99)	"Congestion Pricing: A Research Summary," by Damian Kulash, 33 pp., 1974, $2.50.
URI 84000 (1212-12)	"Income-Distributional Consequences of Roadway Pricing," by Damian Kulash, 32 pp., 1974, $2.50.
URI 85000 (1212-11)	"Road Pricing Technologies: A Survey," by Kiran Bhatt, 45 pp., 1974, $3.00.
URI 11100 (5021-4)	"Guidelines on the Operation of Subscription Bus Services," by Ronald F. Kirby and Kiran U. Bhatt, 81 pp., 1975, $3.00. (Summary version published in Traffic Quarterly, July 1975, reprint available, $0.50).
URI 14100 (708-1)	"Automobile Gasoline Conservation," by Robert G. McGillivray, 67 pp., April 1976, $3.00.
URI 14200 (1216-3-2)	"Industrial and Economic Impacts of Improving Automobile Fuel Efficiency: An Input/Output Analysis," by Melvyn D. Cheslow, 77 pp., April 1976, $3.50.
URI 14300 (5032-3-1)	"What Can We Do About Urban Traffic Congestion? A Pricing Approach," by Kiran U. Bhatt, 41 pp., April 1976, $2.50.
URI 15900 (5050-3-4)	"Transportation Improvement and Road Pricing: A Demonstration Program," by Kiran U. Bhatt, Ronald F. Kirby, and Michael E. Beesley, 12 pp., September 1976, $2.00.
URI 16400 (5032-3-3)	"Implementation Procedures for Pricing Urban Roads," by Kiran Bhatt, Joel Eigen, and Tom Higgins, 49 pp., October 1976, $2.00
URI 18400 (5044-7)	"An Analysis of Road Expenditures and Payments by Vehicle (1956-1975)," by Kiran U. Bhatt, Michael E. Beesley, and J. Kevin Neels 282 pp., March 1977, $7.00.
URI 18500 (5044-8)	"Congressional Intent and Road User Payments," by Kiran U. Bhatt, Robert G. McGillivray, Michael E. Beesley, and J. Kevin Neels, 98 pp., March 1977, $3.00.
URI 21500 (5068-1)	"The Impact of Beltways on Central Business Districts: A Case Study of Richmond," by Tom Muller, Kevin Neels, John Tilney, Grace Dawson, 101 pp., April 1978, $5.50.
URI 22200 (5050-3-8)	"Parking Discounts and Carpool Formation in Seattle," by Mary Lou Olsson and Gerald K. Miller, 44 pp., 1978, $3.50.

Reprints

URI 10052 (450-6 & 8)	"Urban Transport We Could Really Use," by Martin Wohl, Technology Review 72, No. 8, pp. 30-37, June 1970, $0.50.
URI 10081 (708-73)	"Some Problems With Urban Transportation Planning Models," by Robert G. McGillivray, Traffic Quarterly, 26, pp. 547-559, 1972, $0.50.
URI 10104 (708-52)	"Some Evidence of Transit Demand Elasticities," by Michael A. Kemp, Transportation 2, pp. 25-52, 1973, $0.50.
URI 10130 (1216-1)	"Alternative Strategies for Reducing Gasoline Consumption by Private Automobiles," by Robert G. McGillivray and Michael A. Kemp, Transportation Research 8, pp. 349-361, 1974, $0.50.
URI 10141 (214-5032-2-3)	"Some Promising Innovations in Taxicab Operations," by Ronald F. Kirby and Gerald K. Miller, Transportation 4, pp. 369-386, 1975, $0.50.

B. Selected Working Papers

Transportation Studies Working Papers are in various stages or research and editing, but they are shared whenever possible with the research community with the understanding that they are not to be quoted or cited without permission. They are obtainable free of charge from the Transportation Studies Program Secretary.

708-39	"Some Demand Models for the Taxicab System in the Washington, D.C. Area," by Ho Kwan Wong, 33 pp., February 1971.
708-48	"Cost Functions for Right-of-Way and Construction of Roads," by Kiran Bhatt, 18 pp., July 1971.
708-52	"The Empirical Investigation of Transit Demand," by Michael A. Kemp, 59 pp., November 1971.
708-69	"Some Thoughts on the Theory of Traveler Benefit Measurement," by Robert G. McGillivray, 12 pp., December 1974. (Published by The Swedish Journal of Economics, Vol. 77, 1975.)
708-80	"Travel Demand Theory," by Melvyn Cheslow, 13 pp., May 1975.
722-01-1	"Urban Transportation and the Press: A Survey of Editorial Opinion," by Mary Lou Olsson and Michael A. Kemp, 16 pp., July 1975.

1212-7 "Distributional Effects of a Congestion Tax," by Alan A. Walters, 22 pp., September 1973.

1212-10 "Designing a Household Level Experiment to Test Transportation Pricing Policies," by Ronald F. Kirby, 16 pp., January 1974.

1212-13 "Can Parking Taxes Help?," by Damian J. Kulash, 13 pp., July 1974.

1216-4 "The Use of Input/Output Tables to Analyze the Automobile Industry," by Melvyn Cheslow, Mary Lou Olsson, and Hartojo Wignjowijoto, 30 pp., October 1975.

1216-5 "Estimates of Automobile Gasoline Savings Due to Some Conservation Strategies," by Robert G. McGillivray and Mary Lou Olsson, 31 pp., October 1975.

