NATIONAL TRANSPORT RESEARCH CENTRE

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TAXI INDUSTRY
IN
RAWALPINDI AND ISLAMABAD
VOLUME I

NTRC-96

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Preface

This study has been carried out by the National Transport Research Centre, Islamabad on behalf of the Government of Pakistan.

Technical Assistance has been provided by the Overseas Development Administration of the United Kingdom Government as part of a project supervised by the Overseas Section of the Transport and Road Research Laboratory.

The views expressed in this report are not necessarily those of the respective Governments.

Maps are based on the Survey of Pakistan guide sheets to Rawalpindi and Islamabad and are reproduced with the sanction of the Survey of Pakistan.

We should like to acknowledge the help afforded to us throughout this study by all these who responded so patiently and courteously to our probing and questioning; taxi passengers, drivers, owners and officials in various Federal and Provincial Government departments and agencies.

C O N T E N T S

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1 INTRODUCTION

1.1 Origins of the study

This study has its origins in a Presidential Directive (4.3.1985) instructing that the:

"Minster(s) for Finance, Planning and Development, Production and Communications should work out a scheme for improvement of the Taxi Services in the main cities of the country based on locally manufactured cars (Suzuki and Morris) through appropriate measures like the setting up of cooperative societies for the purpose as has been done in India".

Where these Indian cooperatives are and how they operate we cannot say since the Government Department to whom this aspect of the investigation was entrusted has yet to report. Fortunately, however, this is not too material since at a subsequent meeting of the Research Coordinating Committee it was agreed with Cabinet Office approval that, since there was a total absence of reliable information or data on which to evaluate any proposals concerning the taxi industry in Pakistan, the National Transport Research Centre (NTRC) should undertake a more thorough going investigation of taxi operations, covering such aspects as ownership characteristics, revenues, operating costs and other related issues.

1.2 Terms of reference

The terms of reference subsequently agreed with the Cabinet Office were:

1. To determine the number of taxis registered and on the road in the main cities, past and present.
2. To determine the proportion of demand met by taxi viz a vis other modes of transport in urban areas.
3. Analyse trends in taxis viz a vis other modes and to make projections for future years.

4. To determine utilization of taxis, distance operated, number of trips, number of passengers, trip length etc.

5. To determine operating costs, fuel, oil, repair maintenance, taxes, fines, wages of drivers, hire charges to owners etc.

6. To identify and analyse the location of taxi stands, availability of taxis, idle standing etc.

7. To determine supply characteristics, including availability of vehicles, credit facilities, ownership pattern etc.

8. To examine the rules and regulations concerning regulation and control of vehicles, fares etc.

9. To examine alternatives for improvement of taxi services.

10. To recommend policy measures for improvement of taxi services.

1.3 Background

The foregoing objectives need to be set in context. The major cities of Pakistan are undergoing a process of rapid urban expansion due to the high levels of natural increase and a process of inward migration from rural and smaller urban areas. In the last intercensal period the population of the largest urban areas increased by an average of 6% per annum. Accompanying this population growth has been an increase in the supply of urban transport services operated by the private sector who today provide the great majority of urban passenger services in all cities. This increase in supply has taken place not only in the stage carriage services, but also in contract and own account passenger operations and in taxi services. The number of vehicles involved in taxi operation has doubled, tripled and in some cases quadrupled over the last 10 years.

Today, the taxi service is an important component of the urban passenger transport system. It is used by rich and poor, by resi-

dents and visitors; it is used to supplement the stage carriage services where these are overloaded in peak hours or to get to and from areas where their routes do not penetrate. It is used regularly by some segments of the population, only infrequently in case of emergencies by others; it is used not only by passengers but also for carriage of bulky goods, merchandies of all sorts and even livestock.

In short, the taxi system is as essential to the economic and social welfare of the area it serves as are the other modes of urban transport with which it co-exists and sometimes competes.

1.4 Study methodology

The objectives set for the study can be subsumed into a small number of areas of enquiry. The first is to examine the general trends in taxi provision in the main cities and the role that the taxi plays in meeting the demand for urban transport (objectives 1,2 and 3). The second is to determine in detail the use made of the taxi system, and how the system performs in relation to the travelling public's needs and the level of service provided (objectives 4 and 6). The third is to investigate the supply side of the industry and identify ownership patterns, operating costs, revenues, and system ouput (objectives 5 and 7). Finally we should study the role of government in regulating the system and examine ways and means of improving the taxi service (objectives 8,9,10).

As far as the first task is concerned, this can be tackled only by collecting together time series data from secondary sources and identifying the trends revealed. Success in this direction will depend on the availability of these data and the degree of confidence that can be placed on them.

The second and third group of objectives can best be met by a detailed investigation of the structure of the industry using cross sectional analysis. It was decided that such a study would be carried out in Islamabad and Rawalpindi and two extensive investigations were conducted; a survey of passenger use of the taxi

system carried out between September and December, 1985 and a survey with owners and drivers to determine the characteristics of the supply side of the industry undertaken between February and April,1986.

To some extent the pursual of the last group of objectives is only possible once the findings of the first three are available i.e. it is necessary first to identify the nature of the problems affecting the industry and to quantify them before proposals for improvement can be formulated and evaluated. However, it became apparent at an early stage in the study that taxi systems in general have not received the same amount of attention from academics and researchers as other modes of urban transport. Hence there is no single source of reference which clearly explains the structure of the industry, the mechanism of its operations, and more importantly that deals in a systematic way with the all-important role of government in its regulation. It was with this lacuna in mind that a separate working paper "The Economics of the Taxi Industry" was prepared at NTRC (Briggs D.A. 1986). It is hoped that this paper goes some way in providing the information necessary for an understanding of the factors involved in the formulation of policy and regulation of the industry.

1.5 Contents of the report

In Chapter 2 of the report we deal with the first group of objectives; presenting and discussing data on recent trends in the taxi industry in the major cities of Pakistan and its legistative/administrative framework. From there we move to a detailed investigation of the industry as found in Rawalpindi and Islamabad. Chapter 3 describes the procedures that were adopted in the two surveys which were undertaken and which provide the bulk of the primary data upon which the remainder of the study is built. Chapter 4 presents our findings with respect to the numbers and types of vehicles and their mode of operation, whilst Chapters 5 and 6 deal with an analysis of the ownership structure of the industry and with the drivers.

In Chapter 7 we concentrate on the users, describing some of the characteristics of the passengers, the journies being made by taxi, and the fares paid. This is followed in Chapter 8 by a discussion of issues related to level-of-service attributes, such as access to taxi stands, waiting times and passenger's attitudes to vehicles and fares. Chapter 9 presents the extensive data collected on operating costs and in Chapter 10 we analyse the economic performance and productivity of the various segments of the industry. Finally, Chapter 11 focusses on the policy implications of the findings revealed in the preceding parts of the work.

This study has necessarily involved a great deal of data collection and analysis. The primary tabulations which from the basis for much of the detailed analysis have been collected together and are presented in separate supplementary volumes.

2 THE TAXI INDUSTRY IN PAKISTAN

2.1 The legal and administrative framework

It is normal practice, virtually the world over, for governments to regulate the workings of the taxi industry in some way. Governments may grant monopolies to individual operators, or to groups of operators, they may impose restrictions on territories to be covered, they may impose controls governing vehicle types and standards (quality controls), controls on the maximum number of vehicles allowed to operate (quantity controls). They may also regulate fares.

The Government of Pakistan has reserved to itself similar powers. The legal basis upon which the industry in Pakistan is founded is determined by a body of legislation based on the Motor Vehicle Act of 1939, the West Pakistan Motor Vehicle Rules (1969) and Provincial Motor Vehicles Ordinance (XIX of 1965) and subsequent ordinances and regulations largely concerned with amendments to the financial provisions contained within the original legislation.

The legislation admits two types of vehicle for use as taxis:

- The motor taxi cab which may carry upto 5 passengers.
- The motor cab rickshaw; a three wheeled vehicle which should not exceed 900 lbs weight and be designed to carry not more than two passengers.

The taxi is classified as a Public Service Vehicle (P.S.V) and as such the owner and driver have to satisfy certain conditions before being allowed to operate for hire.

a) The driver must have a driving license which has been countersigned as authorizing him to drive a P.S.V. To drive a taxi cab he must have held a motor car driving licence for at least one year. In this respect a motor cab is distinguished as a separate class of vehicle and in order to qualify for a PSV endorsement to his driving licence the prospective taxi driver must satisfy the examiner as to his character and absence of

criminal antecedents. He must also pass a test on the geography of the city in which he intends to operate.

The authority which administers this test in the same as that which grants the licence, i.e. the Traffic Police.

A licence to drive a motor cab rickshaw as a P.S.V. may be granted without the driver first possessing a car driving licence. There is in fact no class of 3-wheeled vehicles given in the first schedule of the Motor Vehicles Ordinance (which defines the types of vehicles for which licences to drive shall be granted). The legislation is not clear on this point, but it is generally assumed that the rickshaw driver should have a licence valid to drive a motor cycle.

Every P.S.V. driver is required to be issued with a driver's badge and registration number by the Regional Transport Authority (RTA), an agency of the Provincial Government.

b) The owner of a taxi must obtain a route permit from the Regional Transport Authority. To qualify for such a permit the owner must for each vehicle, complete an application form, pay the appropriate fee and produce a certificate of fitness issued by the Motor Vehicle Examiner (MVE) and an insurance certificate.

- The RTA may limit the number of permits to be issued in any one area (Rules 58) and refuse to grant a permit if that maximum number has been reached.
- The RTA may impose a condition, limiting the validity of the permit to a particular urban area.
- The permit has to be renewed periodically. In the case of Rawalpindi/Islamabad, the RTA requires renewal at three yearly intervals; the maximum interval permissable.

c) A motor vehicle fitness test is required every six months. The purpose of this test is to ensure that the vehicle complies with the provisions of the motor vehicle fitness rules and it

is conducted by a Police Officer who is designated as Motor Vehicle Examiner. Taxis must be fitted with a taxi meter and the legislation specifically requires the meter to be tested and sealed by the MVE.

The determination of taxi tariffs is the responsibility of the Provincial Government, and in the case of the Punjab, different rates are specified for taxicabs and rickshaws.

Other isolated provisions having specific reference to taxi operations are to be found within the body of legislation dealing with such items as the size and placing of letters of the word 'Taxi' which must appear on each vehicle, the duties of owners to supervise their employees, and the designation and use of taxi ranks.

2.2 Taxi provision

The taxi mode of public transport is well represented in the public transport system of the major urban areas of Pakistan. A full discussion of the factors which determine rates of taxi provision (measured in terms of vehicles per thousand population) will be found in Chapter 2 of the complementary paper referred to in the introduction; it is perhaps sufficient here to comment that the number of taxis per 1000 population appears to be a function of the level of private vehicle ownership and of the level-of-service provided by stage-carriage public transport services. Provision rates can vary quite considerably from country to country and from city to city and in addition to the above factors they appear to be related to country's stage of economic development and of the size of the urban area in question. Rates of more than 9 taxis per 1000 population have been reported for some Indian cities (Fouracre P.R, D.A.C. Maunder et al 1981), whilst in the more developed world, rates typically range between 0.5 to 2.0.

Ananalysis has been made of recent trends in provision rates for the larger urban areas of Pakistan based on vehicle registration data for the years 1974 to 1983, compiled by the National Transport Research Centre (NTRC 1985) and shown in Figures 2.1-2.7 and