1216-6 "Useful Information for Estimating the Transportation Impacts of Gasoline Price Increases," by Melvyn Cheslow, 28 pp., March 1976.

5002-5 "A Comparative Analysis of Urban Transportation Costs," by Kiran Bhatt, published in Transportation Research Record 559, 1976.

5018-1 "A Methodology for Evaluating Public Transportation Alternatives in Small Urban Areas," by Ronald F. Kirby and Robert G. McGillivray, 46 pp., September 1975.

5018-2 "Assessing Public Transportation Needs in Small Urban Areas," by Ronald F. Kirby and Gerald K. Miller, 41 pp., February 1976.

5021-10 "Implementing Shared Taxicab Services -- A Case Study in Arlington, Virginia," by Ronald F. Kirby, 40 pp., February 1975.

5032-1-1 "What Are We Learning From Experiments With Reduced Transit Fares?," by Michael A. Kemp, 25 pp., July 1974.

5032-1-3 "Policies to Increase Transit Ridership: A Review of Experience and Research," by Michael A. Kemp, 89 pp., September 1977.

5032-1-4 "An Econometric Model of Bus Transit Demand and Supply," by Gershon Alperovich, Michael Kemp and Keith Goodman, 97 pp., April 1977.

5032-2-1 "The Potential of Taxicabs for Providing Innovative Paratransit Services," by Ronald F. Kirby, 9 pp., November 1974.

5032-2-2 "Some Examples of Promising Paratransit Services," by Gerald K. Miller, 18 pp., March 1975.

5032-2-3 "Some Promising Innovations in Taxicab Operations," by Ronald F. Kirby and Gerald K. Miller, 27 pp., July 1975. (Published in Transportation, Vol. 4, No. 4, reprint available).

5049-7 "Transportation and Metropolitan Development," by Melvyn Cheslow and Mary Lou Olsson, 64 pp., October 1975.

5049-17-1 "An Empirical Investigation of the Effects of Land Use on Urban Travel," by Kevin Neels, Melvyn Cheslow, Ronald Kirby, and George Peterson, 83 pp., August 1977.

5050-1-2 "The Consequences of Transit Fare and Service Policies: A Classified Bibliography," by Michael A. Kemp and Rebecca L. Rea, 36 pp., April 1976.

5050-2-1 "Public Transportation Alternatives for Today's Cities," by Ronald F. Kirby, 11 pp., August 1975.

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5050-2-5 "Guidelines for the Organization of Commuter Van Programs," by Gerald K. Miller and Melinda A. Green, 89 pp., February 1976. (Available from National Technical Information Service, No. PB-252 305/8WT, Springfield, Virginia.)

5050-2-6 "Monitoring Plan for the St. Bernard Taxi-Feeder to Bus Demonstration Project," by Gerald K. Miller, 70 pp., October 1976.

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5050-3-1 "Planning and Implementing a Road Pricing and Transportation Improvement Package," by Kiran Bhatt and Michael Beesley, 18 pp., February 1976.

5050-3-5 "Comparing Strategies for Reducing Traffic Related Problems: The Potential for Road Pricing," by Tom Higgins, 30 pp., September 1976.

5050-3-6 "A Preliminary Analysis of a Road Pricing and Transit Improvement Program in Berkeley, California," by Melvyn Cheslow, December 1977.

5050-4-1 "Alternative Subsidy Techniques for Urban Public Transportation," by Ronald F. Kirby and Robert G. McGillivray, 16 pp., October 1975.

5050-4-2 "Evaluating Taxi Ticket Demonstrations," by Robert G. McGillivray, 22 pp., September 1975.

5050-4-4 "Improving the Mobility of the Elderly and Handicapped Through User-Side Subsidies," by Ronald F. Kirby and Francine L. Tolson, prepared for presentation at the 55th Annual Meeting of the Transportation Research Board, 33 pp., January 1977.

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5050-4-6 "Mobility, Accessibility, and Travel Impacts of Transportation Programs for the Elderly and Handicapped," by Ronald F. Kirby and Robert G. McGillivray, 33 pp., February 1977 (presented at the 3rd International Conference on Behavioral Travel Modeling in Tanunda, South Australia).

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5066-3-1 "Some Thoughts About Transit Service Variation Experiments," by Michael A. Kemp and Michael E. Beesley, 14 pp., September 1977.

5066-5-1 "The San Diego Transit Corporation: The Impacts of Fare and Service Changes on Ridership and Deficits, 1972-1975," by Keith M. Goodman, Melinda A. Green, and Michael E. Beesley, 42 pp., May 1977.

5066-5-2 "The San Diego Transit Study Data Base: Reference Manual," by Melinda Green, June 1977.

5066-5-4 "The San Diego Transit Study Data Base: Tape-Users' Guide," by Michael A. Kemp, September 1977.

5066-5-3	"The San Diego Transit Corporation: The Impacts of Service Changes on System Costs, 1972-1975," by Keith M. Goodman, 38 pp., December 1977.
5066-6-1	"Plan for Demonstration of Transit Fare Prepayment Promoted by Employers in Sacramento," by Robert G. McGillivray, 45 pp., July 1977.
5066-6-2	"Reduced-Price Promotion of Transit Fare Prepayment in Austin," by Robert G. McGillivray, 41 pp., July 1977.
5066-6-3	"Reduced-Price Promotion of Transit Fare Prepayment in Phoenix," by Robert G. McGillivray, 46 pp., October 1977.
5066-6-4	"Plan for Demonstration of Transit Fare Prepayment Promoted by Employers in Jacksonville," by Robert G. McGillivray, December 1977.
5066-7-1	"Policies and Procedures for Transit Service Development," by Ronald Kirby and Melinda Green, 28 pp., April 1978.
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5072-1	"Plan for a Study of Public Transportation Providers and Services in Small Urban Areas," by Melinda Green and Ronald Kirby, 38 pp., September 1977.
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5103-01	"A Design Study for an Impact Analysis Program for Rail Rapid Transit," by Ulrich F. W. Ernst, 73 pp., April 1978.
5109-1-1	"The Implementation of Paratransit Services in Knoxville, Tennessee," by Gerald K. Miller, 43 pp., April 1978.
5109-1-2	"Implementing Dial-a-Ride Services in Orange County, California," by Gerald K. Miller, 40 pp., March 1978.
5109-1-4	"Implementation of Paratransit Services in Westport, Connecticut," by Melinda A. Green, 57 pp., March 1978.

5109-1-3	"Implementation of Shared-Ride Taxi Services for the Elderly and Handicapped in Oklahoma City, Oklahoma," by Melinda A. Green, pp. 45, March 1978.
5110-3-1	"Interest Among Transit Systems in Demonstrations of Fare and Service Level Policies," by Francine L. Tolson and Ulrich F. W. Ernst, 41 pp., March 1978.
5114-2-1	"Approaches for Improving Urban Demand Forecasts," by Kevin Neels and Melvyn Cheslow, July 1978, contract report submitted to FHWA.
21-1-1	"Should the Intercity Bus Industry be Subsidized?," by Robert McGillivray, 34 pp., March 1978.
21-1-2	"A Quick Quantitative Assessment of Certain Impacts of a Proposed Gasoline Rationing Plan on the New and Used Car Markets," by Robert McGillivray, Michael Kemp, and Ulrich Ernst, 47 pp., March 1978. Final report to U.S. Department of Energy under purchase order EB-78-X-01-3265.
5110-9-1	"Experiences with Fare Prepayment Schemes in Four European Transit Systems," Michael Beesley, Ulrich F.W. Ernst, Peter Gist and Peter Kettle, 27 pp., May 1978.
5110-4-1	"Short-Term Transit Policies for Downtown Revitalization: A Preliminary Assessment," Ulrich F.W. Ernst, 23 pp., April 1978.
1200-31-1	"Demonstration Plan for a Fare-Free Zone in Albany (NY)," Ulrich F.W. Ernst, 44 pp., June 1978.
1200-72-1	"A Survey of Urban Transit Bus Cost Studies," by Robert G. McGillivray, 36 pp., December 1978.
1266-21	"Definition and Identification of Costs," by Kiran Bhatt, 22 pp., November 1978.
1266-23	"Roles of Discounting In The Analysis of Costs and Economic Worth," by Kiran Bhatt, 28 pp., January 1979.
1266-26	"Methods of Estimating Operating Costs for Urban Transportation Alternatives Analyses," by Kiran Bhatt, 83 pp., February 1979.
1266-29	"Issues in the Evaluation of Capital Intensive Metropolitan Transportation Alternatives," by Melvyn Cheslow, 40 pp., January 1979.
1266-30	"Measures for the Evaluation of Capital Intensive Metropolitan Transportation Alternatives," by Keith Goodman, Melvyn Cheslow and Kiran Bhatt, 28 pp., November 1978.

STAFF RESUMES

ULRICH F. W. ERNST
Senior Research Associate

Education

1973	Ph.D., Economics, Indiana University
1967	A.M., Economics, Indiana University

Career Brief

Dr. Ernst's recent work has focused on the design and analysis of demonstration projects of innovative pricing policies in urban transit. He has worked with local communities in the development of demonstration projects. In addition to his direct involvement in such projects, he has also examined the implications and potential of short-term transit policies on the basis of available data. His interest has concentrated on the potential impacts of short-term transit policies on the downtown. He has also been involved in an analysis of the experience with taxi feeder services to conventional transit.

Prior to joining The Urban Institute, Dr. Ernst taught development economics and statistics at The Ohio State University and worked for several years for a private consulting firm. His responsibilities in the latter position included the economic analysis of the effects of government programs in such diverse areas as economic development for depressed areas, housing, water resource development, educational personnel development and solid waste management. He also studied the issues surrounding the provision of transportation services to the elderly and handicapped, developing an approach to the estimation of the size of the target population that has been widely adopted.

Professional Background

1977-present	Senior Research Associate, The Urban Institute
1971-77	Senior Economist, Abt Associates Inc., Cambridge Massachusetts
1969-71	Assistant Professor of Economics, The Ohio State University, Columbus, Ohio
1969-70	Research and Development Specialist, Center for Vocational and Technical Education, the Ohio State University, Columbus, Ohio
1967-68	Teaching Assistant, Statistics, Indiana University, Bloomington, Indiana

Selected Publications

"Experiences with Fare Prepayment Schemes in Five European Transit Systems," with Michael E. Beesley, Peter Gist and Peter Kettle, Urban Institute Working Paper 5110-9-1, January 1979.

"Interest Among Transit Systems in Demonstrations of Fare and Service Level Policies," with F. Tolson, Urban Institute Working Paper 5110-3-1, November 1978.