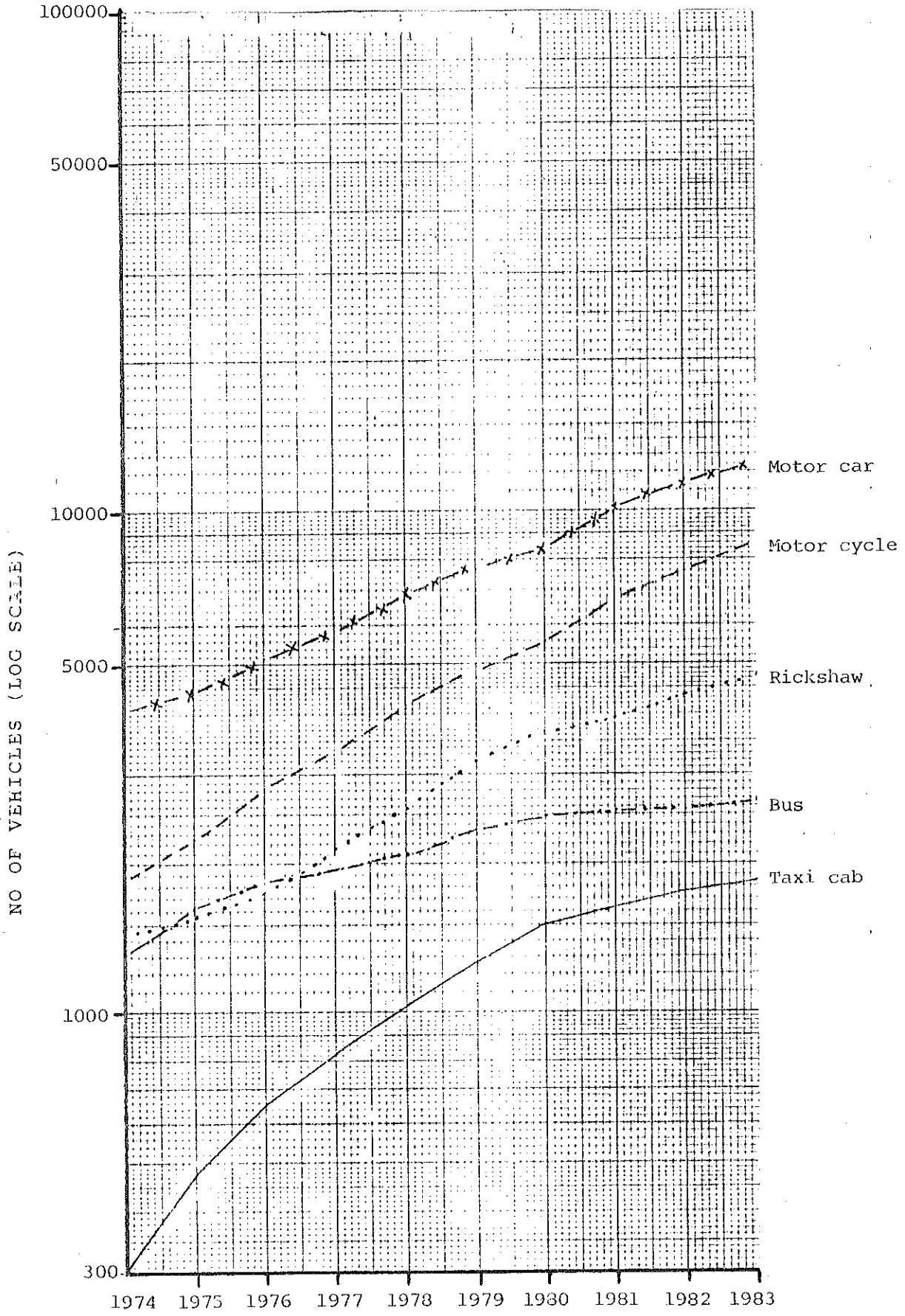


Figure 2.1

GROWTH IN NUMBER OF REGISTERED VEHICLES. PESHAWAR DISTRICT 1974-1983

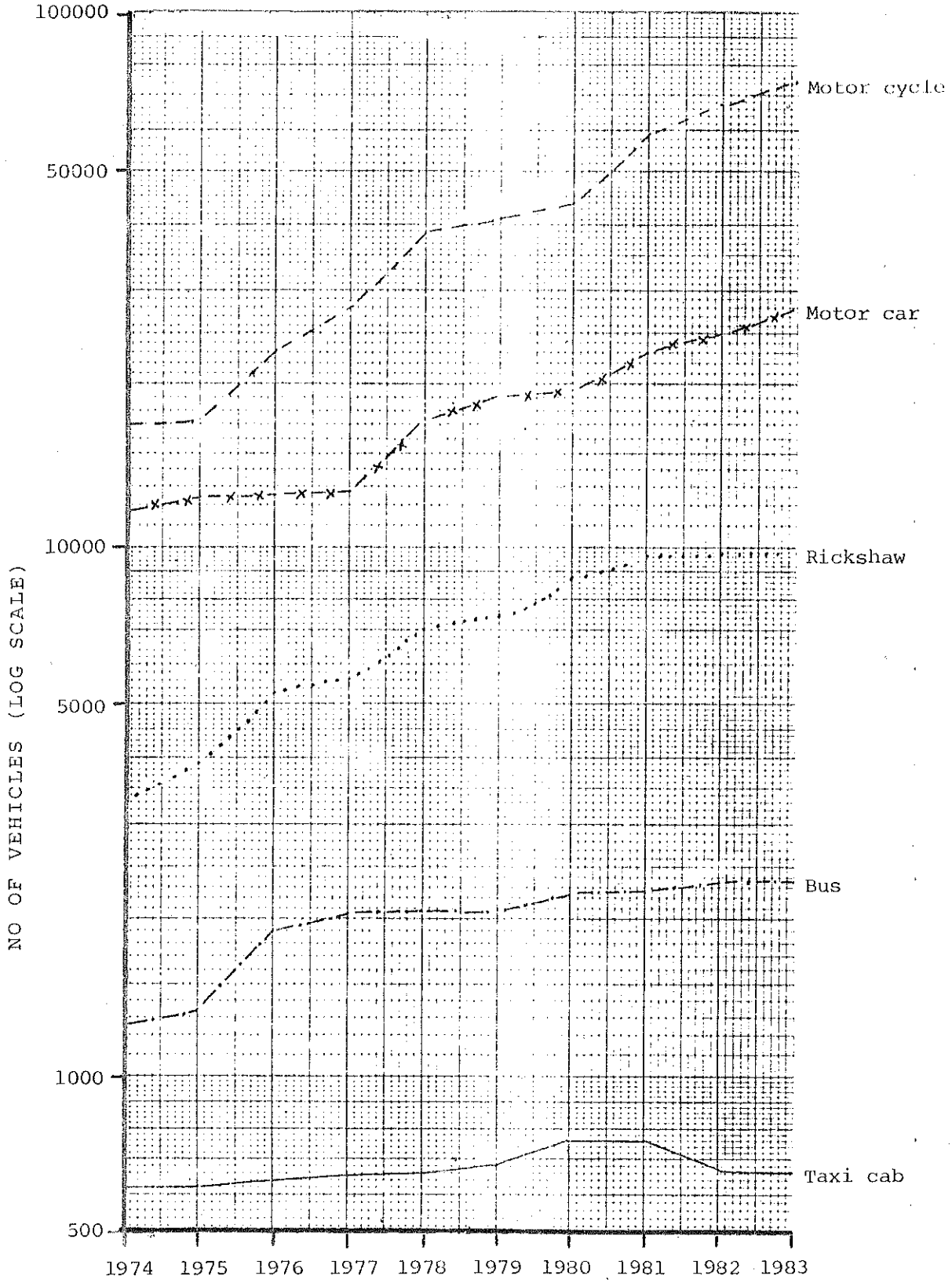


Figure 2.2

GROWTH IN NUMBER OF REGISTERED VEHICLES. LAHORE DISTRICT 1974-1983

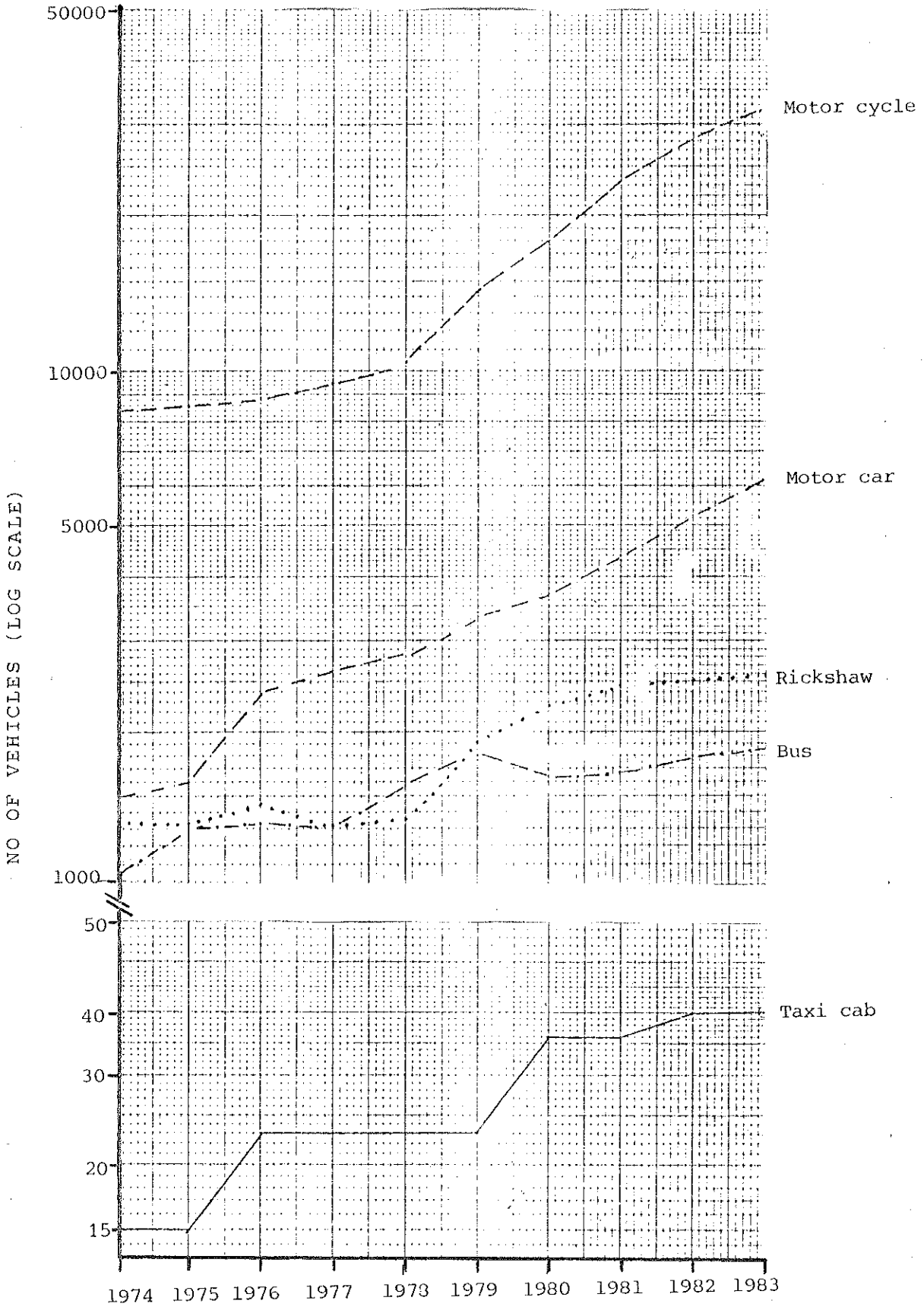


Figure 2.3

GROWTH IN NUMBER OF REGISTERED VEHICLES. FAISALABAD DISTRICT 1974-1983

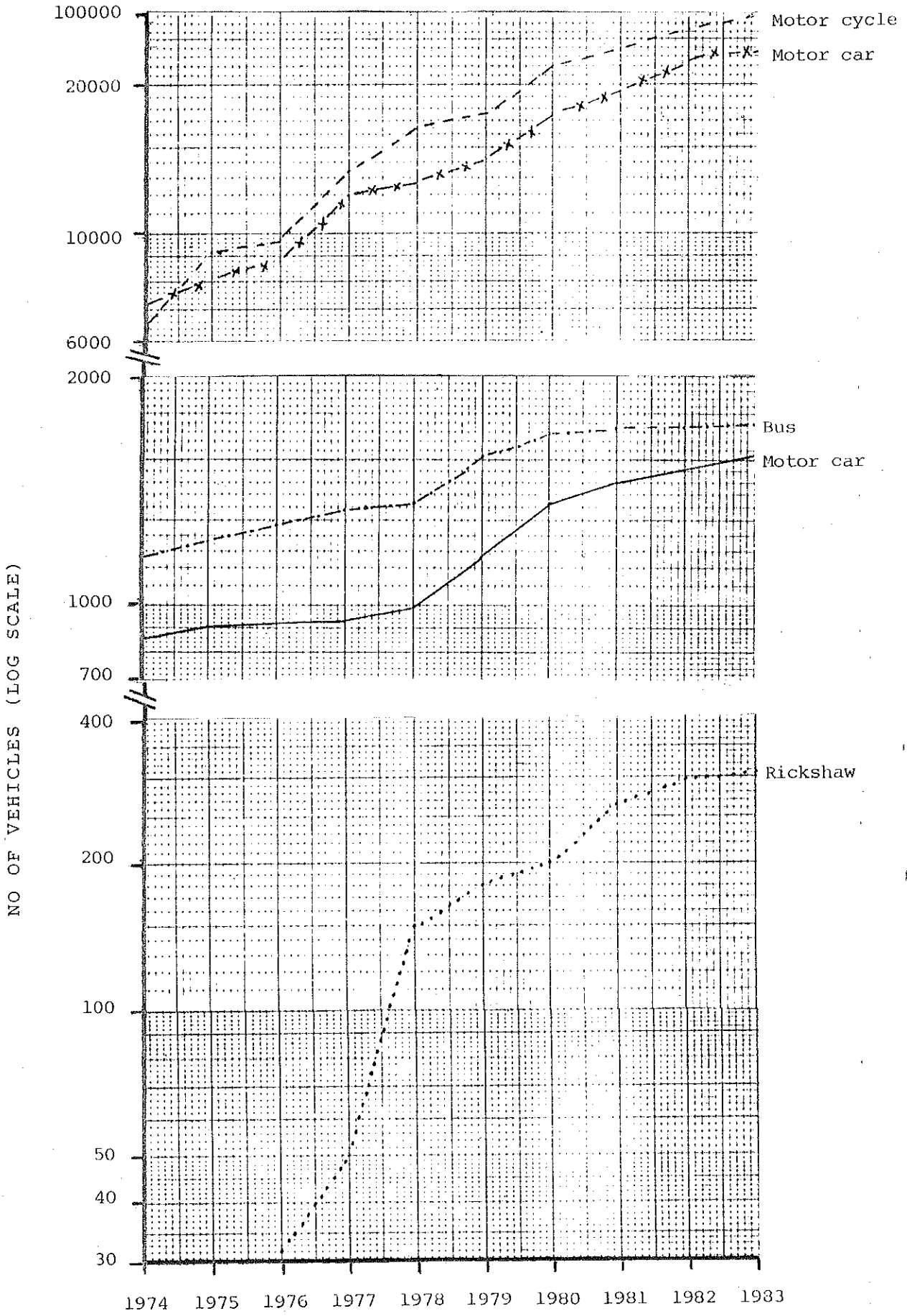


Figure 2.4

GROWTH IN NUMBER OF REGISTERED VEHICLES. RAWALPINDI DISTRICT 1974-1983

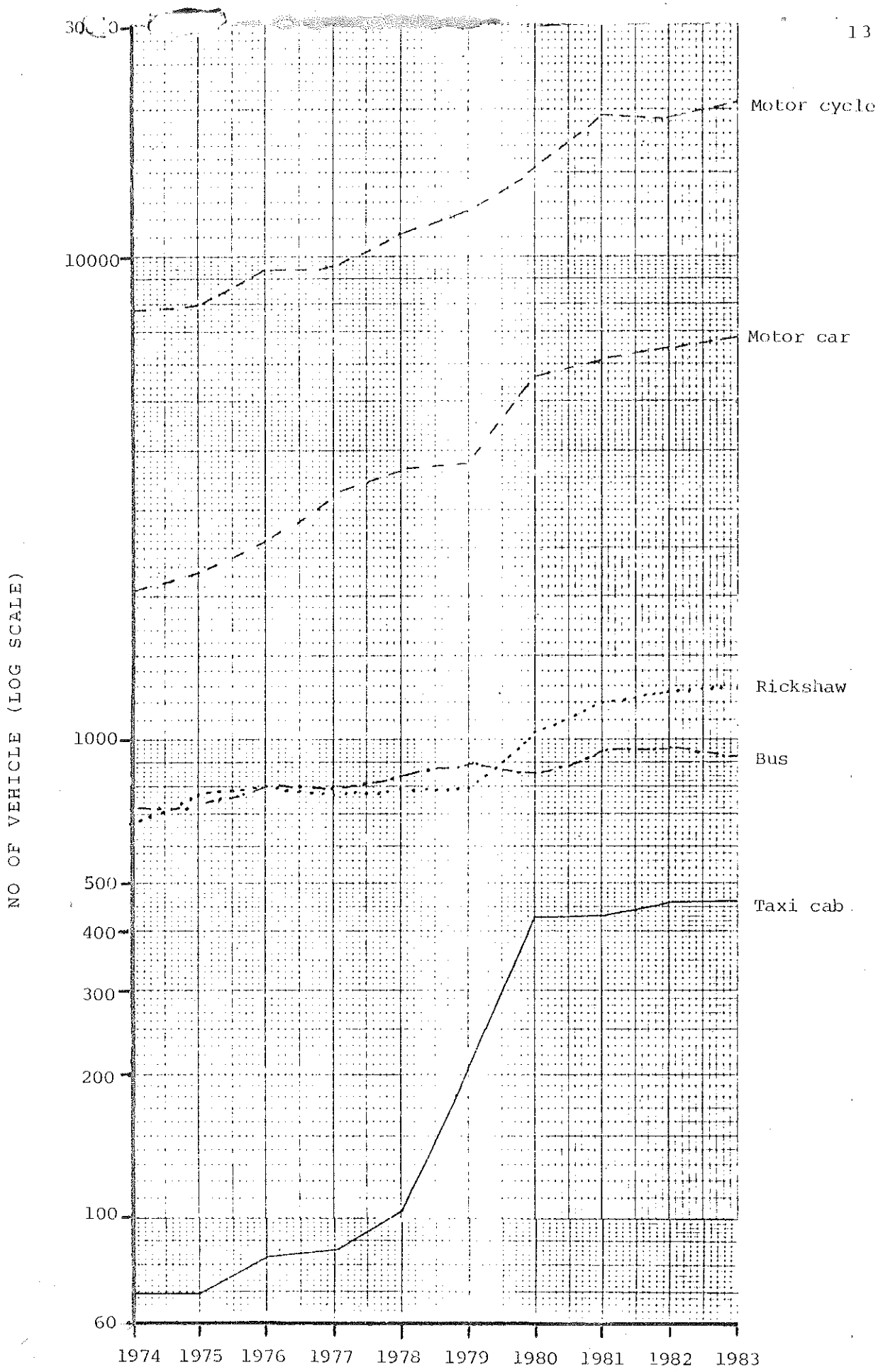


Figure 2.5

GROWTH IN NUMBER OF REGISTERED VEHICLES. MULTAN DISTRICT 1974-1983

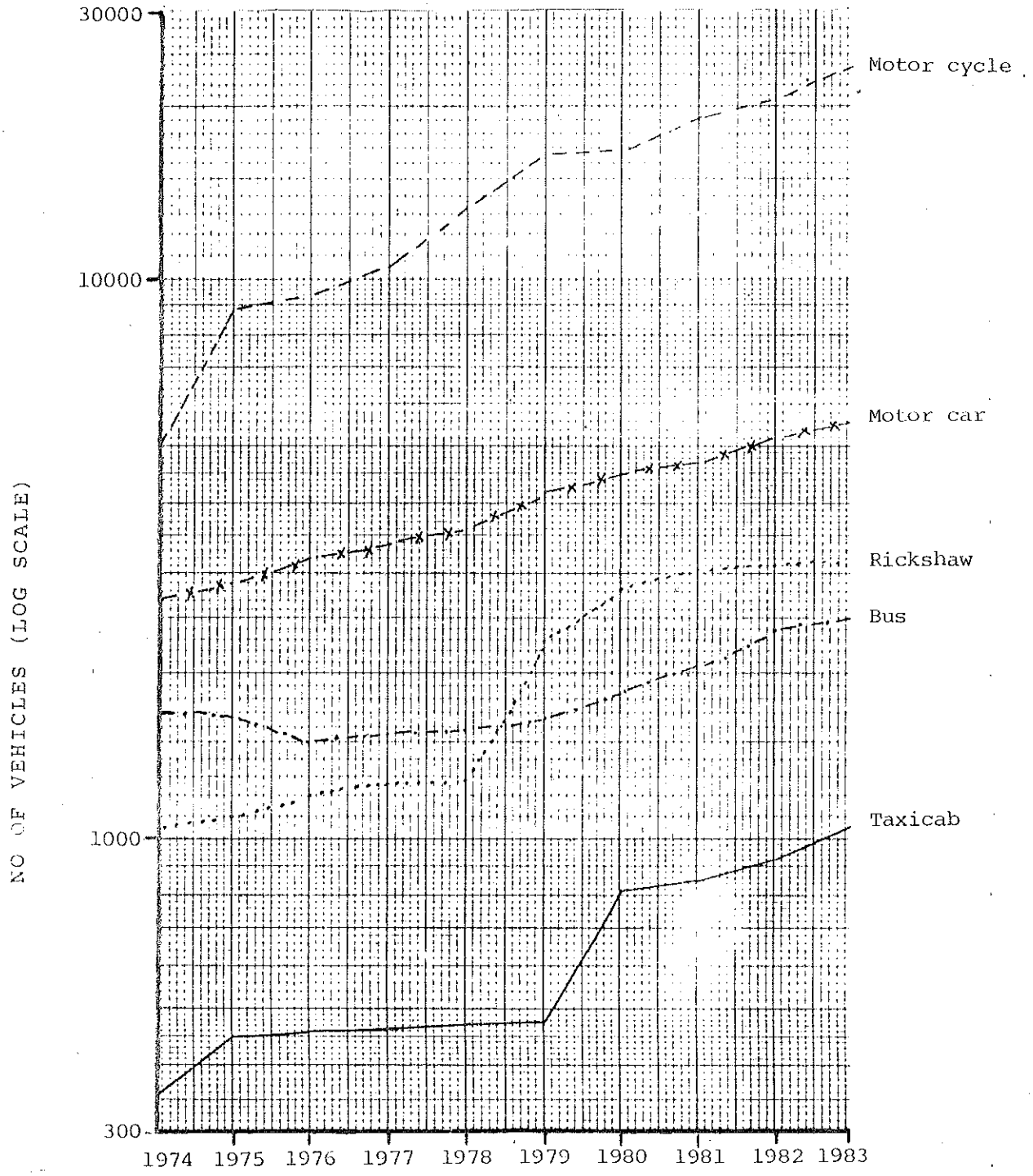


Figure 2.6

GROWTH IN NUMBER OF REGISTERED VEHICLES. HYDERABAD DISTRICT 1974-1983

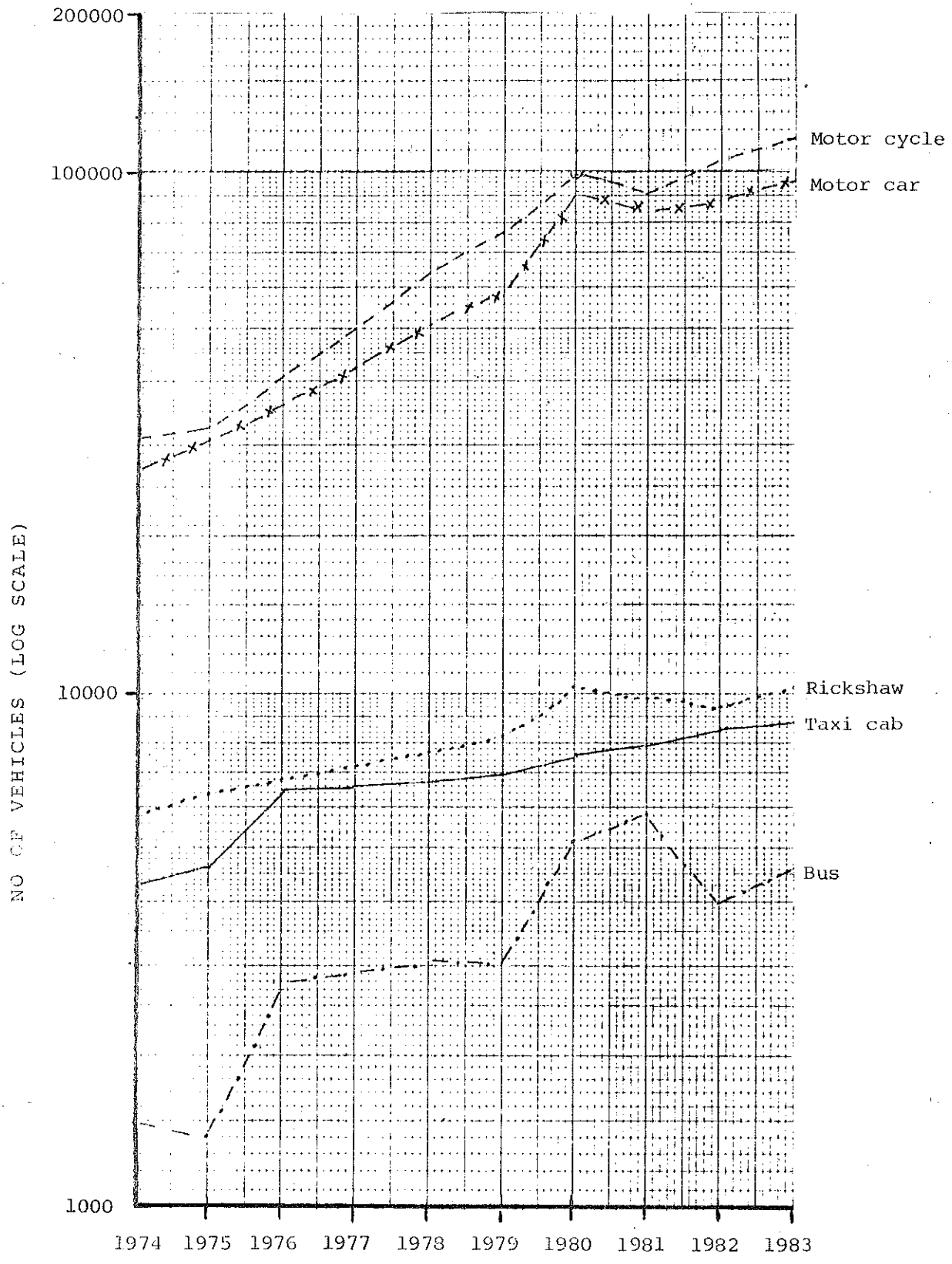


Figure 2.7

GROWTH IN NUMBER OF VEHICLES. KARACHI DISTRICT 1974-1983

population data from the 1981 Census Summary Reports.

Unfortunately, the smallest area for which vehicle registration statistics are compiled is that of the Administrative District, whose boundries often encompass a larg rural population as well as that of the main urban area. Since the taxis are to be found operating almost exclusively in the main urban area, provision rates using the District level population figures are bound to underestimate the real rate for the urban areas to a considerable degree. To overcome this problem a second provision rate was calculated using the population figures given just for the urban area. Although the boundaries the two data sets are not coterminous, it is felt that this second calculation should provide a better estimate of the actual provision rates.