"Transit Policies for Downtown Revitalization: A Preliminary Assessment," Urban Institute Working Paper 5110-4-1, August 1978.

"A Design Study for an Impact Analysis Program for Rail Rapid Transit," Urban Institute Final Report 5103-1, December 1977.

"Survey, Analysis, and Synthesis of Attitudinal Measurement Techniques Appropriate for Transportation Planning and Evaluation," with L. Kerpelman and V. Scardino, Abt Associates Inc., December 1976.

Certification: Determining Eligibility and Setting Payment Levels in a Housing Allowance Program, with D. E. Dickson, Jr., M. G. Trend and H. Chernick, Abt Associates Inc., U.S. Department of Housing and Urban Development, available from NTIS, September 1976.

Economic Adjustment Study for Mineral County and Hawthorne, Nevada, with D. T. Wood and P. Scholnick, Office of Economic Adjustment, U.S. Department of Defense, July 1976.

An Economic Analysis of the Environmental Impact of Highway Deicing, with D. M. Murray, Environmental Protection Technology Series, Office of Research and Development, U.S. Environmental Protection Agency, May 1976.

"Outdoor Recreation in Massachusetts," Abt Associates Inc., December 1975.

Crop Insurance and Information Services to Control Use of Pesticides, with J. A. Miranowski, Socioeconomic Environmental Studies Series, Office of Research and Development, U.S. Environmental Protection Agency, September 1974.

"The Impact of Technological Change on the Economic Development of Small and Medium Sized Communities," Abt Associates Inc., 1973.

An Evaluation of the Special Impact Program: Final Report (four volumes), with P. Merrill, W. J. Knox, et al., Abt Associates Inc., Office of Economic Opportunity, 1973.

KIRAN U. BHATT
Senior Research Associate

Education

1970	Ph.D., Transportation Systems Analysis, Massachusetts Institute of Technology (Minor: Urban and Regional Studies)
1965	S.M., Structural Engineering, University of Illinois
1963	B. Tech., Civil Engineering, Indian Institute of Technology

Career Brief

Dr. Bhatt's expertise covers a broad spectrum of issues in the analysis of transportation systems: analysis of supply and cost characteristics of urban transportation modes, analysis of consumer preferences and demand for transportation services, equilibration of supply and demand, and the development and evaluation of transportation alternatives.

His research at The Urban Institute has focused on the investigation of automobile disincentive policies for improving the mobility in urban areas. He is the project manager for the work on pricing disincentives which focuses on impacts, practical problems and potential of implementing such policies as part of transportation improvement plans. A second major interest is the analysis of supply and exploration of costs of urban transportation systems. Dr. Bhatt has also directed a major study of highway cost allocation and road user subsidy issues. His current responsibilities include a task order agreement with the Transportation Systems Center to design a framework for cost estimation and cost-effectiveness analysis in the context of the Alternatives Analysis program.

Professional Background

1974-present	Senior Research Associate, The Urban Institute
1972-75	Lecturer in Mathematics, Federal City College
1971-74	Research Associate I, The Urban Institute
1966-70	Research Assistant, Massachusetts Institute of Technology, Civil Engineering Department

Publications

"Costs and Productivities of Innovative Urban Transportation Services," (forthcoming), Transportation Research Board Special Report, No. 184.

"What Can We Do About Urban Traffic Congestion? A Pricing Approach," Proceedings of Conference--Public Transport Systems In Urban Areas, Gothenberg, Sweden, June 1978.

"Congressional Intent and Road User Payments," Urban Institute Paper, URI 18500, with Robert G. McGillivray, Michael E. Beesley and Kevin Neels, March 1977.

"An Analysis of Road Expenditures and Payments by Vehicle Class (1956-1975)," Urban Institute Paper, URI 18400, also forthcoming as a Transportation Research Board publication with Michael E. Beesley and Kevin Neels, March 1977.

"Are The Urban Road Users Paying For The Roads They Use?", Proceedings of Transportation Research Forum, Volume XVII, No. 1, 1976.

"Comparative Analysis of Urban Transportation Costs," Transportation Research Record 559, 1976.

"Implementation Procedures for Pricing Urban Roads," Urban Institute Paper, URI 16400, with Joel Eigen and Tom Higgins, November 1976.

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"What Can We Do About Urban Traffic Congestion? A Pricing Approach," Urban Institute Paper, URI 14300, April 1976.

"A Study Design for the Highway Cost Allocation Project," with Robert G. McGillivray, Urban Institute Working Paper 5044-1, March 1976.

"A Comparative Analysis of Urban Transportation Costs," Transportation Research Record 509, 1976.

"An Analysis of Subscription Bus Experience," with Ronald F. Kirby, Traffic Quarterly, July 1975.

Transit: Neglected Options for Urban Mobility, with Ronald F. Kirby, Michael A. Kemp, Robert G. McGillivray, and M. Wohl, Urban Institute Book 87000, April 1975.

"A Comparative Analysis of Transportation Costs," Urban Institute Working Paper 5002-4-2, February 1975.

"Comparative Analysis of Urban Transportation Costs: A Summary," Urban Institute Working Paper 5002-7-2, February 1975.

"Road Pricing Technologies: A Survey," Urban Institute Paper 1212-11, August 1974.

"Capacity and Cost Inputs for Community Aggregate Planning Model (CAPM)," Urban Institute Working Paper 5002-3, December 1973.

"Analysis of Supply and Estimates of Resource Costs," with Marie L. Olsson, Technical Report 2, Urban Institute Working Paper 5002-2, November 1973.

"Study Design for a Comparative Analysis of Transportation Costs," Urban Institute Working Paper 5002-1, April 1973.

"Preferential Bus Systems," with Damian J. Kulash, Urban Institute Working Paper 708-68, March 1972.

"Rail Transit Costs," Urban Institute Working Paper 708-55, October 1971.

"Maintenance Cost of Roads," Urban Institute Working Paper 708-49, Washington, D.C., July 1971.

"Cost Functions for Right of Way and Construction of Roads," Urban Institute Working Paper 708-48, Washington, D.C., July 1971.

"Fundamental Explorations in the Comparative Analysis of Transportation Technology," unpublished Ph.D. dissertation, M.I.T. Department of Civil Engineering, February 1971.

"Search and Choice in Transport Systems Planning: Summary Report," with Marvin Manheim and E. Ruiter, Volume 1 of a Series; M.I.T. Department of Civil Engineering, Research Report R68-40, 1968; also published under the same title by the U.S. Department of Transportation with the number AD-693072.

"An Adaptive Transportation System for a Subcity of the Future: Student Project in Transportation Systems," M.I.T. Department of Civil Engineering, Research Report R68-63, 1968.

"Metran," edited by M. Hanson, M.I.T. Press, Spring 1967.

"Optimum Scheduling," with Bisbee et. al., Research Report of Project TRANSPORT, M.I.T., 1966.

Other Professional Experience

Member, Transportation Research Board Committee on Transportation Finance and Taxation.

Member, Transportation Research Board Subcommittee on Travel Supply Models.

Past member, Transportation Research Board Committee on Taxation, Finance, and Pricing.

Panelist and Speaker at the Conference on Public Transport Systems in Urban Areas in Gothenberg, Sweden, June 1978.

Invited Resource Paper Writer and Panelist at the Conference on Urban Transport Service Innovations at San Diego, December 1977.

Consultant to the World Bank on urban transportation finance in developing countries, 1977.

Participant in the OECD Conference on Better Towns with Less Traffic in Paris, April 1975.

Participant in the Conference on Evaluation of Urban Transportation Alternatives at Airlie House, Warrenton (Virginia), February 1975.

Panelist and speaker at The International Conference on Transportation Research at Bruges (Belgium), June 1973.

Panelist at the Conference on Transportation Planning held at the Center for Metropolitan Planning and Research, The Johns Hopkins University, December 1972.

MICHAEL A. KEMP
Senior Research Associate

Education

1965 B.Sc. (Hons.), A.K.C. University of London King's College

Career Brief

Mr. Kemp can draw on over thirteen years of experience in the investigation of urban transportation policies. He is currently primarily involved in a study of the impacts of fare and service quality changes for urban transit services, and in the design of a program of experiments with innovative transit pricing. His work at The Urban Institute has included research into the determinants of transit demand, documenting the operational experience with a range of para-transit services, and investigating experimental design issues relating to transportation research. Prior to joining the Institute, the main focus of his work was on research design and the application of survey research techniques to a wide range of urban and social research topics including transportation, labor practices, retail spending, recreational facility planning, and housing. Mr. Kemp was in charge of large survey research projects carried out on behalf of local and national government agencies in the United Kingdom.

Professional Background

1974-present	Senior Research Associate, The Urban Institute
1970-74	Research Associate, The Urban Institute
1969-70	Independent consultant in London, mainly working in association with a firm of urban economics consultants
1965-69	Research Executive (later Senior Research Executive), Urban Planning and Transportation research group, Research Services Limited, London

Selected Publications

"How might new energy conservation policies affect recreational and vacation travel by private automobile?", Urban Institute Working Paper 21-1-3, 1978.

The Consequences of Short-Range Transit Improvements: An Overview of a Research Program, U.S. Department of Transportation, 1978.

Moderator's remarks on "Experience with Transit Pricing," published in Urban Transportation Economics, Special Report 181, pp 38-9, Transportation Research Board, 1978.

"A Quick Quantitative Assessment of Certain Impacts of a Proposed Gasoline Rationing Plan on the New and Used Car Markets," with Robert G. McGillivray and Ulrich F. W. Ernst, Urban Institute Working Paper 21-1-2, 1978.

"Some Thoughts about Transit Service Variation Experiments," with Michael E. Beesley, Urban Institute Working Paper 5066-3-1, 1977.

"An Econometric Model of Bus Transit Demand and Supply," with Gershon Alperovich and Keith M. Goodman, Urban Institute Working Paper 5032-1-4, 1977.

"The San Diego Transit Data Base: Tape Users' Guide," Urban Institute Working Paper 5066-5-4, 1977.

"Policies to Increase Transit Ridership: A Review of Experience and Research," Urban Institute Working Paper 5032-1-3, 1977.

Moderator's remarks on "Management of Demand," published in Transportation System Management, Special Report 172, Transportation Research Board, pp. 9-10, 1977.

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"Urban Transportation and the Press: A Survey of Editorial Opinion," with Marie L. Olsson, Transportation 5, pp. 407-18, 1976.

The Consequences of Transit Fare and Service Policies: A Classified Bibliography, with Rebecca L. Rea, Council of Planning Librarians Exchange Bibliography 1096, 1976.