Provision rates have been calculated for two years; 1974 and 1981 (Table 2.1) with the 1974 population estimates interpolated on the basis of a constant average annual growth rate over the intercensal period 1972-1981.

In interpreting these data two reservations must be made: the number of buses given does not accurately reflect the real extent of urban stage-carriage services since in cities like Lahore and Rawalpindi the bulk of these are provided by para-transit vehicles which would not be classed as buses in the registration statistics, whilst the number of taxi cabs shown for Peshawar is quite frankly a mystery since both the Traffic Police and RTA confirm that there are virtually no taxi cabs operating in that city.

Table 2.1

VEHICLE OWNERSHIP RATES - MAIN CITIES OF PAKISTAN

a) 1974 (vehicles per 1000 population)

	M. CYCLE		CAR		BUS		RICKSHAW		TAXICAB	
	DIST.	URBAN	DIST.	URBAN	DIST.	URBAN	DIST.	URBAN	DIST.	URBAN
PESHAWAR	1.02	5.70	2.00	11.18	0.71	4.00	0.77	4.33	0.16	0.91
LAHORE	6.22	7.43	4.01	4.79	0.45	0.54	1.23	1.47	0.22	0.26
FAISALABAD	1.94	9.61	0.30	1.50	0.30	1.51	0.25	1.25	0.003	0.01
RAWALPINDI	3.54	9.88	3.59	10.03	0.70	1.95	-	-	0.47	1.32
MULTAN	2.35	13.53	0.54	3.13	0.20	1.16	0.21	1.24	0.02	0.11
HYDERABAD	2.82	7.44	0.82	2.16	0.99	2.62	0.62	1.64	0.20	0.54
KARACHI	7.89	8.14	5.27	5.44	0.40	0.41	1.48	1.52	1.09	1.13

b) 1981 (vehicles per 1000 population)

	M. CYCLE		CAR		BUS		RICKSHAW		TAXICAB	
	DIST.	URBAN	DIST.	URBAN	DIST.	URBAN	DIST.	URBAN	DIST.	URBAN
PESHAWAR	2.97	12.04	3.82	15.46	1.13	4.57	1.73	7.01	0.72	2.19
LAHORE	17.03	20.47	6.19	7.44	0.65	0.78	2.76	3.31	0.21	0.26
FAISALABAD	5.05	21.57	0.83	3.55	0.36	1.54	0.52	2.25	0.007	0.03
RAWALPINDI	11.66	30.73	7.95	20.95	1.08	2.85	0.12	0.32	0.84	2.23
MULTAN	4.87	27.17	1.35	7.57	0.23	1.29	0.29	1.64	0.10	0.58
HYDERABAD	9.21	24.11	1.02	2.67	0.97	2.53	1.47	2.85	0.41	1.07
KARACHI	17.11	17.95	15.78	16.55	1.09	1.15	1.84	1.94	1.49	1.56

Combining the two private modes (motor-cycle and motor car) and the two taxi modes (taxi cab and rickshaw) for the urban population gives the set of relationships in Table 2.2

Table 2.2

CHANGES IN VEHICLE PROVISION RATES 1974-1981

(Vehicles per 1000 population)

	PRIVATE VEHICLES		TAXI VEHICLES	
	1974	1981	1974	1981
PESHAWAR	16.88	27.5	5.24	9.2
LAHORE	12.22	27.91	1.73	3.56
FAISALABAD	11.11	25.12	1.26	2.28
RAWALPINDI	19.91	51.68	1.32	2.55
MULTAN	16.66	34.74	1.35	2.22
HYDERABAD	9.6	26.78	2.18	4.92
KARACHI	13.58	34.55	1.65	3.5

Looking first at the 1974 combined taxi provision rates, we see that apart from those for Peshawar there is reasonable homogeneity, varying from 1.26 to 2.18 vehicles per 1000 population with an average of 1.58 for all the urban areas included. Seven years later we see a virtual doubling of the rate in all cities to show a 1981 average of 3.17 vehicles per 1000 population. In the same period, private vehicle ownership rates more than doubled, indicating that there has been a phenomenal increase in urban mobility over this period (even assuming that the use of vehicles has been constant).

One further feature requiring comment is the mix of vehicles used in the taxi sector. Here we see a great deal of heterogenity in the data; both in the terms of the proportional share of taxi cabs and rickshaws in each city and in the way the provision rates of each vehicle type have changed over the period in question.

Table 2.3

CHANGES IN VEHICLE COMPOSITION WITHIN THE TAXI SECTOR 1974-1981

(row percentage)

	1974		1981	
	TAXI CAB	RICKSHAW	TAXI CAB	RICKSHAW
LAHORE	15.0	85.0	7.3	92.7
FAISALABAD	0.8	99.2	1.3	98.7
RAWALPINDI	100.0	0.0	87.5	12.5
MULTAN	8.1	91.9	26.1	73.9
HYDERABAD	24.8	75.2	21.75	78.25
KARACHI	42.6	57.4	44.6	55.4

Table 2.3 shows a number of conflicting trends. In all cities except Karachi and Rawalpindi the share of rickshaws has remained high (above 75%) but in Faisalabad and Multan the proportion of rickshaws reduced slightly over the seven year period. Karachi with a more balanced vehicle mix has also seen the share of rickshaws decline slightly whilst in Hyderabad and Lahore the rickshaw proportion has increased. Rawalpindi stands apart, owing to a long-standing policy to prevent the ingress of large numbers of rickshaws into taxi operation; a policy which is still pursued despite the fact that it has been strongly contested and has even required Presidential intervention to resolve bitter disputes which have arisen between the operators and policy makers. Islamabad is served entirely by taxi cabs; the result of a policy which excludes rickshaw operators from the Capital District and which helps to reinforce the rickshaw restrictions in Rawalpindi.

We have specifically excluded Peshawar from these inter-urban comparisons since the rates derived for this city appear to be highly anomalous. Within the context of this study it is difficult to determine whether the anomaly arisen due to problems in the primary data sources or due to some unique feature of that city's transport system. What can be contributed is the observation that there are indeed a great many rickshaws in the city. Classified traffic counts give rickshaw volumes as high as 30% of total

mechanized traffic on some of the city's principal roads. Moreover, the day time population of the city has, in recent years, been swollen by an influx of Afghans from neighbouring refugee camps. Perhaps another contributory factor is that traditionally the rickshaw driver is a Pathan and Peshawar is his 'home' city. Certainly the ranks of rickshaw operators in other parts of Pakistan have been swollen by an outmigration of rickshaw drivers from the Northwest Frontier Province.

However, we cannot rule out errors in the basic statistics from which the relationships have been derived. The source of these statistics is the records of the Excise and Taxation Offices (ETO) of the various Provincial Governments. When we confront their statistics with those of a different source, we discover significant divergences.

In 1981 the Federal Bureau of Statistics (FBS) carried out a survey of the transport industry in all the major urban areas. (Federal Bureau of Statistics 1983). According to this source the number of vehicles of different types at the time of their survey is given in Table 2.4 where we can see for example that for Peshawar there were 3000 rickshaws (as against nearly 4000 according to ETO) and no taxi cabs. Using FBS figures the overall provision rate for Peshawar in 1981 would be in the region of 3.14 vehicles per thousand population; a rather more plausible figure. There are also very significant differences in the vehicle numbers reported for other cities; the number of taxi cabs in Karachi is put at some 60% of the ETO figure, those in Lahore at 50%, whilst the number quoted for Rawalpindi is nearly double that given in the ETO's vehicle registration statistics.

At this point in time it is probably impossible to adjudicate between the sources, and we must treat the relationships quoted in this chapter with a great deal of caution.

Table 2.4

NUMBER OF VEHICLES OF DIFFERENT CLASSES IN OPERATION IN 1981

TYPE OF VEHICLES	LAHORE	RAWALPINDI	PESHAWAR	QUETTA	KARACHI
BUSES	2,920	965	1,195	190	1,375
MINI BUSES	1,745	980	1,355	86	2,890
TRUCKS	1,435	3,555	5,365	1,405	5,545
MINI TRUCKS	1,430	-	-	125	2,960
TAXIS	340	3,085	-	15	4,740
RICKSHAW	7,555	320	3,000	1,500	9,360

Source:
Federal Bureau of Statistics 1983

2.3 Previous studies

The only study which has touched upon the taxi industry in any systematic way is the previously referred to survey conducted by the Federal Bureau of Statistics in 1981. The purpose of that study was to estimate the value added to the economy from private sector public transport operations; both goods and passenger services. The reports on the study unfortunately do not indicate how precisely the data were collected nor how costs were defined. We do know however, that they were compiled from interviews with operators in 1981 in the offices of the respectives RTA's at the time that renewal of route permits was being sought. Tables 2.5 and 2.6 summarise for taxicabs and rickshaws respectively the main findings of that survey.

Taking the data at their face value we see that industry output varies between cities and also between vehicle types. In Rawalpindi and Lahore, rickshaws performed 30% and 50% more kms daily than the taxicabs, but not as many as the rickshaws of Peshawar where there are no taxicabs to compete. In Karachi, taxicabs covered 13% more kms daily then their rickshaw counterparts.

Distance covered annualy ranged from 25,000 kms for taxicabs in Lahore through to 57,000 kms for rickshaws in Peshawar. Total operating costs ranged from Rs.0.51 to 0.74 per km for rickshaws and from Rs.0.87 through to Rs.1.30 per km for taxicabs. Costs were put at approx 50% of revenue for rickshaws and at about 60% for taxicabs.

Finally, the study reveals that everywhere, the ownership pattern of the whole taxi sector is dominated by owner drivers, each typically owning but one vehicle.

Table 2.5

OPERATING DATA - TAXICABS 1981

	RAWALPINDI	LAHORE	KARACHI	QUETTA
TOTAL EXPENSES PER VEHICLE (Rs)	29,994	32,656	35,075	35,600
ANNUAL FUEL COST (Rs)	23,915	23,712	26,652	23,667
ANNUAL DISTANCE TRAVELLED (kms)	37,006	25,056	40,522	35,798
TOTAL OPERATING COST/KM (Rs)	0.81	1.30	0.87	0.99
FUEL & LUBES AS % OF OPERATING COSTS	79.73	72.6	76.0	66.5
GROSS ANNUAL REVENUE (Rs)	58,564	59,344	66,635	54,200
REVENUE PER VEHICLES/KM (Rs)	1.58	3.37	1.64	1.51
NET REVENUE (Rs)	28,569	26,688	31,560	18,600
OPERATING DAYS PER ANNUM	297	270	296	288
FUEL CONSUMPTION (KMS/LITRE)	7.9	6.2	8.14	8.1
DAILY KMS.	124.6	92.8	136.9	124.3

Source:
Federal Bureau of Statistics 1983

Table 2.6

OPERATING DATA - RICKSHAWS 1981

	RAWALPINDI	PESHAWAR	LAHORE	KARACHI	QUETTA
TOTAL EXPENSES PER VEHICLE (Rs)	25,623	29,441	28,822	22,472	24,048
FUEL COSTS (Rs)	16,457	23,957	22,765	16,857	18,479
ANNUAL DISTANCE TRAVELLED (kms)	45,280	57,528	45,026	36,510	32,302
TOTAL OPERATING COST/KM (Rs)	0.57	0.51	0.64	0.62	0.74
FUEL & LUBES AS % OF OPERATING COST (Rs)	64.22	81.37	79.0	75.0	76.8
GROSS ANNUAL REVENUE (Rs)	52,696	61,044	65,162	41,438	41,206
REVENUE PER VEHICLE/KM (Rs)	1.16	1.06	1.45	1.13	1.28
NET REVENUE (Rs)	27,070	31,603	36,340	18,966	17,158
OPERATING DAYS PER ANNUM	291	331	303	300	317
FUEL CONSUMPTION (KMS/LITRE)	12.9	16.4	11.5	11.35	8.9
DAILY KMS.	155.6	173.8	148.6	121.7	101.9

Source:
Federal Bureau of Statistics 1983

2.4 The informal taxi sector

It is a not uncommon feature for informal or parallel (unlicensed) operations to exist side by side with the licensed taxi trade. Understandably, it is often difficult to quantify the scale of these operations, but it is known that in cases where strict (and unreasonable) quantity controls are enforced, the informal sector may be larger than the formal (this is so in New York City).

In Pakistan an informal sector is known to operate, but there is no reliable knowledge as to how extensive the scale of operation is. In the Islamabad/Rawalpindi study area there are two ways in which this sector operates. The first is through the medium of hire-cars, which may or may not be licensed as such, and which operate from the airport and the better class hotels. Hire-cars may also be found in other central city locations where they seem to be used primarily for longer-distance journies. The second mode of operation is that of the 'pirate' taxi; the private car owner who seeks to supplement his income by picking up fares at places like the airport and other such locations where control is lax. Although both these practices are known to exist from the researches carried out in this study, it has not proved possible to quantify them. We can conclude however that they appear to be conducted only on a relatively minor scale in Rawalpindi/Islamabad, but would appear to be more prevalent in cities such as Peshawar and Lahore where the number of taxicabs in the licensed sector is very small in relation to the size of the city.

2.5 Overall trends

The overall picture is one in which the number of taxis vehicles has in recent years been increasing at a rate higher than the increase in urban population; there are possibly twice as many taxis today per head of population than there were 10 years ago.

In the same period we have witnessed a similar increase in private vehicle (motor car and motor cycle) numbers, but a considerably smaller increase in the number of vehicles used for urban stage carriage services. It is not unreasonable to infer that the taxi system today, in some part at least, serves to rectify the inadequacies of supply in the stage carriage sector. Even so, the number of vehicles per head of population is already higher than is found in the developed world and in many other developing countries, and future requirements cannot be determined simply by extrapolating recent trends. Unfortunately, there are no reliable time-series data on the number of stage carriage

vehicles operating in the country's major urban areas. Current estimates for Karachi suggest an urban bus provision rate of 0.8 equivalent standard size buses per 1000 population, and that for Rawalpindi/Islamabad at about 0.9 per 1000 population.

There has been a trend in certain cities for the rickshaw to gain ascendancy over the taxicab. The FBS study suggests that the net annual operating revenue for the two types of vehicles is about the same, (except in Karachi) but operating costs for the rickshaw are only one half to two thirds of those for the taxicab. Since the authorized fare for rickshaws are also lower, we would expect that a simple search for economies from both the supply side and the demand side to be the driving force behind this trend.

The reduction in the proportion of the taxicabs has been most marked in Peshawar where there are today virtually no taxicabs to be found, but has also occured in Lahore, and most probably would have occured in Rawalpindi if it had not been for the policy to restrain the number of rickshaws, and to prohibit them altogether from operating in Islamabad.

As far as the government's role in regulating the industry is concerned there appears to be no systematic procedure followed or studies carried out for determining tariffs. Price increases are granted at irregular and infrequent intervals and apparently only as a consequence of pressures brought by industry representatives. The actual level of the increase is determined by a process of bargaining between the two sides.

The legislation provides basic powers for the regulation of the industry, both with respect to quantity controls and quality controls but it must be said that in many cases those powers are not exercised. There is in fact, a total absence of any coordinated policy with respect to the taxi industry in Pakistan.

3 THE RAWALPINDI AND ISLAMABAD SURVEYS

3.1 Introduction

In the virtual absence of any previous study or reliable statistics about the taxi industry the only recourse has been to collect the necessary information and data at first hand. In this chapter we outline the methods and procedures that were adopted in this task. A more thorough discussion of study methodology has been written up as part of a 'Study Brief' prepared during the early stages of the study and available as an internal working paper of NTRC; as is a detailed description of the procedures adopted in the conduct of the two interview surveys, carried out in Rawalpindi and Islamabad.

3.2 Preliminary studies

In order to determine the best method to organize an extensive data collection exercise which would provide a reliable, quantitative assesment of the structure of the industry and its operations and to plan the execution of that exercise, it was first necessary to aquire some prior knowledge (of a qualitative nature) as to the induutry's size, its modus operandi and its problems. This was done through a series of discussions with taxi drivers, with the traffic police, the RTA, and the Drivers Unions, as well as by direct observation of operating practices in various parts of the study area.

The study area comprises an estimated total urban population of 1.38 million spread over some 160 square kilometres of built up area in two contiguous settlements.

The Federal Capital, Islamabad built along the lines of grid like master plan of the late 1950's has a resident population of less than one third of its neighbour Rawalpindi. It is administered by the Federal Government through its Capital Development Authority. Rawalpindi is the largest city in the northern part of the Province of the Punjab and has a more complex pattern of local government

comprising a Municipal Corporation, and a military administration controlling the several Cantonment areas which today have large civil populations and various important business districts.

The urban public transport system is provided for in part by services of the Punjab Urban Transport Corporation, but mainly by the private sector, operating a wide range of vehicles including buses, mini-buses, Ford transit vans, Suzuki pick-ups, and tongas (horse drawn vehicles) as well as the taxis.

It was established that there could be as many as 4000 taxis operating throughout the city. The taxi drivers prefer to operate from stands, and a great many unofficial stands have emerged over the years. The first step was to map the location of these stands and note how many taxis could be found waiting at one time, which would give some indication of the volume of passenger demand at each locality. In all, some 89 separate 'stands' were identified of which all but a few were included in the survey (Figure 3.1).

The data required could be split between that necessary to describe the demand side and that the supply side, and it soon became evident that information about passenger demand would be the most difficult to deal with due to the absence of a clearly defined sample frame. It was therefore decided to conduct our survey in two stages.

The first would deal with the passengers, and would be carried out in the form of a systematic random sample survey in order to obtain reliable and inbiased information about trip length, fares paid, revenue and the O-D pattern of journies made. At the same time the survey would have to provide sufficient information about the composition of the taxi fleet to unable us to dimension and plan the second stage, which was to be a survey with the owner to obtain data on operating practices and costs.

3.3 The passenger survey

Since manpower resources were limited, the strategy adopted for

the passenger survey was to attempt to describe a typical day's pattern of operations and journies by sampling, in turn, the journies made at each of the taxi stands during a typical working day. One idea which was mooted was that of asking drivers to complete a diary or log of journies made, but had to be discarded due to problems of illiteracy and other practical considerations.

The design of the survey and formulation of the questionnaire was accomplished within a period of two months. Some of the important considerations in this process were:

- The length of time necessary to complete the interview - a maximum of 5 minutes was set since it was felt that a lengthy interview would have seriously prejudiced the response rate.
- Consideration of how data was to be coded and subsequently analysed. The 'SNAP' survey analysis package available for the 'Apricot' microcomputer was to be used where possible to analyse all data.
- Ease of comprehension of the questions by the respondents when asked in Udru or one of the regional languages (Punjabi and Pushto).
- Questions to be structured so that simple unambiguous responses could be given.
- Clear and logical layout of the questionnaire to facilitate the interview procedure.

The information sought during the survey can be split into three parts.

- An interview with the passengers about the journey being undertaken including destination and fares being paid, the use generally made of taxis, walking distance and waiting time, and a set of questions related to the passenger's attitude to the quality of service and fare levels.
- A short interview with the driver to establish the mode of operation, the number of journies made per day, the number of days worked per week, and details of where and when the last passenger had been set down (in order to estimate empty running and waiting time).
- Direct observations by the interviewer of vehicle make, registration number and the number of passengers.

A copy of the questionnaire is given as Appendix 3.1.

The questionnaire was field tested by running two small pilot surveys. An interviewer's manual was prepared in both English and Urdu and, prior to the start of the survey, the team of six interviewers spent a week of training on interviewing techniques and familiarization with the questionnaire format.

The survey with passengers and taxi drivers was carried out between September and December, 1985. Each survey station with more than 15 taxis waiting at one time was assigned a team of two interviewers, with two shifts working from 07:00 hours through to 21:00 hours. Other 'stands' were covered by just one interviewer per shift.

The response rate was higher than had been expected reflecting a high degree of cooperation on the part of both the public and the taxi drivers. Including refusals, completed interviews which were rejected at the coding stage, and those journies starting at or in the vicinity of ranks and which could not be interviewed, the overall sample rate was in the region of 50% of observed taxi journies. A detailed breakdown of the number of interviews and respective sample rates for each survey point is given in Appendix 3.2.

Not all taxi journies begin at taxi stands of course, and in order to estimate the proportion of fares that are picked up whilst cruising, a separate survey was conducted with 169 taxi drivers. It was found that on average 72% of fares were picked up at points other than taxi stands, so that our sample represents some 10% of the total trips by taxi over the entire study area in a typical working day.

3.4 The owner/driver interviews

The purpose of this survey was to collect information about the ownership structure of the industry, about vehicle acquisition practices and details of operating costs and problems. Since the passenger survey would give information on vehicle composition within the fleet and the proportion of owner drivers to other

types of operator, it was possible to design this survey on the basis of stratified random samples. As strata we adopted the four major makes of vehicle; Datsun, Morris, Suzuki, and Rickshaw, further subdividing between owner drivers and other operators. This subdivision was adopted because, in the first place we expected to see differences in costs between different makes and types of vehicles, and secondly to test the hypothesis that there were likely to be differences in costs between the owner driver and the other owners. A target of 50 interviews was set for each category.

The questionnaire (Appendix 3.3) was formulated envisaging that interviews would be quite lengthy and could be conducted with owner drivers at the taxi stands and with other owners at their residences or places of business.

In the section dealing with operating costs, the objective was to collect data on all expenditure over the previous 12 months. However, it was dicovered during field testing that the owner's recall of past expenses was sometimes very haphazard. It was finally decided to prepare a series of lists so that each item of possible expenditure could be checked off in turn by the interviewer.

This survey was undertaken between February and April of 1986 and turned out to be more protracted than expected. It had not been possible to formulate a sample frame from the records of the RTA since we discovered that the ownership details on the route permit registers were simply not reliable, and owners had to be traced through information provided by the vehicle driver. The problems arose because this process of contacting owners who were not owner drivers proved to be a laborious and time consuming process, largely due to the absence of street names and house numbers over much of Rawalpindi.

Due to the relatively small number of Suzukis in the vehicle fleet, the tracing of Suzuki owners became a very time consuming affair and towards the end of the period it was decided for reasons

of cost-effectiveness to curtail the survey with only 20 completed interviews for Suzuki's (18 owner drivers and 2 other owners).

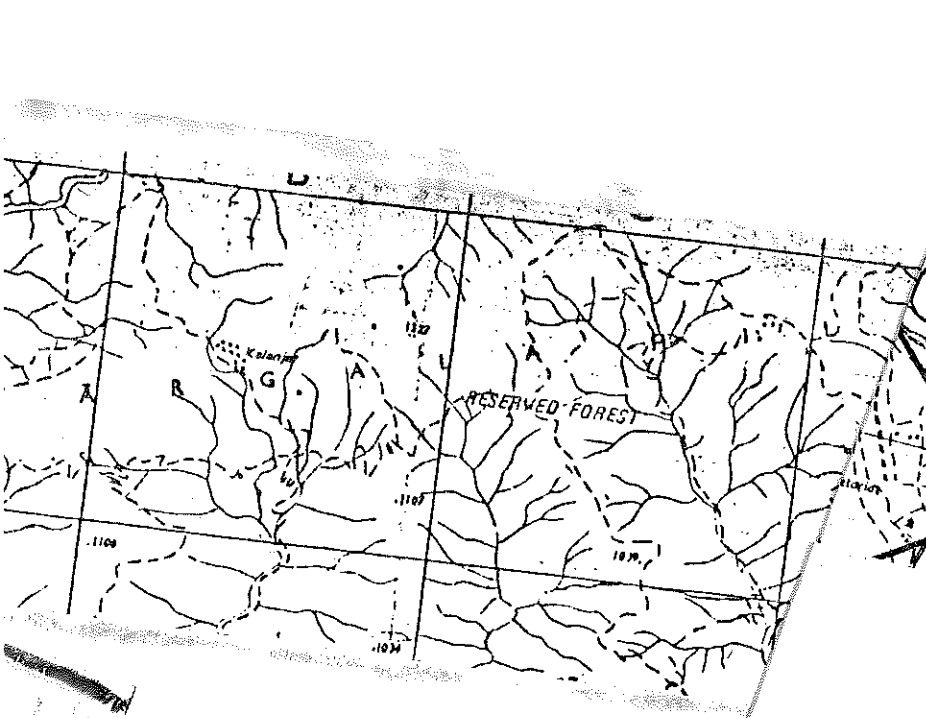
There was an extremely good response rate amongst those owners actually contacted, with only 4 cases of refusals encountered in all the contacts made. In all, 326 complete interviews were accepted as cases for analysis.

3.5 Coding and analysis

For the purpose of coding origin - destination data, and for calculating passenger journey lengths and distance covered in empty running, the study area was divided into 120 zones (Figure 3.2) and matrices of shortest distance between survey stations and zone centroids were compiled (Appendix 3.4).

The data from the questionnaire were transferred to coding sheets and analyzed using a proprietary survey analysis package 'SNAP' on the Centre's 'Apricot' microcomputers. The data on vehicle operating costs were tabulated using the 'Supercalc' package. At the time of coding vehicle operating costs, the cost data for vehicles that had been owned for less than a year were factored to give an annual cost, but on later inspection it was felt that due to the relatively large proportion of such vehicles in the sample, distortions would inevitably arise from working with such incomplete data. It was decided to eliminate these vehicles from the data set used in the operating cost calculations.

The data sets obtained for the two surveys along with a complete description of each variable are given in Supplementary Volume 1. Supplementary Volume 2 contains the tabulations of the vehicle operating costs whilst Volumes 3 and 4 contain the primary tabulations of the data collected from the passenger survey and the owner/operator survey.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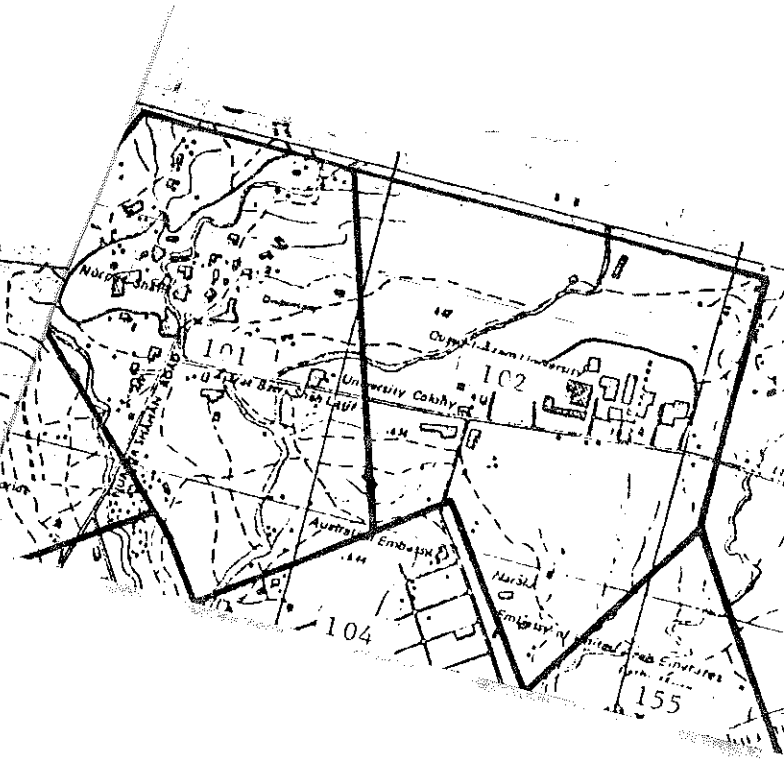
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Appendix 3.1 Form 1

GOVERNMENT OF PAKISTAN
PLANNING AND DEVELOPMENT DIVISION
NATIONAL TRANSPORT RESEARCH CENTRE

3953

NATIONAL SURVEY OF TAXI SERVICES

PART 1. SURVEY WITH PASSENGER.

1. Ask for the address at which the passenger started this journey. _____ _____ ☐☐☐ 1-3

2. How long have you had to wait before getting this taxi? ..... ☐☐ 4,5

3. How far have you had to walk to get this taxi? ..... ☐☐☐ 6-8

4. If you had the choice would you have preferred to use another type of public transport rather than the taxi? YES ☐ NO ☐ 9

   IF YES: What would have been your first preference?

   BUS ..... ☐
   MINI BUS ..... ☐
   WAGON ..... ☐
   SUZUKI ..... ☐ 10

5. What is the destination of your present journey? _____ _____ ☐☐☐ 11-13

6. Ask the passenger if a fare has already been agreed. YES ☐ NO ☐ 14

   IF YES: ask the passenger "How much will you pay?" and enter value .....

   IF NO: ask the driver "How much will you charge?" and enter value .....

   If fare will be charged according to meter, indicate here ..... METER ☐ 15

   FARE ☐☐☐ 16-18

7. To which of the following categories do you belong?

   PERMANENTLY RESIDENT IN THIS CITY ☐
   TEMPORARILY RESIDENT IN THIS CITY ☐
   VISITING ON BUSINESS/OFFICIAL DUTIES ☐
   VISITING FOR TOURISM/RECREATION ☐
   VISITING FOR OTHER REASONS ☐ ☐ 19

PART I CONTINUED

8. How often do you uses taxis?

AT LEAST ONCE A DAY ☐

AT LEAST ONCE A WEEK, BUT NOT EVERY DAY ☐

AT LEAST ONCE A MONTH BUT NOT EVERY WEEK ☐

LESS THAN ONCE A MONTH ☐ ☐ 20

9. Ask for the passenger's opinion about taxi fares in general

VERY CHEAP	QUITE CHEAP	REASONABLE	QUITE EXPENSIVE	VERY EXPENSIVE

☐ 21

10. Ask for the passenger's opinion on the general standard of vehicles used as taxis.

VERY GOOD	QUITE GOOD	STATISFAC-TORY	UNSATIS-FACTORY	VERY UN-SATISFACTORY

☐ 22

11. It has been suggested that a new type of taxi service be introduced using modern vehicles with radio control. Would you be prepared to pay more to use this service in preference to the existing service?

IF No ☐ 23

IF YES: Establish how much more. (CONSULT TABLE OF FOR ACTUAL VALUES)

25% MORE ..... YES ☐ NO ☐ 24

IF YES: ..... 50% MORE ..... YES ☐ NO ☐ 25

IF YES: ..... 100% MORE ..... YES ☐ NO ☐ 26

PART II. SURVEY WITH DRIVER

12. How is the vehicle operated?

VEHICLE IS OWNED EXCLUSIVELY BY DRIVER ☐

VEHICLE IS OWNED BY DRIVER AND ONE OR MORE OTHERS ☐

DRIVER IS HIRING OR RENTING VEHICLE FROM OWNER(S) ☐

DRIVER IS A REGULAR EMPLOYEE OF VEHICLE OWNER(S) ☐ 27

13. Has the vehicle been hired previously today? YES ☐ NO ☐ 28

IF YES: Ask for the address or location where the last passenger was set down.

_____

_____ ☐☐☐ 29-31

14. How long have you been waiting before picking up this passenger? ☐☐☐ 32-34

15. How many times was the vehicle hired on your last working day? ☐☐ 35,36

16. What is the vehicle model (year)? ☐☐ 37,38

PART III – TO BE COMPLETED AT END OF INTERVIEW

1. Vehicle Registration Number ☐☐☐ ☐☐☐☐ 39-45
2. Vehicle Make _____ ☐ 46
3. Number of Passengers ☐ 47
4. Location of Interview ☐☐☐ 48-50
5. Time ☐☐☐☐ 51-54
6. Date ☐☐☐☐ 55-58

(For office use only)

		Date	Pass	Rej.	Pass	Rej.
Interviewer	_____	_____	☐	☐	☐	☐
Checked	_____	_____				
Coding	_____	_____	☐	☐	☐	☐
Checked	_____	_____				
Data Entry	_____	_____				

Appendix 3.2 a)

a) EXPANSION FACTORS FOR PASSENGER INTERVIEWS - ISLAMABAD

SURVEY POST	TOTAL TAXI TRIPS OBSERVED	INTER-VIEWS MISSED	INTER-VIEWS REFUSED	INTERVIEWS REJECTED AT CODING	INTERVIEWS ACCEPTED	EXPANSION FACTOR
I. 1. Nurpur Shahan	34	2	7	5	20	1.7
I. 2. British Embassy	8	0	0	1	7	1.14
I. 3 Foreign Affairs	13	1	2	3	7	1.35
I. 4. Covered Market	19	0	5	0	14	1.36
I. 5. Poly Clinic	111	19	88	3	51	2.18
I. 6. Super Market	170	30	30	8	102	1.67
I. 7. (1) Jinnah Super	86	5	22	2	57	1.51
I. 7. (2)						
I. 8. Rana Market	22	0	8	0	14	1.57
I. 9. Zafar Chowk	5	0	0	0	5	1.0
I. 10. Melody Centre	90	8	22	1	59	1.53
I. 11. Aabpara	92	8	20	5	59	1.56
I. 12. Lal Quarter	84	4	18	1	61	1.38
I. 13. F-8 Markaz	95	7	24	10	54	1.76
I. 14. Saudi Embassy	32	8	4	4	16	2.0
I. 15. Sitara Market	69	7	9	2	51	1.35
I. 19. T & T Colony	6	0	2	0	4	1.5
I. 22. Karachi Co.	88	15	14	7	62	1.42
I. 23. Peshawar Morh	148	13	32	13	90	1.64
I. 24. Pak. Secty:	49	1	15	0	33	1.48
I. 25. Gillania Chowk	26	1	8	0	17	1.53
I. 26. Indian Embassy	2	0	0	0	2	1.0

Appendix 3.2 b)

EXPANSION FACTORS FOR PASSENGER INTERVIEWS - RAWALPINDI

SURVEY POST	TOTAL TAXI TRIPS OBSERVED	INTER-VIEWS MISSED	INTER-VIEWS REFUSED	INTERVIEWS REJECTED AT CODING	INTERVIEWS ACCEPTED	EXPANSION FACTOR
R. 1. Faizabad	102	4	32	14	52	1.96
R. 2. Pendora	74	11	21	24	18	4.11
R. 3. Rehmanabad	63	15	15	4	29	2.17
R. 4. Haidri Chowk	49	5	11	1	32	1.53
R. 5. Khyaban-i-Sir Syed	30	5	7	1	17	1.76
R. 6. Holy Family	167	9	57	4	97	1.72
R. 7. Commercial Market	110	3	25	07	75	1.47
R. 8. Sadiqabad	41	13	8	03	17	2.41
R. 9. Service Road	36	8	7	05	16	2.25
R. 10. Muslim Town	61	15	10	05	31	1.97
R. 11. Pirwadhai Morh	65	12	22	04	27	2.41
R. 12. ADA Office	23	6	5	03	9	2.56
R. 13. Chandni Chowk	41	5	13	01	22	1.86
R. 14. Pirwadhai Bus Stand	105	7	40	05	53	1.98
R. 15. Govt. College Chowk	20	3	6	03	8	2.5
R. 17. R.G. Hospital	81	22	36	01	22	3.68
R. 18. Naz Cinema	93	25	39	04	35	2.66
R. 19. Chah Sultan	73	26	17	03	27	2.70
R. 20. Glass Factory	95	25	25	12	33	2.88
R. 21. Bunni	144	39	51	03	51	2.82
R. 23. Committee Chowk	140	55	48	02	35	4.0
R. 24. Raja Bazar	125	61	27	05	32	3.91
R. 25. PAF Campus	28	3	13	0	12	2.33
R. 26. Air Port	224	36	38	30	120	1.87

Appendix 3.2 b) continued

EXPANSION FACTORS FOR PASSENGER INTERVIEWS - RAWALPINDI

SURVEY POST	TOTAL TAXI TRIPS OBSERVED	INTER-VIEWS MISSED	INTER-VIEWS REFUSED	INTERVIEWS REJECTED AT CODING	INTERVIEWS ACCEPTED	EXPANSION FACTOR
R. 27. Liaqat Bagh	123	34	45	02	42	2.93
R. 28. Ratta	104	17	33	07	47	2.21
R. 29. Chore	64	18	23	04	19	3.37
R. 30. Kohinoor Mill	66	22	32	02	30	2.2
R. 31. Westridge	443	9	13	07	14	3.07
R. 33. Railway Station	82	12	24	02	44	1.86
R. 34. Marir Chowk	105	45	31	-	29	3.62
R. 35. Cantt Hospital	74	30	15	2	27	2.74
R. 36. Lahore Wagon Stand	68	13	21	02	32	2.13
R. 37. Market	30	6	6	0	18	1.67
R. 39. Saddar	50	25	13	1	11	4.55
R. 40. M. Hospital	86	26	14	8	38	2.26
R. 41. R.A. Bazar	44	14	16	2	12	3.67
R. 42. Intercont Hotel	20	2	6	1	11	1.82
R. 45. Jhanda	56	15	21	0	20	2.80
R. 46. Mughal Abad	82	13	34	0	35	2.34
R. 47. 22. No.	65	23	18	5	19	3.42
R. 48. Lal Kurti	95	24	40	3	28	3.39
R. 49. Civil Court	24	1	8	0	15	1.60
R. 51. Kamal Abad	56	18	21	2	15	3.73
R. 52. Tahli Mohri	56	13	24	2	17	3.29
R. 53. Dehri	56	18	21	-	18	3.1
R. 55. Lalazar Colony	38	7	7	3	21	1.81
R. 56. Gulistan Colony	10	0	5	4	1	10.0
R. 57. Fuji Foundation	24	1	7	0	16	1.5
R. 58. C.M.H.	93	32	32	4	25	3.72

GOVERNMENT OF PAKISTAN
PLANNING AND DEVELOPMENT DIVISION
NATIONAL TRANSPORT RESEARCH CENTRE

NATIONAL SURVEY OF TAXI SERVICES — OWNER/OPERATOR SURVEY

VEHICLE DATA

1. Make._____ ☐ 2. Model..... ☐☐

3. Registration No. ☐☐☐ ☐☐☐☐ 4. Cubic capacity,_____, ☐

5. How is the vehicle operated ?

a) Vehicle is owned exclusively by driver..... ☐

b) Vehicle is owned by driver and one or more others... ☐

c) Driver is hiring or renting vehicle from owner..... ☐

d) Driver is a regular employee of vehicle owner..... ☐ ☐

INFORMATION FROM VEHICLE DRIVER

6. On average, how many hours each day are you working with this vehicle ?..... ☐☐

7. Is this vehicle also used regularly by other drivers ?..... YES ☐ NO ☐

8. IF YES: For how many hours each day does the other driver(s) work? ☐☐

9. How many days do you work each week driving this vehicle ?..... ☐

10. For how long have you been working in the taxi industry ?

_____Years _____Months ☐☐☐☐

IF DRIVER IS ALSO THE OWNER GO TO Q. 14

11. If the vehicle is contracted or hired out, what is the fee ?

Rs._____ (Month) (Week) (Day) ☐☐☐☐

12. If the driver is a regular employee, what is his wage ?

Basic Pay Rs._____ (Month) (Week) (Day) ☐☐☐☐

Allowances Rs._____ (Month) (Week) (Day) ☐☐☐☐

13. Who pays for

a) Petrol..... Driver Owner ☐

b) Servicing/Oil..... Driver Owner ☐

c) Minor repairs..... Driver Owner ☐

d) Tyres/innertubes..... Driver Owner ☐

e) Accident repairs..... Driver Owner ☐

f) Gratification/fines..... Driver Owner ☐

14. What is the Name and Address of the owner of this vehicle ?

_____

_____

_____ ☐

INFORMATION FROM VEHICLE OWNER

15. What relationship does the REGISTERED OWNER have with the taxi industry and how many vehicles are owned ?

	Taxi	Rick-shaw
a) He is the sole owner who takes full profits and losses of the operation of the vehicle(s).....	☐☐	☐☐
b) He is a joint owner who takes part share of profits and losses.	☐☐	☐☐
c) He provides hire purchase or other finance for the sale of the vehicle but is not involved in its operation.....	☐☐	☐☐

16. For how long have you been in the taxi business ?

_____years _____months ☐☐☐☐

17. Have you been operating with this vehicle in some other town before operating in Islamabad/Rawalpindi ?.....YES ☐ NO ☐

IF YES: COMPLETE Qs. 18,19,20.