"Transportation," with Melvyn D. Cheslow, in Gorham, William, and Nathan Glazer, (eds.) The Urban Predicament, The Urban Institute, pp. 281-356, 1976; and (in shortened form) in The Transit Law Review (forthcoming).

Report to Congress Concerning the Demonstration of Fare-Free Mass Transportation, drafted, Urban Mass Transportation Administration, U.S. Department of Transportation, 1975.

"What Are We Learning from Experiments with Reduced Transit Fares?" in Hamer, Andrew M. (ed.) Out of Cars/Into Transit: The Urban Transportation Planning Crisis, Georgia State University, pp. 21-43, 1976.

Para-Transit: Neglected Options for Urban Mobility, with Ronald F. Kirby, Kiran U. Bhatt, Robert G. McGillivray and Martin Wohl, The Urban Institute, 1975.

"The Effects of Atlanta's Short-Range Improvement Program on System Ridership," Proceedings of the Transportation Research Forum 15, pp. 496-504, 1974.

"Alternative Strategies for Reducing Gasoline Consumption by Private Automobilies," with Robert G. McGillivray, Transportation Research 8, pp. 349-61, 1974.

"Reduced Fare and Fare-Free Urban Transit Services--Some Case Studies," Urban Institute Paper 1212-3; and in Symposium on Public Transport Fare Structure: Papers and Discussion, Transport and Road Research Laboratory Supplementary Report 37UC, pp. 37-54, 1974.

"Transit Improvements in Atlanta--The Effects of Fare Service Changes," Urban Institute Paper 1212-2, 1974.

"Some Evidence of Transit Demand Elasticities," Transportation 2, pp. 25-52, 1973.

"Short-Term Urban Car Rentals--Some Notes About the European Experience," Urban Institute Working Paper 4800-2-1, 1973.

"Aggregation and Disaggregate Behavioral Models," with Damian J. Kulash and Robert G. McGillivray, Urban Institute Working Paper 708-74, 1972.

"Transit Price Elasticities," paper for the IIPF Roundtable on Urban Transportation Policy, Columbia University, 1972.

"Innovation in Urban Transportation: A Report from the 1971 Conference on Cities," with J. H. Bertin, published in Conference on Cities, Final Report, pp. 73-84, 1971.

"The Empirical Investigation of Transit Demand," Urban Institute Working Paper 708-53, 1971.

"Commuters into Central London," with Richard Berthoud, Social and Community Planning Research, 1970.

"The 1970 GLC Election--Some Preliminary Research," 1970.

"The Employment Practices of Civil Engineering Firms," Research Services Ltd., 1969.

"Assessment of 1981 Shopping Space Requirements in the London Borough of Lambeth," with R. W. Evely, Development Analysts Ltd., 1969.

"London Transport Fare Increases: An Investigation of Research Methodology," Research Services Ltd., 1969.

"National Travel Survey, 1964-1968," with G. W. Hoinville, Research Services Ltd., 1969.

Joint Industry Committee for Poster Audience Surveys, Newport Survey: Technical Document, JICPAS, 1969.

Merseyside Area Land Use/Transportation Study, Technical Report 4: Goods Vehicle Survey, MALTS, 1969.

Merseyside Area Land Use/Transportation Study, Technical Report 2: Home Interview Survey, MALTS, 1968.

Report of the Committee of Enquiry Under Professor E. H. Phelps Brown into Certain Matters Concerning Labour in Building and Civil Engineering: Vol. 2, Research Supplement, Her Majesty's Stationery Office, 1968.

"Exposure to Posters: Some New Developments," Outdoor Advertising, July/August 1967, pp. 10-16; and Studi e Ricerche, Marzo/Giugno 1968, pp. 19-34.

Professional Affiliations

Transportation Research Board
Transportation Research Forum
Market Research Society (Full Member)
Regional Studies Association

RONALD F. KIRBY
Principal Research Associate

Education

1969	Ph.D., Applied Mathematics, University of Adelaide, South Australia
1964	B.Sc., (Honors), University of Adelaide
1963	B.Sc., University of Adelaide

Career Brief

Dr. Kirby has been recognized as a leading expert on issues of urban transportation, with more than ten years of research experience on various policy problems in this field. He has established a national reputation in the area of paratransit services as well as alternative subsidy schemes for special user groups. His current responsibilities include the development and technical support for demonstration projects designed to test innovative policies for improving urban mobility. He is also engaged in an assessment of the decision-making process in local transit operations.

Dr. Kirby headed the group that prepared the first comprehensive study of the various forms of paratransit services. The book emerged from that effort in 1975 contained several recommendations for research, development and demonstration of paratransit concepts. It has served as a focus for the rapidly growing interest in these types of public transportation. Over the last four years, Dr. Kirby has assisted the SMD Program in designing and implementing demonstration projects for paratransit and special user groups. He has also provided technical assistance to the local communities involved in the demonstration program and has conducted a number of cross-cutting studies.

He assisted the Minnesota State Department of Transportation in structuring a $4.5 million paratransit demonstration program, and helped organize and write the first annual report. In another project, Dr. Kirby designed and supervised the preparation of materials for a series of regional seminars on UMTA's paratransit policy statement.

Dr. Kirby has written numerous journal articles and given a large number of presentations on questions of paratransit and special user groups. He heads The Urban Institute's Transportation Studies Program. In this capacity, he is involved in virtually all of the research and development efforts currently underway. In addition, he provides advice to governmental agencies both in the U.S. and abroad.