IF NO : GO TO Q 21.

18. Where were you operating before ?..... ☐☐

19. When did you move to Islamabad/Rawalpindi ?

_____year _____month ☐☐☐☐

20. Why did you move ?

_____

_____

_____

_____ ☐ ☐ ☐

21. Do you have any other business interests or income ?.....YES ☐ NO ☐

IF YES: What percentage of your total income is derived from taxi ownership ?..... ☐☐

22. What is your experience with regard to the profitability of taxi ownership ?

HIGHLY PROFITABLE	REASONABLY PROFITABLE	JUST BRAKS EVEN	MAKES SMALL LOSS	MAKES LARGE LOSS

☐

23. Do you intend to remain in the taxi business?.....YES ☐ NO ☐

24. What do you consider to be the main problems confronting a taxi owner ?

_____

_____

_____

_____ ☐ ☐ ☐

25. Is anyone otherthan the owner of the vehicle employed in connection with the operation of the taxi business ? YES ☐ NO ☐

IF YES: COMPLETE THE INFORMATION OF FORM 2.1 AND ATTATCH TO THIS FORM

26. Are there any premises being used in connection with the taxi business ?.....YES ☐ NO ☐

IF YES: COMPLETE THE INFORMATION ON FORM 2.2 AND ATTATCH TO THIS FORM

AQUISITION DETAILS FOR VEHICLE

27. When was the vehicle aquired ? _____year_____month ☐☐☐☐

28. Was it already registered as a taxi when aquired ? YES ☐ NO ☐

29. How was the vehicle purchased ?

a) outright..... ☐

b) by instalments..... ☐ ☐

IF OUTRIGHT PURCHASE: COMPLETE Qs. 30,31 AND THEN GO TO Q. 38.

IF PURCHASED ON INSTALMENTS: GO TO Q. 32.

30. What was total amount paid ?.....Rs._____ ☐☐☐☐☐

31. How was money raised for outright purchase ?

a) The purchaser contributed from own resources..... ☐

b) Loan from family..... ☐

c) Loan from friends..... ☐

d) Loan from bank..... ☐

e) Gift of money ..... ☐

f) Loan from agent/money lender..... ☐

g) Other sources..... ☐

IN THE CASE THAT THE PREVIOUS OWNER WAS NOT PAID OUTRIGHT IN ONE LUMP SUM: COMPLETE Qs. 32 THROUGH TO 37.

32. What was the lump sum value of the vehicle?.....Rs._____ ☐☐☐☐

33. What was the initial deposit?.....Rs._____ ☐☐☐☐

34. What was the value of each instalment? (monthly).....Rs._____ ☐☐☐☐

35. What is the total number of instalments? (monthly)..... ☐☐

36. How easy is it to meet the loan repayments?

easy ☐ difficult ☐ very difficult ☐ ☐

37 To whom are/were the repayments to be made?

a) Bank or financial institution..... ☐

b) Relative..... ☐

c) Friend..... ☐

d) Seller of vehicle..... ☐

e) Agent/money lender..... ☐

f) Other..... ☐

38. What is the market value of the vehicle now?.....Rs._____ ☐☐☐☐☐

INSURANCE

39. What type of insurance does the vehicle have?

a) None..... ☐

b) Franchise Certificate (Owner takes first Rs. 10,000 of risk). ☐

c) Third party (Act)..... ☐

d) Third party (Risk)..... ☐

e) Third party + Additions (eg fire, theft, personal accident).. ☐

f) Comprehensive (Compensation is given for loss of vehicle in accident)..... ☐

g) Other (state)_____..... ☐ ☐

40. What is the annual premium?.....Rs.____ ☐☐☐☐

OPERATING EXPENSES

41. What general expenses have been incurred over the last 12 months in connection with operating this vehicle?

COMPLETE CHECK LIST 1 AND ATTATCH TO THE FORM.

42. What major items of work have been carried out on the vehicle in last 12 months?

COMPLETE CHECK LIST 2 AND ATTATCH TO THE FORM.

43. What minor repairs and replacement of parts has been carried out over the last 12 months?

COMPLETE CHECK LIST 3 AND ATTATCH TO THE FORM.

44. What is the estimated fuel consumption? _____ ☐☐

45. How often is the vehicle serviced?..... _____ ☐☐

46. How often is the engine oil changed?... _____ ☐☐

47. How often is the gear oil changed?..... _____ ☐☐

48. How many days has the vehicle been off the road over the last 12 months due to:

a) Accidents..... ☐☐☐
b) Breakdowns/Repair..... ☐☐☐
c) Illness..... ☐☐☐
d) Other reasons..... ☐☐☐

(For office use only)

		Date	Pass.	Rej.	Pass.	Rej.
Interviewer	_____	_____				
Checked	_____	_____	☐	☐	☐	☐
Coding	_____	_____				
Checked	_____	_____	☐	☐	☐	☐
Data Entry	_____	_____				

GOVERNMENT OF PAKISTAN
PLANNING AND DEVELOPMENT DIVISION
NATIONAL TRANSPORT RESEARCH CENTRE

NATIONAL SURVEY OF TAXI SERVICES — OWNER/OPERATOR SURVEY

CHECK LIST 1

	AMOUNT
VEHICLE REGISTRATION	
FITNESS TEST	
ROUTE PERMIT	
VEHICLE LICENCE (TOKEN TAX)	
LEGAL EXPENSES	
OTHER PROFESSIONAL FEES	
FINES	
COMPENSATION PAYMENTS	
GRATIFICATIONS - POLICE	
GRATIFICATIONS - OTHERS	
UNION FEES	
OTHERS (PLEASE SPECIFY)	
_____	
_____	
_____	
_____	
_____	
_____	

GOVERNMENT OF PAKISTAN
PLANNING AND DEVELOPMENT DIVISION
NATIONAL TRANSPORT RESEARCH CENTRE

NATIONAL SURVEY OF TAXI SERVICES — OWNER/OPERATOR SURVEY

CHECK LIST 2

	AMOUNT
RECONDITIONED/ENGINE	☐☐☐☐☐
NEW ENGINE	☐☐☐☐☐
OVERHAUL OF ENGINE	☐☐☐☐☐
REPAIRS TO CHASSIS	☐☐☐☐☐
MAJOR REPAIRS TO BODYWORK	☐☐☐☐☐
RESPRAY	☐☐☐☐☐
ACCESSORIES FITTED	☐☐☐☐☐

NATIONAL TRANSPORT RESEARCH CENTRE

NATIONAL SURVEY OF TAXI SERVICES OWNER/OPERATOR SURVEY

CHECK LIST 3

	REPLACEMENTS NEW	REPLACEMENTS SECOND HAND	REPAIRS	AMOUNT
ALTERNATOR (COIL)	☐	☐	☐	☐☐☐☐☐
GENERATOR (DYNAMO)	☐	☐	☐	☐☐☐☐☐
LIGHTS	☐	☐	☐	☐☐☐☐☐
DISTRIBUTOR	☐	☐	☐	☐☐☐☐☐
SPARK PLUGS	☐	☐	☐	☐☐☐☐☐
BATTERY	☐	☐	☐	☐☐☐☐☐
DIRECTION INDICATORS	☐	☐	☐	☐☐☐☐☐
OTHER ELECTRICAL	☐	☐	☐	☐☐☐☐☐
TYRES	☐	☐	☐	☐☐☐☐☐
INNERTUBES	☐	☐	☐	☐☐☐☐☐
STEERING	☐	☐	☐	☐☐☐☐☐
BRAKES	☐	☐	☐	☐☐☐☐☐
WHEEL ALIGNMENT/BALANCING	☐	☐	☐	☐☐☐☐☐
CLUTCH	☐	☐	☐	☐☐☐☐☐
GEARS	☐	☐	☐	☐☐☐☐☐
DIFFERENTIAL	☐	☐	☐	☐☐☐☐☐
BEARINGS	☐	☐	☐	☐☐☐☐☐
SHOCK ABSORBERS/SUSPENSION	☐	☐	☐	☐☐☐☐☐

CHECK LIST 3 (CONTD)

	REPLACEMENTS NEW	REPLACEMENTS SECOND HAND	REPAIRS	COST
CARBURETTOR	☐	☐	☐	☐☐☐☐☐
FUEL PUMP	☐	☐	☐	☐☐☐☐☐
EXHAUST/SILENCER	☐	☐	☐	☐☐☐☐☐
RADIATOR	☐	☐	☐	☐☐☐☐☐
HOSES	☐	☐	☐	☐☐☐☐☐
FAN BELT	☐	☐	☐	☐☐☐☐☐
UPHOLSTERY	☐	☐	☐	☐☐☐☐☐
SEATS	☐	☐	☐	☐☐☐☐☐
WINDOWS/DOORS	☐	☐	☐	☐☐☐☐☐
OTHERS (PLEASE SPECIFY)				
_____	☐	☐	☐	☐☐☐☐☐
_____	☐	☐	☐	☐☐☐☐☐
_____	☐	☐	☐	☐☐☐☐☐
_____	☐	☐	☐	☐☐☐☐☐
_____	☐	☐	☐	☐☐☐☐☐

FORM 2.1

FORM NUMBER ☐☐☐

NATIONAL TRANSPORT RESEARCH CENTRE

NATIONAL SURVEY OF TAXI SERVICES — OWNER/OPERATOR SURVEY

EMPLOYEE COSTS

1. What is the total number of full-time, part time and casual employees working in connection with the taxi business?

FUNCTION	FULL-TIME	PART TIME	CASUAL
_____	☐☐	☐☐	☐☐
_____	☐☐	☐☐	☐☐
_____	☐☐	☐☐	☐☐
_____	☐☐	☐☐	☐☐

2. For each person in turn, enter below his function, the type of payment made (wages, daily allowance, meal allowance, etc) and the amount paid per month.

FUNCTION	TYPES OF PAYMENT	AMOUNT
_____	_____	☐☐☐☐
_____	_____	☐☐☐☐
_____	_____	☐☐☐☐
_____	_____	☐☐☐☐
_____	_____	☐☐☐☐

For office use only

	Date	Pass	Rej.	Pass	Rej.
Interviewer_____	_____				
Checked_____	_____	☐	☐	☐	☐
Coding_____	_____				
checked_____	_____	☐	☐	☐	☐
Data Entry_____	_____				

NATIONAL TRANSPORT RESEARCH CENTRE

FORM NUMBER

NATIONAL SURVEY OF TAXI SERVICES

OWNER/OPERATOR SURVEY

PREMISES AND EQUIPMENT

1. Details of premises or land used in connection with the taxi business?

	TOTAL AREA	CAPITAL VALUE	MONTHLY RENT
Offices	_____		
Covered Workshops/ Garage	_____		
Un-covered Work-shops/Garage	_____		

2. Overheads relating to premises (per month)

ITEM	AMOUNT	ITEM	AMOUNT
ELECTRICITY			
GAS			
TELEPHONE			
RENT			
TAXES			

3. Equipment (Office and Workshops)

ITEM	YEAR OF PURCHASE	NEW	SECOND HAND	AMOUNT PAID

For Offices Use Only

	Date	Pass	Rej.	Pass	Rej.
Interviewer					
Checked					
Coding					
Checked					
Data Entry					

INTER ZONAL SHORTEST PATHS - ISLAMABAD.

(Kilometres)

ORIGIN	DESTINATION ZONE																							
	104	105	103	109	108	106	107	113	112	110	111	117	116	114	115	121	120	118	119	125	124	122	123
I_1	5.5	3.2	5.3	6.3	7.1	6.2	5.2	7.9	8.1	6.9	6.6	7.7	9.2	7.9	6.9	10.0	9.9	9.2	9.7	11.0	12.0	9.9	9.0
I_2	2.3	0.4	4.0	5.1	5.9	5.0	4.0	6.6	6.8	5.6	5.3	6.5	8.0	6.7	5.7	8.7	8.6	7.9	8.4	9.8	10.8	8.7	7.8
I_3	3.2	1.9	2.0	3.2	4.0	3.1	2.1	4.7	4.9	3.7	3.4	4.6	6.1	4.8	3.8	6.8	6.7	6.0	6.5	7.9	8.9	6.8	5.9
I_4	4.8	3.8	2.7	1.7	1.4	0.6	0.8	3.1	4.3	3.4	2.6	3.9	3.4	2.4	3.2	4.5	5.3	3.1	4.6	7.1	6.8	5.8	5.9
I_5	5.9	4.0	2.3	1.9	1.1	0.5	1.7	1.5	2.4	1.0	1.7	3.9	2.6	2.9	3.0	3.3	4.2	3.2	2.6	7.3	7.1	6.1	6.2
I_6	7.0	6.1	1.7	3.2	2.1	1.6	2.8	0.9	0.8	1.0	1.0	5.0	6.0	3.8	4.1	3.3	4.0	2.3	2.9	6.7	6.4	5.0	5.5
I_7	9.3	8.4	4.0	4.0	3.1	4.0	5.0	2.0	2.0	3.3	3.3	4.2	3.2	3.5	3.7	0.8	1.0	1.7	0.6	4.4	4.2	3.2	3.3
I_8	9.7	8.8	4.4	4.8	3.8	4.8	5.8	2.4	2.4	3.8	3.8	4.8	3.6	3.9	4.1	0.9	0.3	1.3	1.6	4.9	4.8	3.7	3.8
I_9	11.2	9.6	5.9	5.4	6.3	7.2	8.2	4.5	3.8	5.4	5.4	7.2	3.7	6.1	6.6	2.5	1.7	2.6	3.3	4.1	3.2	3.8	4.0
I_{10}	5.4	4.8	3.2	0.9	0.8	0.7	1.1	2.5	3.7	2.8	2.0	2.9	3.2	1.8	2.1	3.6	4.5	3.6	3.0	5.8	5.5	4.4	4.5
I_{11}	4.7	4.1	4.0	0.7	1.6	1.5	1.1	3.2	4.3	3.4	2.7	3.7	3.5	2.6	2.9	5.0	5.8	4.5	4.2	6.6	6.4	5.3	5.4
I_{12}	7.0	6.3	3.3	1.7	0.8	1.7	4.6	0.8	2.0	3.8	2.0	2.9	2.7	1.7	2.1	2.3	3.2	2.2	1.5	4.9	4.9	3.7	3.8
I_{13}	10.3	10.2	6.4	5.9	5.8	6.6	6.8	4.5	4.5	5.4	5.7	5.8	3.1	4.8	4.9	2.6	2.3	3.5	3.0	3.3	2.4	3.6	3.7
I_{14}	12.5	11.0	7.2	6.4	5.6	6.4	7.6	5.4	5.0	6.1	6.5	5.1	3.0	6.5	4.6	2.6	3.2	4.0	3.9	3.1	2.3	3.4	3.5
I_{15}	7.5	6.8	8.2	1.2	2.2	3.5	3.7	2.8	3.6	4.6	3.7	1.7	0.8	1.1	1.3	3.2	3.9	3.6	4.0	4.0	3.9	2.8	2.9
I_{16}	6.2	5.5	6.0	1.8	2.6	3.6	2.6	3.7	4.5	5.3	4.5	1.2	2.5	1.8	0.9	4.0	5.2	5.5	4.0	3.6	4.2	3.6	3.2
I_{17}	7.3	6.7	7.1	6.6	7.4	6.1	5.5	8.4	9.2	8.0	7.3	8.1	9.4	8.2	7.3	10.2	11.6	10.1	9.5	9.8	10.3	10.3	9.4
I_{18}	7.1	6.4	6.8	2.6	3.5	4.3	3.5	4.5	5.2	6.0	5.4	2.1	1.8	2.4	1.8	3.4	4.1	4.2	4.2	2.6	4.5	2.1	4.5
I_{19}	8.0	7.3	7.1	5.5	4.6	5.5	6.5	5.0	5.3	6.7	5.8	2.0	1.8	3.3	2.7	3.2	3.9	5.0	4.1	1.9	2.5	1.4	0.5
I_{20}	10.9	10.2	7.2	5.6	4.7	5.6	6.6	5.0	5.8	6.6	5.9	5.5	3.1	4.7	5.0	3.2	4.0	5.1	4.1	1.7	0.7	2.6	2.6
I_{21}	12.5	10.0	10.8	7.7	7.6	8.5	8.8	6.3	7.2	8.0	7.2	5.2	4.2	6.6	4.8	4.6	5.3	6.3	5.4	2.4	1.6	2.8	2.9
I_{22}	12.7	12.0	9.0	7.3	6.4	7.3	8.4	7.0	8.0	8.5	7.8	7.0	4.9	6.5	6.7	5.0	5.7	6.7	5.9	3.8	2.6	4.3	4.5
I_{23}	3.5	8.2	6.3	5.5	6.3	7.2	6.3	6.8	7.6	8.5	7.7	4.9	3.7	5.2	5.0	4.9	5.7	6.6	5.8	0.8	1.6	2.7	2.0

Table.