Prior to joining The Urban Institute, Dr. Kirby worked with private consulting organizations in the U.S. and abroad.

Professional Background

1975-present	Principal Research Associate and Program Director, Transportation Research, The Urban Institute
1971-75	Senior Research Associate, The Urban Institute
1969-71	Senior Associate, Planning Research Corporation, McLean, Virginia
1966-69	Consultant, P. G. Pak-Poy and Associates, Parkside, South Australia
1965-66	Consultant, South Australian Highways Department

Selected Publications

Para-Transit: Neglected Options for Urban Mobilty, with K. U. Bhatt, M. A. Kemp, R. G. McGillivray, and M. Wohl, Urban Institute Book 87000, April 1975.

Para-Transit: A Summary Assessment of Experience and Potential, Urban Institute Paper 91000, December 1974.

"Financing Public Transportation," with R. G. McGillivray, in Public Transportation: Planning Operations, and Management. (Englewood Cliffs, N.J.: Prentice-Hall, 1978.

"Mobility, Accessibility, and Travel Impacts of Transportation Programs for the Elderly and Handicapped," with R. G. McGillivray, in Behavioural Travel Modelling, (Proceedings of the Third International Conference on Behavioural Travel Modelling, Tanunda, South Australia, April 1977) London: Groom Helm, 1978.

"An Empirical Investigation of the Effects of Land Use on Urban Travel," with Kevin Neels, Melvyn D. Cheslow, and George E. Peterson, Urban Institute Working Paper 5049-17-1, August 1977.

"Improving the Mobility of the Elderly and Handicapped Through User-Side Subsidies," with F. L. Tolson, Transportation Research Record 660, 1977.

"Alternative Subsidy Techniques for Urban Public Transportation," with R. G. McGillivray, Transportation Research Record 589, 1976.

"A Grid Fare Structure for Shared Taxi Services," Urban Institute Working Paper 5050-2-7, June 1976.

"Paratransit - A State of the Art Overview," Transportation Research Board Special Report 164, 1976.

Transportation Improvement and Road Pricing: A Demonstration Program, with K. U. Bhatt and M. E. Beesley, Urban Institute Paper 15900, September 1976.

"Some Promising Innovations in Taxicab Operations," with G. K. Miller, Transportation, vol. 4, no. 4, 1975.

"Are Subways Necessary?" Public Management, October 1975.

"An Analysis of Subscription Bus Experience," with K. U. Bhatt, Traffic Quarterly, July 1975.

"The Potential of Para-Transit," New York Affairs, vol. 2, no. 2, 1975.

"The Potential of Taxicabs for Providing Innovative Para-Transit Services," Transportation Research Board Special Report 154, 1974.

Road User Charges--Some Practical Considerations, Urban Institute Paper URI 66000, March 1974.

"A Methodology for Evaluating Public Transportation Alternatives in Small Urban Areas," with R. G. McGillivray, Urban Institute Working Paper 5018-1, November 1973.

Residential Zoning and Equal Housing Opportunities: A Case Study in Black Jack, Missouri, with F. de Leeuw and W. Silverman, Urban Institute Paper URI 19000, 1972.

"A Preferencing Model for Trip Distribution," Transportation Science, vol. 4, no. 1, 1970.

"The Minimum Route Problem for Networks with Turn Penalites and Prohibitions," with R. B. Potts, Transportation Research, vol. 3, no. 3, 1969.

Other Professional Activities

1973-76	Member, Editorial Advisory Board, Transportation Research
1974-75	Chairman, Transportation Science Section, Operations Research Society of America
1974-76	Associate Editor, Transportation Science
1975-76	Chairman, Advisory Committee on Paratransit, Transportation Research Board
1974-present	Member, Transportation Research Board Committee on Urban Transport Service Innovations (Paratransit)

ROBERT G. MCGILLIVRAY
Senior Research Associate

Education

1969	Ph.D., Economics, University of California, Berkeley
1959	B.A., Economics, Washington State University

Career Brief

The emphasis in Dr. McGillivray's research career has been on the empirical analysis of problems in transportation economics and policy and in related areas, such as energy and land use. During his seven years at The Urban Institute, he has managed and participated in projects concerned with investment, pricing, financing, taxation and cost analysis for a variety of transportation problems. His recent efforts have focused on the analysis of fare elasticities for on-call public transportation, the investigation of costs and productivity for bus transit operations, and a study of the financial position of the intercity bus industry. He is also involved in the evaluation of demonstration projects for rural public transportation.

In addition to his extensive research experience, Dr. McGillivray has also been involved in assisting local communities in developing demonstration projects in the areas of transit fare prepayment and user-side subsidies.

Professional Background

1971-present	Senior Research Associate, The Urban Institute
1973-74	Lecturer, Georgetown University
1969-71	Operations Analyst and Transportation Economist, Stanford Research Institute
1967-69	Lecturer in Business Administration, University of California, Berkeley
1966-67	Assistant Regional Scientist, Bay Area Transportation Study Commission
1960-66	Teaching and Research Assistant, University of California at Los Angeles and at Berkeley
1960-61	Junior Economist and Assistant Economist, RAND Corporation

Selected Publications

"Should the Intercity Bus Industry be Subsidizied", Traffic Quarterly, Volume XXXIII, no. 1, January 1979, p. 99-115.