INTER ZONAL SHORTEST PATHS - ISLAMABAD

(Kilometres)

ORIGIN	DESTINATION ZONE																					ZERO POINT	PERSHA-WAR MOOR
	129	128	126	127	135	134	132	133	140	140	140	140	144	143	141	142	139	138	136	137	130	131	
I_1	11.8	12.8	11.6	11.5	13.3	12.9	11.7	11.5	12.8	12.0	11.1	12.2	14.8	13.1	14.0	12.9	13.6	14.4	13.7	13.0	10.4	11.8	8.1	10.4
I_2	10.5	11.5	10.3	10.2	12.1	11.7	10.5	10.3	11.6	10.8	9.9	11.0	13.6	11.9	12.8	11.7	12.4	13.2	12.5	11.8	9.1	10.5	6.9	9.2
I_3	8.6	9.6	8.4	8.3	10.2	9.8	8.6	8.4	9.7	8.9	8.0	9.1	11.7	10.0	10.9	9.8	10.5	11.3	10.6	9.5	7.2	8.6	5.0	7.3
I_4	5.9	6.1	5.6	4.7	9.2	10.2	8.1	8.4	9.1	8.3	7.4	8.5	11.1	9.4	10.3	9.2	10.0	11.5	10.9	11.1	5.2	6.6	4.4	6.7
I_5	4.9	5.7	4.8	3.9	9.5	10.5	8.4	8.7	9.3	8.5	7.5	8.5	11.3	10.5	9.6	10.4	12.3	11.7	11.2	11.4	4.7	6.1	4.7	6.4
I_6	9.1	5.6	4.6	4.0	8.5	9.6	7.6	7.7	10.6	9.8	8.3	9.7	12.5	11.8	10.8	11.7	11.5	11.1	10.4	10.7	3.5	4.9	5.2	7.4
I_7	2.7	2.9	2.2	1.7	7.0	7.7	6.0	6.1	8.5	5.6	7.9	7.0	9.8	9.6	9.8	11.9	8.8	8.4	7.7	8.0	2.5	3.2	2.9	5.1
I_8	2.5	2.9	1.9	1.6	6.8	8.4	6.6	6.7	8.6	7.7	6.8	7.8	10.6	9.8	8.9	9.8	10.3	9.9	9.2	9.5	6.0	2.5	3.8	6.0
I_9	1.8	1.0	0.7	1.5	5.6	4.4	3.6	5.5	7.8	6.4	5.4	6.5	9.2	8.5	7.6	8.5	7.6	7.2	6.5	6.7	1.6	0.5	4.4	6.6
I_{10}	4.6	5.3	4.5	3.9	7.8	8.5	6.9	7.0	8.5	6.2	6.6	7.7	10.6	9.7	11.9	10.7	10.5	10.1	9.4	9.6	5.3	6.4	3.8	6.1
I_{11}	6.3	7.0	6.1	5.4	7.1	8.2	7.1	6.3	8.3	9.4	6.4	7.4	10.2	9.4	10.6	8.3	9.0	9.8	9.0	8.3	6.4	7.1	3.4	5.8
I_{12}	4.2	5.0	5.2	4.4	6.8	5.6	4.8	6.0	8.7	7.8	6.8	7.8	10.6	9.8	9.9	8.9	8.3	8.0	7.2	7.5	3.9	5.4	3.8	5.5
I_{13}	1.1	1.0	0.9	0.7	5.2	5.9	3.2	4.6	9.0	6.1	5.1	6.1	8.9	8.1	7.1	7.9	6.9	6.5	5.8	6.0	2.5	6.6	6.0	3.9
I_{14}	0.7	0.8	2.2	1.8	5.3	4.1	3.3	4.5	7.0	6.2	4.8	6.2	9.0	8.2	7.1	8.1	6.9	1.3	5.8	6.0	3.6	2.5	4.6	4.0
I_{15}	4.2	4.6	3.8	3.0	6.5	7.0	5.2	5.3	7.6	6.2	5.7	6.7	7.4	8.7	7.8	8.7	8.9	8.6	7.8	8.0	4.7	5.0	2.5	4.7
I_{16}	4.9	5.6	4.7	3.9	4.7	6.4	4.6	3.9	5.9	5.0	4.1	5.0	7.8	7.0	5.9	6.9	6.7	7.5	6.8	6.0	5.7	5.9	1.2	3.5
I_{17}	12.1	13.2	12.0	11.2	10.1	13.7	12.0	11.2	13.2	12.3	11.3	12.3	15.2	14.3	13.3	14.2	14.0	14.8	14.1	13.3	12.4	13.3	8.4	10.4
I_{18}	3.8	4.5	3.6	2.9	4.0	4.4	3.8	3.1	5.1	4.3	3.3	4.3	5.0	6.3	5.2	6.2	5.9	6.6	5.9	5.2	4.8	11.9	0.4	3.1
I_{19}	3.9	4.7	3.7	2.9	3.4	4.5	3.1	2.4	4.7	3.8	2.9	3.9	6.7	5.9	4.8	5.7	5.3	6.1	5.3	4.6	4.7	5.0	0.7	1.8
I_{20}	1.7	2.7	3.2	2.6	3.0	1.8	0.9	2.2	4.7	3.9	2.9	3.9	6.2	3.8	5.0	5.8	4.6	4.1	3.3	3.7	4.9	3.7	3.9	2.7
I_{21}	2.9	3.8	4.4	3.8	1.6	2.2	0.5	1.1	4.1	2.5	2.3	3.3	6.1	5.3	4.4	5.1	4.0	3.7	2.7	3.2	6.1	4.9	3.2	1.1
I_{22}	3.4	3.8	4.9	4.0	1.8	0.3	1.7	2.7	5.5	4.6	3.6	4.7	7.5	6.7	5.8	6.5	2.9	2.5	1.8	2.0	6.6	5.4	4.7	2.5
I_{23}	3.8	4.8	5.3	4.0	1.5	2.6	1.4	0.7	3.2	1.3	1.4	2.4	3.1	4.4	3.5	4.2	3.8	4.6	3.9	3.1	8.4	5.8	2.4	0.06

Table.

INTER ZONAL SHORTEST PATHS - RAWALPINDI

(Kilometres)

ORIGIN	DESTINATION ZONE																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
R-1	2.0	1.0	3.3	3.0	3.5	4.6	5.2	3.9	3.8	4.2	4.9	4.4	5.1	5.0	5.6	6.3	7.5	6.8	5.1	5.5
R-2	3.8	1.9	2.8	1.2	0.8	6.7	4.7	3.3	1.7	2.0	2.8	2.9	4.7	2.6	3.3	4.5	6.0	8.9	6.0	4.0
R-3	2.3	3.7	1.2	0.9	1.5	4.6	2.6	1.2	1.1	2.4	4.5	1.7	2.4	2.2	3.6	4.1	5.9	6.8	6.6	2.8
R-4	3.9	2.9	2.2	1.9	0.5	4.8	2.8	2.3	0.7	1.1	3.2	1.9	2.8	1.6	2.2	4.5	4.3	7.0	6.7	3.1
R-5	5.9	4.1	4.8	4.1	2.1	7.4	5.4	4.9	3.3	3.7	0.5	4.5	5.2	4.2	4.9	2.3	3.7	15.6	9.4	5.6
R-6	4.8	4.0	3.7	2.4	1.0	6.4	4.4	3.5	1.8	0.7	3.6	3.6	3.3	2.2	1.8	2.3	4.9	8.7	7.5	6.7
R-7	3.2	3.6	2.9	2.1	1.4	4.0	2.0	1.5	0.2	1.9	4.0	1.1	1.8	1.4	2.7	4.3	5.2	6.2	5.9	2.2
R-8	2.4	4.5	1.1	2.6	3.4	0.6	2.0	2.4	2.0	3.6	6.0	1.1	1.5	2.6	3.8	5.5	6.4	4.8	5.7	2.4
R-9	1.3	4.3	0.0	1.6	2.8	4.3	1.7	1.3	2.3	3.6	5.4	2.2	2.6	3.7	4.9	6.6	7.5	5.9	6.8	3.5
R-10	2.6	5.6	1.3	2.8					1.6 1.8 1.8	3.5		0.9	1.3							2.2
R-11		5.4	6.3	4.7			5.6		4.6	9.6	1.8			5.3		1.0	2.4			
R-12						1.6	0.5		2.6			1.7	2.1	3.4						
R-13	3.7	4.5	2.6	2.3	2.1	3.8	1.8	1.4	1.0	2.0	6.7	0.9	1.0	0.9	2.2	3.8	4.7	6.1	5.2	1.4
R-14	7.3	6.6	6.5	6.1	3.8	7.2	5.2	5.2	4.8	3.4	2.8	4.8	3.5	3.1	2.2	0.3	1.4	9.4	7.2	3.4

Table.

INTER ZONAL SHORTEST PATHS - RAWALPINDI

(Kilometres)

ORIGIN	DESTINATION ZONE																			
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
R-1	6.0	6.7	8.0	7.7	12.5	8.4	7.3	6.3	7.7	7.6	7.3	7.9	9.3	7.8	8.4	10.5	10.1	9.0	9.1	8.8
R-2	3.1	4.4	5.9	5.6	14.4	7.2	5.5	3.9	5.9	5.1	5.2	6.0	7.3	6.1	6.7	8.7	9.5	7.2	7.4	7.0
R-3	3.2	4.7	6.5	7.1	7.7	5.7	4.6	3.6	5.0	4.2	5.4	5.9	6.6	6.1	5.8	7.3	6.7	6.3	6.4	6.1
R-4	2.1	3.6	4.9	6.6	7.7	6.0	4.4	2.6	4.8	4.0	3.9	4.8	6.4	5.0	5.5	7.6	7.3	7.1	6.2	5.9
R-5	4.5	6.0	7.3	4.2	10.5	8.6	6.9	5.3	7.3	6.5	6.6	7.4	8.9	7.5	8.1	10.1	11.1	8.6	8.7	8.4
R-6	3.0	3.5	4.8	6.0	8.4	6.7	5.9	3.7	5.2	5.1	4.8	5.4	6.8	6.1	6.7	8.7	8.4	7.2	7.4	7.0
R-7	2.3	3.8	5.6	6.2	7.0	5.1	3.8	3.1	4.4	3.6	4.4	5.7	6.0	4.6	5.5	6.7	6.3	5.7	5.8	5.7
R-8	3.0	3.9	5.3	7.4	6.5	4.8	4.8	3.2	5.3	4.0	4.7	5.4	6.9	4.8	5.4	6.4	6.1	6.0	6.1	5.8
R-9	4.1	5.0	6.4	8.5	7.6	5.9	5.9	4.3	6.4	5.0	5.8	6.5	8.0	5.9	6.5	7.5	7.2	7.1	7.2	6.9
R-10	2.8							3.5	5.7	4.0									6.6	6.5
R-11								3.5	5.7	4.0		3.9							6.6	5.5
R-12																				
R-13	2.0	1.9	4.3	6.0	6.6	4.9	2.8	2.2	3.3	2.6	3.7	4.7	4.8	3.5	4.2	6.2	5.9	4.7	4.8	4.5
R-14	2.8	2.2	2.8	2.5	8.1	6.1	4.7	2.8	5.2	3.2	3.3	2.9	7.0	4.6	4.3	8.0	7.6	6.1	5.6	4.5

3

Table.

INTER ZONAL SHORTEST PATHS - RAWALPINDI

(Kilometres)

ORIGIN	DESTINATION ZONE																			
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
R-1	9.5	9.7	10.7	11.0	10.9	9.2	10.7	9.6	10.6	10.5	12.4	12.6	11.2	10.9	10.7	12.5	12.9	11.9	12.5	12.6
R-2	7.4	8.4	7.5	9.5	8.8	7.5	8.7	8.0	8.1	8.5	10.3	10.8	9.2	8.9	9.0	10.8	10.7	10.3	10.7	10.0
R-3	7.5	8.5	7.4	10.4	12.4	6.6	7.8	7.1	8.5	8.4	9.5	10.0	8.5	8.6	8.1	9.9	10.3	9.3	10.1	9.9
R-4	6.1	6.9	6.2	8.2	9.9	6.4	7.9	6.9	7.3	7.2	9.5	9.8	8.3	8.0	7.8	9.6	9.8	9.0	9.5	9.7
R-5	8.8	9.3	5.6	7.1	6.6	8.3	9.5	8.8	8.2	6.6	11.3	11.7	10.3	10.6	9.8	11.6	12.0	11.0	11.9	11.6
R-6	7.2	7.2	6.8	8.8	10.9	7.5	8.8	8.0	8.4	7.8	10.7	10.9	9.5	8.7	9.0	10.8	11.2	10.0	11.0	10.7
R-7	6.7	7.8	9.1	11.1	12.7	5.9	7.2	6.6	7.9	10.0	6.9	9.3	7.9	7.1	7.6	9.4	9.5	8.8	9.5	9.5
R-8	6.7	7.7	6.7	8.8	10.4	6.2	7.5	6.8	8.6	7.7	9.3	9.7	8.3	7.4	7.7	9.5	9.7	8.8	9.9	9.5
R-9	7.8	8.8	7.8	9.9	11.5	7.3	8.6	7.9	9.7	8.8	10.4	10.8	9.4	8.5	8.8	10.6	10.8	9.9	10.9	10.6
R-10														8.1						
R-11					5.3															
R-12																				
R-13	6.4	7.2	5.5	7.6	9.2	5.0	6.5	5.6	7.0	6.5	7.8	8.5	7.1	6.2	6.5	8.3	8.7	7.6	8.4	8.3
R-14	5.6	5.4	3.3	7.0	6.3	6.9	6.9	5.5	6.3	4.3	9.4	9.7	7.7	7.4	6.9	8.0	8.7	9.7	10.4	11.1

4
Table.

INTERZONAL SHORTEST PATHS - RAWALPINDI

(Kilometres)

ORIGIN	DESTINATION			
	61	62	63	64
R-1	3.8	13.9	15.0	16.0
R-2	12.1	12.2	13.4	14.3
R-3	11.3	11.4	12.6	13.5
R-4	11.1	11.2	12.4	13.3
R-5	13.0	13.1	14.3	15.2
R-6	12.2	12.4	13.5	14.4
R-7	10.7	10.8	12.0	12.9
R-8	11.1	11.2	12.3	13.3
R-9	12.2	12.3	13.4	14.4
R-10				
R-11				
R-12				
R-13	9.9	10.0	11.2	12.0
R-14	11.0	11.2	12.3	13.3

Table.

INTER ZONAL SHORTEST PATHS - RAWALPINDI

(Kilometres)

ORIGIN	DESTINATION ZONE																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
R-15		4.5	4.3	2.9	2.2				1.5					0.5						
R-17	4.7	6.0	3.4	3.0	2.8	4.1	2.0	2.1	1.6	2.3	6.0	1.6	0.3	0.9	1.5	3.2	4.0	6.3	4.5	0.74
R-18	5.0	6.3	3.7	3.2	3.1	4.1	2.1	2.3	1.9	2.6	6.3	1.9	0.4	1.2	1.8	3.4	4.3	6.7	4.2	0.5
R-19			4.2	3.7					4.3				0.5	1.5					3.9	1.1
R-20	5.1	6.9	3.2	3.8	3.1	4.9	2.2	3.0	2.5	3.2	6.9	2.1	0.5	1.8	2.4	4.0	4.9	6.5	3.6	1.4
R-21	5.8	5.0	4.5	3.4	2.9	5.1	3.1	3.1	2.4	2.2	7.1	2.7	1.2	1.2	1.4	4.3	3.0	5.1	4.6	1.3
R-23	6.4	6.4	5.1	4.7	4.2	5.6	3.5	3.8	3.4	3.6	6.6	3.3	1.9	2.5	2.8	3.7	4.6	8.1	3 3	1.2
R-24	7.1	6.4	5.8	4.7	4.2	6.4	4.4	4.4	3.7	3.4	5.6	4.0	2.5	2.5	2.2	2.8	3.0	6.4	4.9	2.6
R-25	7.8	7.7	6.4	6.0	5.5	6.9	4.9	5.1	4.7	4.9	7.9	4.5	3.2	3.8	4.1	5.1	5.9	5.6	1.7	3.1
R-26	9.7	9.6	8.4	8.0	11.5	8.0	6.8	7.0	6.6	6.9	9.9	6.5	5.1	5.8	6.0	7.0	7.9	6.2	0.0	5.0
R-27	6.8	6.9	5.7	5.2	4.8	6.1	4.0	4.3	4.4	4.1	6.7	3.9	2.4	3.0	3.3	3.8	4.7	10.1	3.9	2.5
R-28	7.6	6.7	6.0	5.0	4.5	6.7	4.7	4.7	4.0	3.9	5.8	4.2	2.8	2.8	2.7	3.0	2.9	6.7	5.4	2.9
R-29	12.4	10.4	11.0	10.0	8.7	11.2	9.2	10.1	9.7	9.0	7.0	9.6	8.0	8.0	8.2	6.2	6.1	13.9	11.4	8.0
R-30			11.6		8.4											6.3			11.7	

2

Table.

INTER ZONAL SHORTEST PATHS. - RAWALPINDI

(Kilometres)

ORIGIN	DESTINATION ZONE																			
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
R-15								1.2												
R-17	1.3	2.0	3.4	5.3	5.4	3.7	2.5	1.5	3.0	2.2	2.7	3.7	4.5	3.1	3.7	5.2	4.9	4.2	4.3	4.4
R-18	1.0	1.8	3.2	5.6	5.1	3.4	2.2	1.3	2.7	1.9	2.5	3.4	4.3	2.8	3.4	5.0	5.6	4.0	4.1	3.8
R-19							3.1	1.9	3.5				5.1							4.4
R-20	2.0	2.7	4.1	5.9	3.9	2.2	2.8	1.9	3.3	2.5	3.6	4.3	3.0	0.5	4.0	3.1	3.5	4.6	4.7	4.4
R-21	0.3	1.2	1.9	3.7	5.7	3.8	2.1	0.5	2.6	1.8	1.9	2.0	4.2	2.7	2.9	5.4	5.0	3.8	3.9	3.9
R-23	1.6	1.9	3.2	5.9	4.4	2.5	0.8	1.0	1.9	1.1	2.2	3.0	3.5	2.1	2.7	4.0	3.7	3.2	3.4	3.0
R-24	1.6	0.9	2.3	4.9	5.8	4.1	2.4	1.0	2.4	0.5	0.7	1.5	3.4	1.9	1.7	5.9	5.6	3.0	3.0	1.9
R-25	2.9	3.1	4.5	7.2	3.1	1.1	1.2	2.3	2.1	2.0	3.5	4.3	1.3	1.5	3.0	2.5	2.4	3.5	3.7	3.3
R-26	4.9	5.1	6.5	9.2	1.0	0.8	3.2	4.3	3.5	4.9	6.1	6.9	2.6	3.0	4.4	2.9	2.6	5.0	5.1	4.8
R-27	2.1	2.0	3.0	5.7	5.0	3.0	2.0	1.5	1.3	0.6	1.8	2.5	2.4	0.9	1.4	4.9	4.4	2.0	2.1	1.8
R-28	1.9	1.0	1.9	4.5	6.5	4.6	3.1	1.5	2.9	1.0	0.2	1.0	3.9	2.4	2.1	6.4	6.1	4.2	3.1	2.2
R-29	7.0	6.4	5.0	3.7	12.5	10.6	8.3	4.5	8.7	7.0	6.3	5.4	10.4	8.9	8.1	11.5	11.2	9.4	9.6	5.0
R-30												6.1	10.2					11.0	11.2	6.5

Table.

INTER ZONAL SHORTEST PATHS - RAWALPINDI

(kilomtres)

ORIGIN	DESTINATION ZONE																			
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
R-15																				
R-17	5.0	5.8	5.2	7.2	8.1	4.5	5.9	5.0	6.5	6.1	7.7	7.9	6.5	6.0	7.1	8.1	8.5	7.4	5.2	8.1
R-18	4.8	5.6	4.9	6.9	5.8	4.2	5.6	4.8	6.2	5.9	7.4	7.6	6.2	5.7	6.8	7.8	8.2	7.2	7.9	9.8
R-19																				
R-20	5.6	6.4	5.6	7.7	9.3	4.8	6.0	5.4	6.8	6.6	8.0	8.2	6.8	6.0	6.0	8.0	8.1	7.5	7.7	8.2
R-21	3.9	4.7	4.0	6.0	7.0	4.0	5.4	4.9	5.3	5.0	7.2	7.4	6.0	5.5	6.6	6.9	8.0	6.3	7.7	7.6
R-23	4.3	5.3	4.8	6.8	8.8	3.7	4,7	6.0	5.6	5.8	6.4	6.9	5.4	6.4	5.0	6.8	7.1	6.0	7.0	6.7
R-24	2.9	3.9	3.5	5.5	7.2	3.3	4.3	2.9	4.0	4.5	6.5	6.7	5.3	4.2	3.9	5.7	6.2	5.1	6.3	5.8
R-25	4.6	5.6	6.1	8.1	9.7	3.3	5.1	4.3	5.8	9.1	6.1	7.0	5.8	5.1	5.3	7.1	7.5	6.4	7.4	7.1
R-26	6.0	7.1	8.0	10.1	11.7	3.9	6.0	5.8	7.2	9.0	6.8	7.0	5.6	6.4	6.8	8.6	8.8	7.8	7.1	8.5
R-27	3.0	4.1	3.9	5.9	7.6	2.2	3.5	3.2	4.7	4.9	5.4	5.6	4.2	3.4	4.2	6.0	5.6	5.4	5.8	6.1
R-28	2.8	2.6	3.4	5.8	7.9	4.1	4.4	3.2	3.5	4.4	7.7	7.6	5.6	4.9	4.2	5.2	7.5	6.4	7.2	7.1
R-29	4.4	2.9	3.0	0.8	1.6	6.9	7.0	4.9	3.8	1.9	9.8	9.3	7.9	6.2	5.3	6.3	8.2	7.0	7.9	7.7
R-30			4.5		3.1			6.4						7.7			9.7	8.6		

Table

INTER ZONAL SHORTEST PATHS - RAWALPINDI

ORIGIN	DESTINATION ZONE			
	61	62	63	64
R-15				
R-17	9.2	9.4	10.5	11.4
R-18	9.0	9.1	10.3	11.2
R-19				
R-20	9.6	9.7	10.9	11.8
R-21	8.8	8.9	10.1	11.0
R-23	8.2	8.3	9.5	10.4
R-24	8.0	8.2	9.3	10.2
R-25	8.5	8.7	9.7	10.7
R-26	8.3	8.5	9.6	10.5
R-27	7.0	7.1	8.3	9.2
R-28	8.9	9.0	10.2	11.13
R-29	10.7	10.8	12.0	12.9
R-30				

Table.

INTER ZONAL SHORTEST PATHS - RAWALPINDI

(Kilometres)

ORIGIN	DESTINATION ZONE																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
R-31	9.4	8.5	7.9	6.8	6.3	8.5	6.5	6.5	5.9	5.7	7.0	6.1	4.7	4.6	4.6	4.1	3.1	13.0	6.8	4.7
R-33	9.1	8.3	7.8	6.7	6.2	8.4	6.4	6.4	5.7	5.4	7.6	6.0	4.5	4.5	4.2	4.7	4.6	10.6	5.4	4.6
R-34	7.6	7.7	6.5	6.0	5.6	6.9	4.9	5.1	5.2	4.9	7.5	4.7	3.2	3.8	4.0	5.5	5.5	10.9	3.8	3.3
R-35	9.4	8.7	8.0	7.0	6.5	8.7	6.7	6.8	6.0	5.7	7.9	6.3	4.8	4.8	4.5	5.0	5.0	10.0	5.7	4.9
R-36	7.8	7.9	5.7	6.3	5.8	7.[illegible]	5.1	5.4	5.4	5.1	7.7	4.9	3.4	4.1	4.3	4.9	5.8	9.4	3.9	3.5
R-37										6.1										
R-39			7.7						6.4											
R-40	9.6	8.9	8.3	7.2	6.7	8.9	6.9	7.0	6.3	5.2	8.1	6.5	5.0	5.0	4.7	5.3	5.2	11.2	5.9	5.1
R-41	9.7	9.8	8.6	8.0	7.7	9.0	7.0	7.3	7.3	7.1	9.6	6.8	5.3	6.0	6.1	7.7	7.7	13.0	6.0	5.4
R-42	9.4	9.5	8.3	7.7	7.3	8.7	6.7	6.9	7.0	6.7	9.3	6.5	5.0	5.6	5.8	7.3	7.3	12.7	5.6	5.0
R-45	10.1	10.0	8.7	8.3	7.8	9.2	7.2	7.4	7.0	7.2	10.2	6.8	5.5	6.1	6.4	7.4	8.2	8.9	2.9	5.4
R-46	10.6	10.8	9.5	9.0	8.6	9.0	7.8	7.9	8.3	8.0	10.5	7.7	6.3	6.9	7.1	8.6	8.6	14.0	6.9	6.3
R-47	10.5	10.6	9.4	8.8	8.4	9.8	7.8	8.0	8.1	7.8	10.4	7.6	6.1	6.7	6.9	8.4	8.4	13.8	6.7	6.2
R-48	10.9	10.6	9.4	8.9	8.5	9.8	7.8	8.0	8.1	7.8	10.4	7.6	6.1	6.6	7.0	8.4	8.4	11.9	6.1	6.2

2

Table.

INTER ZONAL SHORTEST PATHS - RAWALPINDI

ORIGIN	DESTINATION ZONE (Kilometres)																			
	21	22	23	24	25	26	27	29	29	30	31	32	33	34	35	36	37	38	39	40
R-31	3.7	2.9	0.4	2.8	7.7	6.0	6.8	3.4	4.7	2.8	2.0	1.5	5.4	3.8	2.8	7.9	7.0	4.0	2.5	2.0
R-33	3.6	2.9	3.9	5.2	6.5	4.5	4.5	3.0	3.9	2.7	2.7	3.0	3.9	2.4	1.1	6.4	5.9	3.3	2.2	1.2
R-34	2.9	2.8	3.8	6.5	4.9	3.0	2.8	2.3	2.1	1.4	2.6	3.3	2.3	0.8	0.6	4.9	3.6	1.2	1.3	1.0
R-35	3.9	3.2	3.2	5.0	6.8	4.9	4.9	3.3	4.2	3.0	3.0	2.3	4.2	2.7	1.4	6.7	6.3	3.7	2.6	1.5
R-36	3.2	3.0	4.0	6.7	4.3	2.4	3.0	2.6	1.7	1.6	2.8	3.6	1.7	0.3	1.6	4.0	3.6	2.2	2.3	2.0
R-37	4.1		5.0					3.5		2.5				2.0				9.6	0.9	
R-39							4.1	3.6	3.3			3.6		2.1						
R-40	4.1	3.4	4.5	5.8	7.0	5.0	5.1	3.5	4.4	3.2	2.9	4.6	4.4	2.9	1.6	6.9	6.5	6.9	1.0	1.1
R-41	5.1	4.9	5.9	8.6	7.0	5.1	4.9	4.4	4.2	3.5	4.7	3.4	4.5	2.9	2.0	7.0	3.2	3.3	2.0	1.2
R-42	4.7	4.6	5.6	8.3	6.7	4.8	4.6	4.1	3.9	3.2	4.3	5.1	4.1	2.6	2.4	6.6	5.4	3.0	1.2	1.4
R-45	5.2	5.5	4.8	9.5	3.5	2.5	3.5	4.6	4.3	3.9	5.1	5.9	0.9	2.4	3.8	2.7	1.3	4.4	2.8	3.8
R-46	6.0	5.8	6.9	9.3	8.0	6.0	5.9	5.4	5.2	4.4	5.6	6.4	5.4	7.9	3.7	7.9	6.7	4.2	2.5	2.0
R-47	5.8	5.7	6.7	9.4	7.8	5.9	5.7	5.2	5.0	4.3	5.5	6.2	5.2	3.7	3.5	7.7	6.5	4.1	1.4	2.5
R-48	5.9	5.7	6.7	8.0	6.7	5.6	5.7	5.2	5.0	4.3	5.5	6.7	3.9	3.7	3.6	5.6	4.3	3.9	1.2	2.3

3

Table.

INTER ZONAL SHORTEST PATHS - RAWALPINDI

(Kilometres)

ORIGIN	DESTINATION ZONE																			
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
R-31	1.2	0.8	3.3	3.8	5.8	3.8	3.4	1.9	1.7	2.4	6.7	6.2	4.4	4.1	2.3	3.3	5.5	3.7	6.0	5.0
R-33	1.0	1.8	4.3	4.7	6.7	3.6	3.4	1.7	2.2	3.3	6.4	6.7	4.6	3.2	2.9	2.8	5.0	4.0	5.2	4.7
R-34	2.3	3.4	5.9	6.3	8.4	1.4	2.7	2.4	3.9	4.1	4.6	4.8	3.4	2.7	3.4	5.2	4.8	4.6	5.0	5.3
R-35	0.5	1.4	3.9	4.3	6.4	4.0	3.0	1.2	1.5	2.7	6.1	6.0	3.9	2.5	2.1	3.1	4.4	3.6	4.5	4.0
R-36	3.4	4.1	6.6	7.1	9.1	2.4	4.4	3.0	4.4	5.6	5.6	5.8	4.4	3.4	4.4	6.2	5.8	5.6	6.3	6.3
R-37		2.1					2.4	1.0					2.7							
R-39											4.7			2.0				3.4		
R-40	0.5	1.2	3.7	4.1	6.2	4.2	2.2	1.0	1.3	2.7	5.9	5.4	3.7	2.8	1.9	2.9	4.2	3.4	4.3	3.8
R-41	1.8	2.4	5.2	5.7	7.5	3.1	2.6	0.2	2.1	4.7	5.8	5.3	3.4	1.2	0.8	2.6	3.1	2.0	5.7	2.7
R-42	1.9	2.6	5.0	4.1	6.1	2.5	2.0	1.0	2.7	5.9	5.2	4.7	2.8	0.9	1.2	3.1	3.4	2.4	5.1	2.4
R-45	5.0	5.7	8.2	8.6	10.7	1.0	3.0	4.3	6.4	9.0	3.9	4.1	2.7	3.9	4.4	5.9	5.0	6.8	4.3	7.5
R-46	2.6	3.2	5.7	6.1	8.2	3.3	1.6	1.0	2.4	5.1	6.4	6.0	2.7	0.6	1.2	1.8	2.2	1.2	3.8	1.8
R-47	3.1	3.7	3.2	5.2	7.3	2.7	0.8	1.7	3.7	6.4	5.8	3.5	1.1	0.4	1.8	2.5	2.9	1.8	1.8	2.5
R-48	3.0	3.6	6.2	6.6	8.6	2.4	0.6	2.5	3.7	5.3	4.4	4.8	1.8	2.9	4.3	7.5	2.9	2.6	1.9	3.2

Table

INTER ZONAL SHORTEST PATHS - RAWALPINDI

(Kilometres)

ORIGIN	DESTINATION ZONE			
	61	62	63	64
R-31	7.6	7.7	8.9	9.8
R-33	8.0	8.1	9.3	10.2
R-34	6.2	6.3	7.5	8.4
R-35	7.3	7.4	8.6	9.5
R-36	7.19	7.3	8.5	9.4
R-37				
R-39				
R-40	7.1	7.2	8.4	9.3
R-41	8.0	8.7	9.9	10.8
R-42	7.4	8.3	9.3	10.2
R-45	5.5	5.6	6.8	7.7
R-46	7.3	7.4	8.6	9.5
R-47	6.2	6.7	7.9	8.8
R-48	6.1	6.2	7.4	8.1

Table

INTER ZONAL SHORTEST PATH - RAWALPINDI

(kilometres)

ORIGIN	DESTINATION ZONE																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
R-49	9.6	9.8	8.5	8.0	7.6	9.0	6.9	7.2	7.3	7.0	9.5	6.7	5.3	5.9	6.1	7.6	7.6	10.0	4.2	5.2
R-51	12.5	12.6	11.4	10.8	10.5	11.8	9.7	9.8	10.0	9.8	12.4	9.6	8.1	8.7	9.0	10.4	10.4	15.8	8.7	8.2
R-52	12.2	12.3	11.1	10.5	10.2	11.5	9.5	9.7	9.8	9.5	12.1	9.13	7.8	8.4	8.7	10.1	10.1	15.5	8.4	7.9
R-53	11.5	11.6	10.4	9.9	9.5	10.8	8.8	9.0	9.1	8.9	11.4	8.6	7.1	7.8	8.0	9.5	9.5	14.8	7.8	7.2
R-55																				
R-56									9.5											
R-57																				
R-58	10.8	10.9	9.7	9.1	8.7	10.1	8.1	8.3	8.4	8.1	10.7	7.9	6.4	7.0	7.2	8.7	8.7	14.1	7.0	6.5
R-59																				

Table

INTER ZONAL SHORTEST PATHS - RAWALPINDI

(Kilometres)

ORIGIN	DESTINATION ZONE																			
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
R-49	5.0	4.8	5.9	8.5	4.9	5.0	4.9	4.4	4.2	3.4	4.6	5.4	4.4	2.9	3.3	2.7	2.5	2.5	2.6	2.7
R-51	7.8	7.3	8.7	11.4	9.8	7.9	7.7	7.2	7.0	6.3	7.5	8.2	7.2	5.7	8.5	9.7	8.5	6.1	4.3	3.8
R-52	7.5	7.1	8.4	11.1	9.5	7.3	7.3	6.9	6.7	6.0	7.2	7.9	6.9	8.4	5.2	9.4	8.2	5.8	3.1	4.2
R-53	6.9	6.7	7.7	10.4	8.8	6.6	6.6	6.3	6.0	5.3	6.5	7.3	6.3	4.7	4.6	8.8	7.6	5.1	2.4	2.5
R-55								7.0	6.8	6.1				5.5					3.2	4.3
R-56																		4.7	4.8	5.0
R-57								9.2		8.2		10.2						7.3	7.4	7.5
R-58	6.1	6.1	6.7	9.7	8.1	6.2	5.9	5.5	5.3	4.6	5.8	6.5	5.5	4.0	3.8	8.0	6.8	4.4	1.7	2.8
R-59										5.0										

Table

INTER ZONAL SHORTEST PATHS - RAWALPINDI

(Kilometres)

ORIGIN	DESTINATION ZONE																			
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
R-49	3.3	3.9	6.5	7.7	9.5	0.7	1.4	2.9	4.3	5.5	2.5	2.8	1.4	2.8	3.0	4.8	3.4	3.9	3.0	4.6
R-51	4.4	5.0	7.5	8.0	10.0	5.1	3.4	2.8	4.3	6.9	8.3	7.8	4.6	2.5	3.0	3.6	1.9	2.3	3.2	0.5
R-52	4.8	5.4	7.9	6.9	9.0	4.2	2.6	3.4	5.4	8.0	7.5	5.2	2.5	2.1	3.6	3.6	0.3	2.2	1.0	2.8
R-53	4.1	4.7	7.2	6.2	8.3	3.5	1.9	2.7	2.8	7.4	6.8	4.6	2.2	1.5	2.9	3.5	1.0	2.8	0.7	3.5
R-55							2.7						2.9	2.3			1.8	3.6		
R-56													4.9				7.9	9.7		
R-57													1.4	0.7	2.1	2.8	1.9	2.1	1.9	2.8
R-58	3.3	4.0	6.5	5.5	7.5	2.8	1.2	2.0	4.0	6.7	6.1	3.8								
R-59																				

Table

INTER ZONAL SHORTEST PATHS - RAWALPINDI

(Kilometres)

ORIGIN	DESTINATION ZONE			
	61	62	63	64
R-49	4.1	4.3	5.4	6.3
R-51	9.1	9.3	10.4	11.3
R-52	6.6	6.7	7.9	8.8
R-53	6.9	7.0	8.2	9.1
R-55		7.8		
R-56				
R-57				
R-58	6.9	7.0	8.2	9.1
R-59				

4 THE VEHICLE FLEET AND MODE OF OPERATION

4.1 Introduction

In this chapter we begin to report on the findings of the two surveys carried out in Islamabad and Rawalpindi, dealing first with the institutional and organizational aspects of taxi operations and concentrating on such issues as the ownership structure of the industry, and characteristics of the vehicle fleet.

The one aspect which dominates the structure and operation of the industry is its highly fragmented nature and virtual absence of any organization or control exercised either by the industry itself or by government. Admittedly, the taxi industry is characterised, the world over, as one of small scale operators, but in the area covered by our study this characteristic is manifest to an almost exaggerated extent.

4.2 Fleet size

It has proved impossible to obtain a reliable estimate from official sources of the number of vehicles operating regularly within the study area. The vehicle licensing authorities (Excise and Taxation Office) for the Rawalpindi and Islamabad districts whilst distinguishing between taxis and private motor vehicles do not include in their records the significant number of vehicles seen in day-to-day operation in Islamabad and Rawalpindi bearing registration plates from as far-a-field as Karachi, Lahore, and Azad Kashmir. Nor is it possible, due to the geographical extent of the Administrative District, to distinguish between vehicles which although registered in Rawalpindi could in fact be operating in Hasan Abdal, Attock, or Murree.

The records of the RTA are equally suspect in that the requirement that licenses (route permits) to operate taxis be renewed only every three years means that there is no way of reckoning the number of vehicles which have been retired since the last issue of a permit.

Added to which there is an unknown number of vehicles which operate without a valid route permit.

Reference to Tables 4.1 and 4.2 shows the disparity between the figures from different sources. Table 4.1 shows that the number of taxi route permits conceded by the RTA for different vehicles over the last 18 years is almost double the number of vehicles registered as taxis over the preceding 28 years by ETO. Admittedly, some 23.3% of those permits were given to vehicles first registered outside the study area. Of the total number of vehicles for which permits have been conceded (7127) many will now of course have been scrapped, but how many we cannot tell. If we multiply the number of vehicles as given by ETO by the factor of 1.233 so as to account for vehicles registered outside the district, we obtain a total fleet size of 4310. However, even then there is no guarantee that all these vehicles are still operating as taxis; some may have moved elsewhere, others may have been scrapped. In fact, one of the dominant scenes of the urban landscape is the many hundreds of taxis in various states of disrepair and apparent abandonment to be seen in the vicinity of the multitude of small motor workshops that abound in certain areas of Rawalpindi.

Of the remaining possible sources of data on fleet size, the Motor Vehicle Examiner informed that no records are kept of the number of taxis being examined, whilst the two driver's unions operating in the area, could only offer a guess as to the number of drivers and vehicles in operation.

The Secretary RTA estimates that the current number of taxis operating in Rawalpindi and Islamabad may be somewhere between 3000 and 4000 vehicles. In our survey, with an overall sample rate of 50%, some 1557 separate vehicles were identified. Thus a not unreasonable estimate would be to put the number of vehicles in daily operation in the region of 3000-3250.

Table 4.1

TAXI PERMITS ISSUED BY RTA RAWALPINDI 1967-1985

M A K E	VEHICLE REGISTRATION DISTRICT			T O T A L
	RAWALPINDI	ISLAMABAD	OTHERS	
DATSUN	1378	269	837	2984
MORRIS	2560	41	671	3272
SUZUKI	154	49	78	281
RICKSHAW	400	-	24	424
OTHERS	100	16	50	166
TOTAL	5092	375	1660	7127

Table 4,2

TAXI REGISTRATIONS - EXCISE AND TAXATION OFFICE 1957-1985

M A K E	VEHICLE REGISTRATION DISTRICT		T O T A L
	RAWALPINDI	ISLAMABAD	
DATSUN	632	91	723
MORRIS	1814	20	1834
SUZUKI	57	5	62
RICKSHAW	458	-	458
OTHERS	220	7	227
TOTAL	3181	123	3304

4.3 The vehicle fleet: composition and age structure

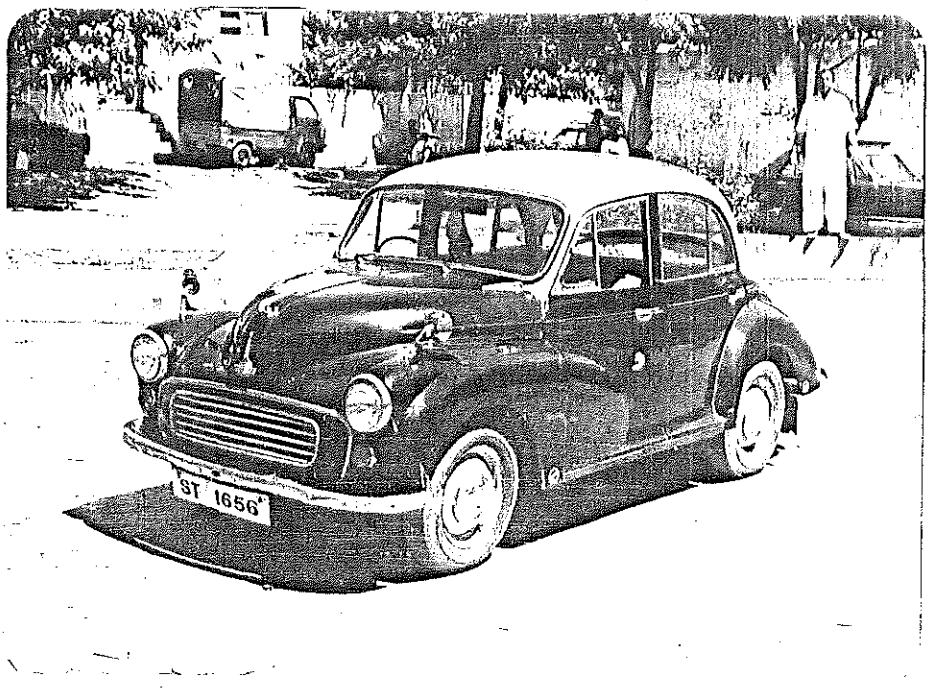
In the first interview survey particulars of 1557 different vehicles were recorded of which 52% were Datsun, 43% were Morris, and 3% were Suzukis, with other makes of taxicab contributing 0.7%, and rickshaws 1.2%. Since this sample was selected in a systematic but random manner, and the sample fraction is large, we can confidently expect the above proportions of vehicle make to be representative of the total vehicle population.