"Mobility, Accessibility, and Travel Impacts of Transportation Programs for the Elderly and Handicapped," with Ronald F. Kirby, in: Behavioural Travel Modelling. (Proceedings of the Third International Conference on Behavioural Travel Modelling, Tonunda, South Australia, April 1977). London: Groom Helm, 1978.

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"Some Thoughts on the Theory of Traveler Benefit Measurement," Swedish Journal of Economics, Vol. 77, No. 2, 1975, pp. 265-272.

"Alternative Strategies for Reducing Gasoline Consumption by Private Automobiles," with Michael A. Kemp, Transportation Research, Vol. 8, No. 4/5, October 1974, pp. 349-361.

"Estimates of Optimal Congestion Tolls," Urban Institute Paper, URI 82000, July 1974.

"On Road Congestion Theory," Urban Institute Paper, URI 69000, March 1974.

"Mode Split and the Value of Travel Time," Transportation Research, Vol. 6, No. 4, December 1972, pp. 309-316.

"Some Problems with Urban Transportation Planning Models," Traffic Quarterly, Vol. XXVI, No. 4 October 1972, pp. 547-559.

"Binary Choice of Urban Transport Mode in the San Francisco Bay Region," Econometrica, Vol. 40, No. 5, September 1972, pp. 827-848.

"A Case of Inter-Class Subsidy in Urban Public Transportation," with Glenn Shelly, The Annals of Regional Science, Vol. V, No. 2, December 1971, pp. 126-136.

"A Theory of Highway Investment Planning," The Engineering Economist, Vol. 16, No. 2, Winter 1971, pp. 87-102.

"Estimating the Linear Probability Function," Econometrica, Vol. 38, No. 5, September 1970, pp. 775-776.

"Demand and Choice Models of Modal Split," Journal of Transport Economics and Policy, Vol. IV, No. 2, May 1970, pp. 192-207.

Other Professional Experience

Member, TRB Committee on Rural Public Transportation

Organized and moderated session at a conference on "Urban Problems and Public Policy Choices", Washington, D.C., 1975.

Presented papers to meetings of the Econometric Society, American Statistical Association, Western Regional Science Association and Transportation Research Board.

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Research Associate II

Education

1972 B.A. (cum laude), Sociology (Minor: Research Methods), Trinity College, Washington, D.C.

Career Brief

Ms. Tolson's current work involves developing and designing transportation demonstration projects to test the effects of user-side subsidies as an alternative approach to improve the mobility of special user groups in different forms and different operational settings. Thus far she has developed four federally funded projects and continues to provide technical assistance to those cities. This work has led her to become generally knowledgeable about federal programs benefitting these groups as well as agency regulations governing administration of the programs. Her interest in the participation of the private transportation providers, primarily taxicab companies in the demonstration projects, has directed Ms. Tolson to study the role of the taxicab industry in public transportation and the impacts of federal and local policy on the taxicab industry, including such issues as labor protection, regulation and productivity. Ms. Tolson also handled much of the preparatory work for a series of workshops on paratransit, planned for ten cities across the nation. Her past work was primarily concentrated in the field of program evaluation. Ms. Tolson co-authored manuals on developing and operating monitoring and evaluation systems for criminal justice planning agencies and participated in the evaluation of various social service programs.

Professional Background

1975-present Research Associate, The Urban Institute

1972-75 Consultant, The Urban Institute

1971 Computer Aide, Federal Home Loan Bank Board, Washington, D.C. (summer)

1970-71 Computer Trainee (work-study), Federal Home Loan Bank Board, Washington, D.C.

Selected Publications

"Interest Among Transit Systems in Demonstrations of Fare and Service Level Policies," with Ulrich F.W. Ernst, Urban Institute Working Paper 5110-3-1, November 1978.

"Supporting Mass Transportation in Small Urban Areas through User-Side Subsidies: A Demonstration in Danville, Illinois," with Ronald F. Kirby, Urban Institute Working Paper 1186-4-1, December 1978.

"Improving the Mobility of the Elderly and Handicapped Through User-Side Subsidies," with Ronald F. Kirby, Improving Transportation Services for The Elderly, The Handicapped, and The Disadvantaged, Transportation Research Record 660, Transportation Research Board, Washington, D.C. 1977.

"Monitoring for Government Agencies," with John D. Waller, Dona MacNeil Kemp, John W. Scanlon, and Joseph Wholey, Urban Institute, February 1976.

"Intensive Evaluation for Criminal Justice Planning Agencies," with Donald Weidman, John Waller, Dona MacNeil, and Joseph Wholey, National Institute of Law Enforcement and Criminal Justice, Law Enforcement Assistance Administration, U.S. Department of Justice, July 1975.

"Monitoring for Criminal Justice Planning Agencies," with John Waller, Dona MacNeil, John Scanlon, and Joseph Wholey, National Institute of Law Enforcement and Criminal Justice, Law Enforcement Assistance Administration, U.S. Department of Justice, March 1975.

"Summary of Initial Assessment and Evaluation Study Design for Operation Breakthrough," Urban Institute Contract Report 213-2, with Donald Weidman, and Joseph Wholey, Urban Institute, December 1973, revised May 1974.

Other Professional Activities

Attended the Third UMTA R&D Priorities Conference, November 1978, sponsored by The U.S. Department of Transportation, Urban Mass Transportation Administration.

Speaker at August 1978 meeting of Women's Transportation Seminar, Washington Chapter.