Thus there is a marked homogeneity in the composition of the taxi fleet, with just two types of vehicle dominating the taxicab sector; the Datsun 'Sunny' (GL) and the Morris 'Minor'. The Datsun is a four door, 1200cc capacity saloon car; the Morris is rated at 1000cc, whilst the rickshaw has a body with two passenger seats behind the driver built around a 150cc Vespa Motor Scooter engine (Figure 4.1).

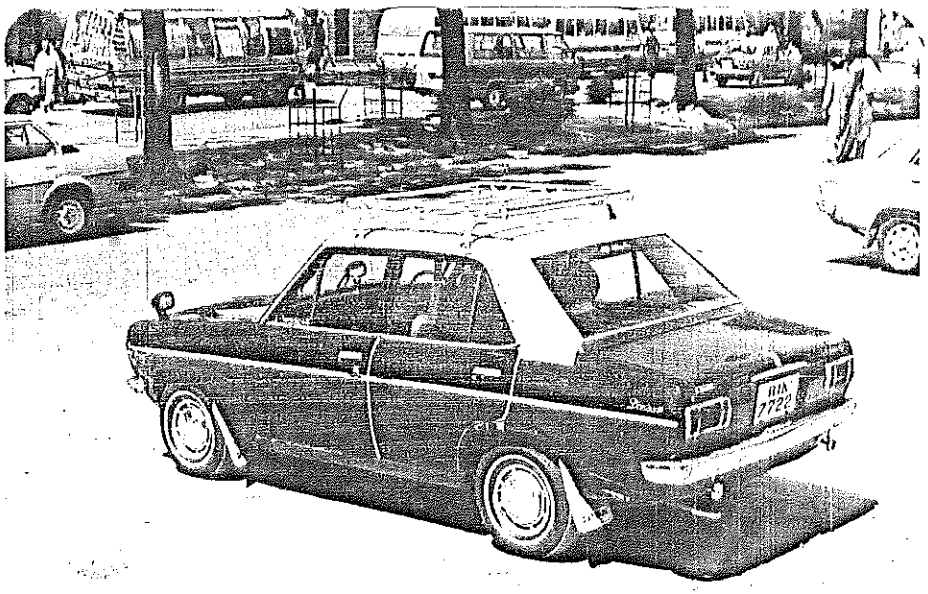
The only other vehicle appearing in any significant proportion is the Suzuki saloon car. This is a sub-compact model with a 800cc engine and of relatively recent introduction into Pakistan.

The Morris vehicles have largely been assembled in Pakistan from knocked-down units imported from the UK. Local assembly of the Morris Minor ceased in the mid-1970's. All the Datsuns are imported vehicles, whilst the rickshaws are manufactured by small scale industries, principally centred in Lahore. The Suzuki's are assembled in Pakistan, with a proportion of components being manufactured locally.

The age distribution for each vehicle type is shown in Figure 4.2 which reveals that the great majority of vehicles in use must have already covered a considerable distance. The Morris Minors are by far the oldest vehicles with 1967 as the mode of their age distribution and with more then 45% of vehicles manufactured in that year. In all, some 90% of the Morris were recorded as having been manufactured between 1965 and 1970. It is likely that the average Morris Minor taxi must have already covered some half a



a) Morris Minor



b) Datsun

Figure 4.1

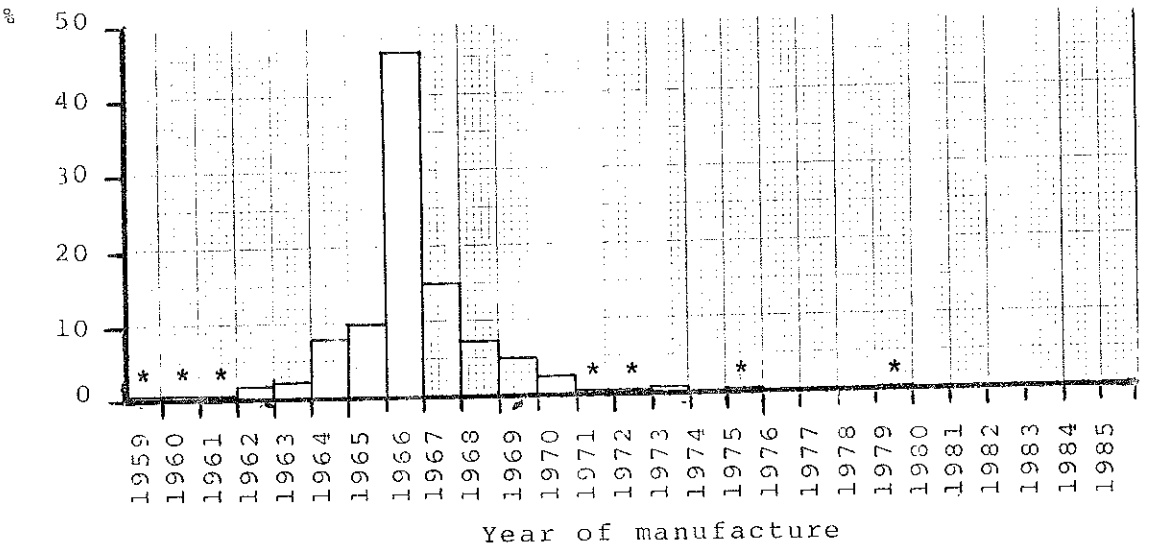
PREDOMINANT VEHICLE TYPES IN THE ISLAMABAD/RAWALPINDI TAXI FLEET.

c) Suzuki

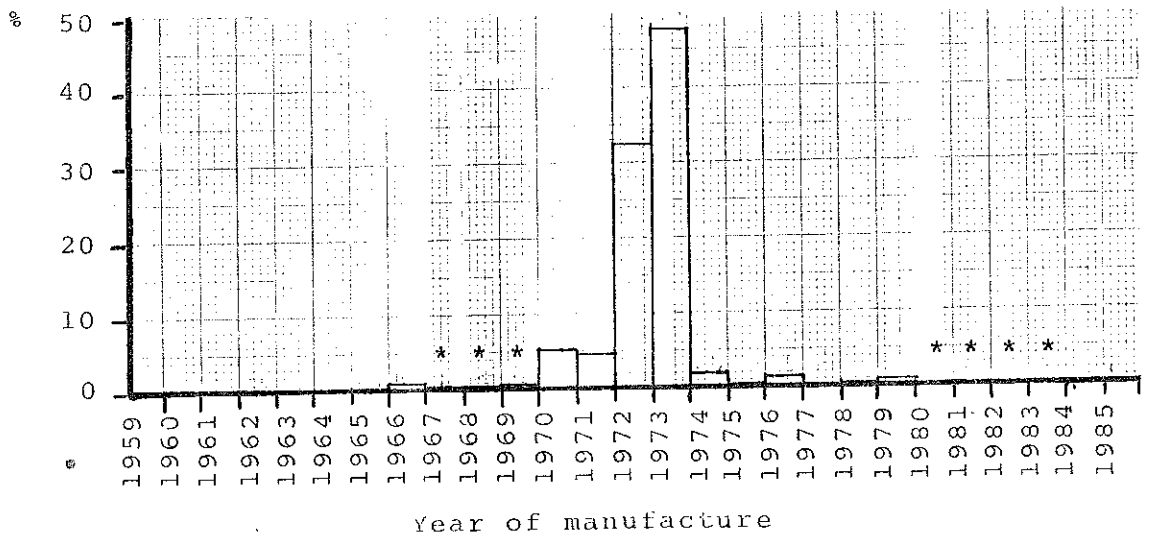
d) Rickshaw

Figure 4.1 (continued)

PREDOMINANT VEHICLE TYPES IN THE ISLAMABAD/RAWALPINDI TAXI FLEET.



a) MORRIS

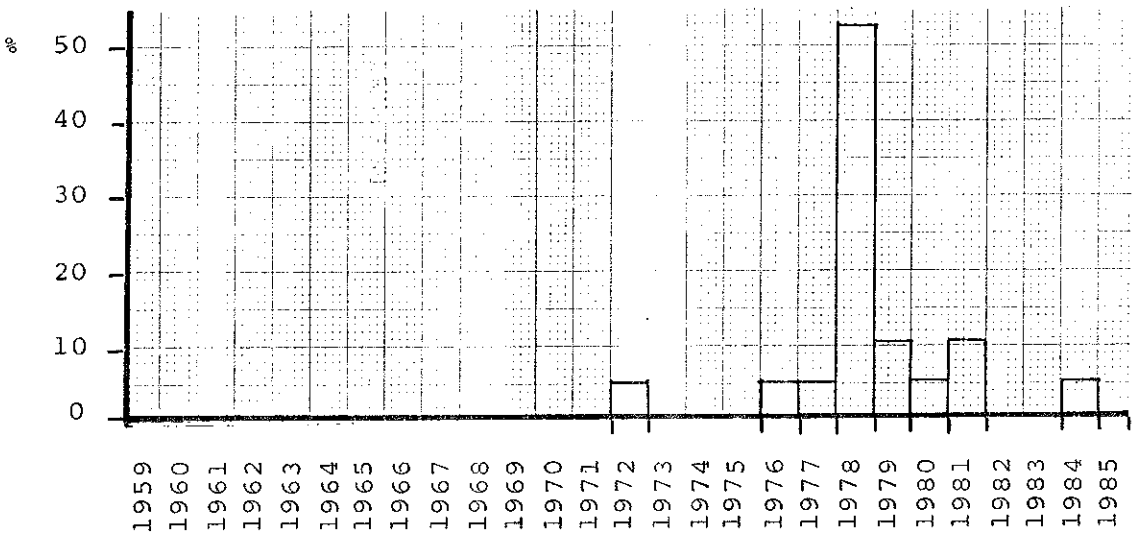


b) DATSUN

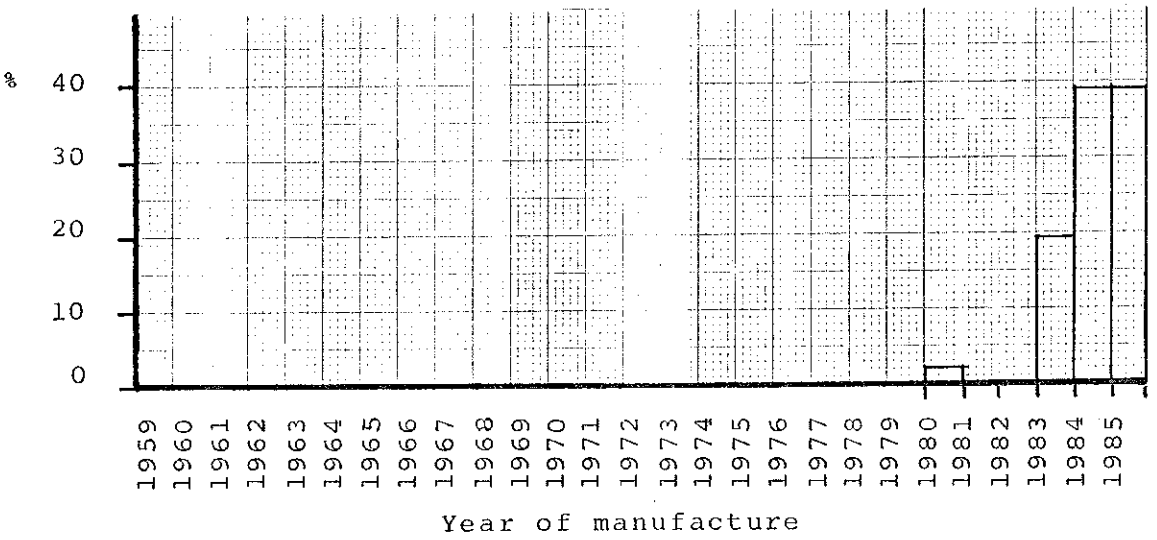
* = Less then 1%

Figure 4.2

AGE DISTRIBUTION OF VEHICLES



c) RICKSHAW



d) SUZUKI

Figure 4.2 (Continued)
AGE DISTRIBUTION OF VEHICLES

million kilometers during its lifetime.

The Datsuns are somewhat less elderly with 1974 as the mode of the age distribution. The distribution of ages is not as widely dispersed as the Morris, with nearly 80% of the vehicles manufactured in 1973 and 1974; the remainder dispersed between 1965 and 1984.

The Suzukis, are very much newer vehicles with over 95% having been brought on to the road in only the last 3 years. The rickshaws are on average somewhat older: the mode of the distribution is the year 1979; accounting for more than 50% of the total, whilst only 5% are older than 1976.

Table 4.3

AGE OF TAXI VEHICLES

	DATSUN	MORRIS	SUZUKI	RICKSHAW
AVERAGE AGE (Years)	13	19	1	7
MEDIAN YEAR OF MANUFACTURE	1972	1966	1984	1978
YEAR OF MANUFACTURE OF OLDEST VEHICLE	1964	before 1959	1980	1966
YEAR OF MANUFACTURE OF NEWEST VEHICLE	1984	1979	1985	1984

One of the remarkable features of the fleet is that the condition of a vehicle is not necessarily correlated with its age. Some of the older Morris vehicles have obviously had a considerable amount of money spent on them and would not look amiss in a "Concourse d'elegance". On the other hand many vehicles of both Datsun and Morris manufacture are in a fairly ramshackle condition and their road worthiness must be in some doubt.

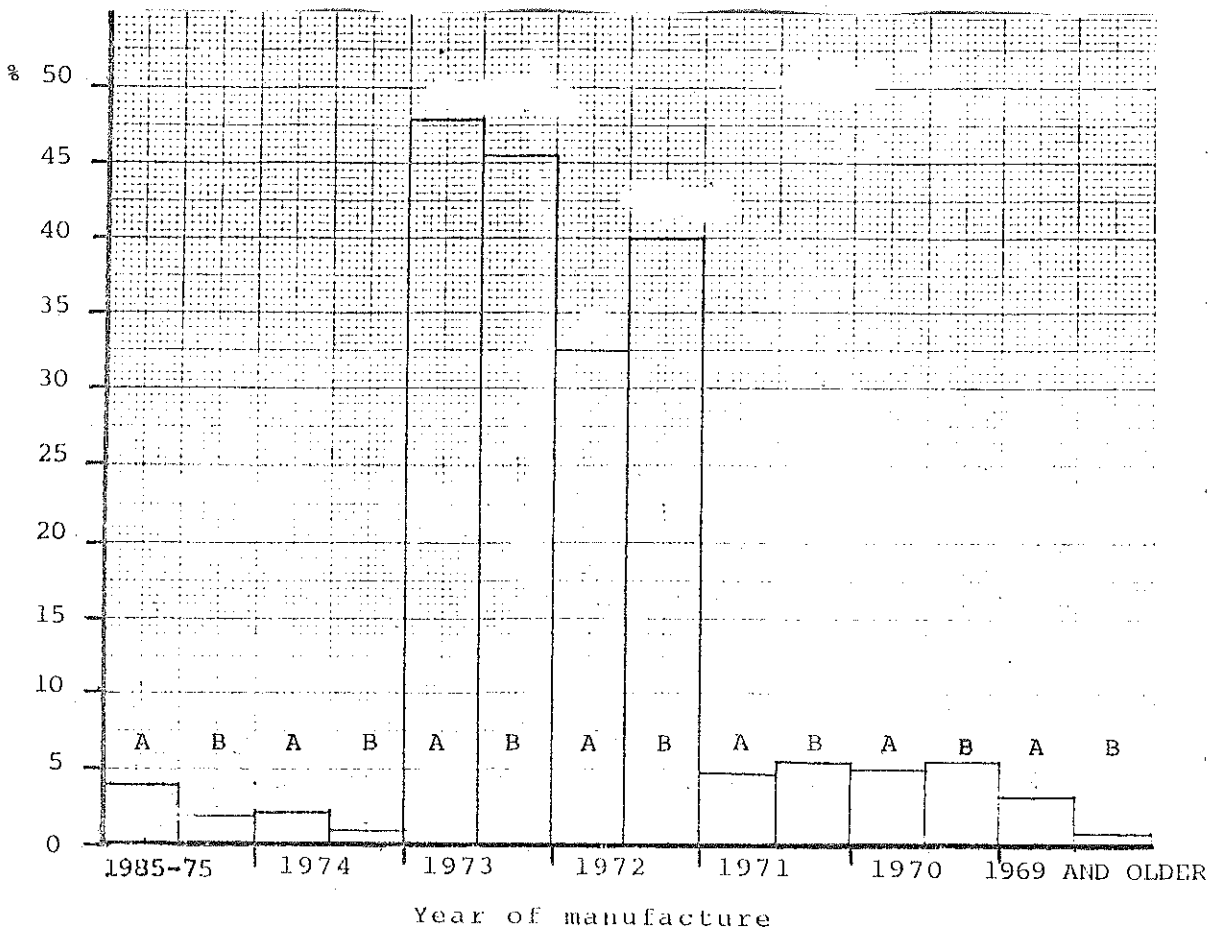
Figure 4.3 shows the age distribution for each vehicle type obtained from the stratified sample of the second survey, plotted against the age distribution obtained from the first survey. It shows that there is a very close correspondence between the two data sets, hence we can be reasonably confident that since the two distributions are similar, the smaller sample will also be a reliable estimator of the characteristics of the fleet as a whole.

4.4 Ownership and mode of operation

The general practice is for the taxis and rickshaws to operate from stands, although in the busier parts of Rawalpindi a certain amount of cruising is seen and fares are picked up by vehicles returning to a stand.

The term 'stand' is used here in a pragmatic rather than legal sense since there are only a mere handful of authorized taxi stands in the area. An authorized stand is one where the local authority (Muncipal Corporation, Cantonment Board or Capital Development Authority) stipulates that a parking fee shall be charged, and where revenue collection has been farmed out to a contractor. There are two such stands in Islamabad with daily fees at Rs. 2.00 and Rs. 5.00 respectively and there in Rawalpindi (the Airport, the Railway station and the Pirwadhi bus terminal). Elsewhere taxis use the public highway, forecourts to public and commercial buildings and vacant ground as their stands. The definition of stand adopted for this study was any location where two or more taxis habitually wait for the purposes of picking up passengers. Some 71 such locations covering the whole of the urbanized area of Islamabad and Rawalpindi, were covered in the survey.

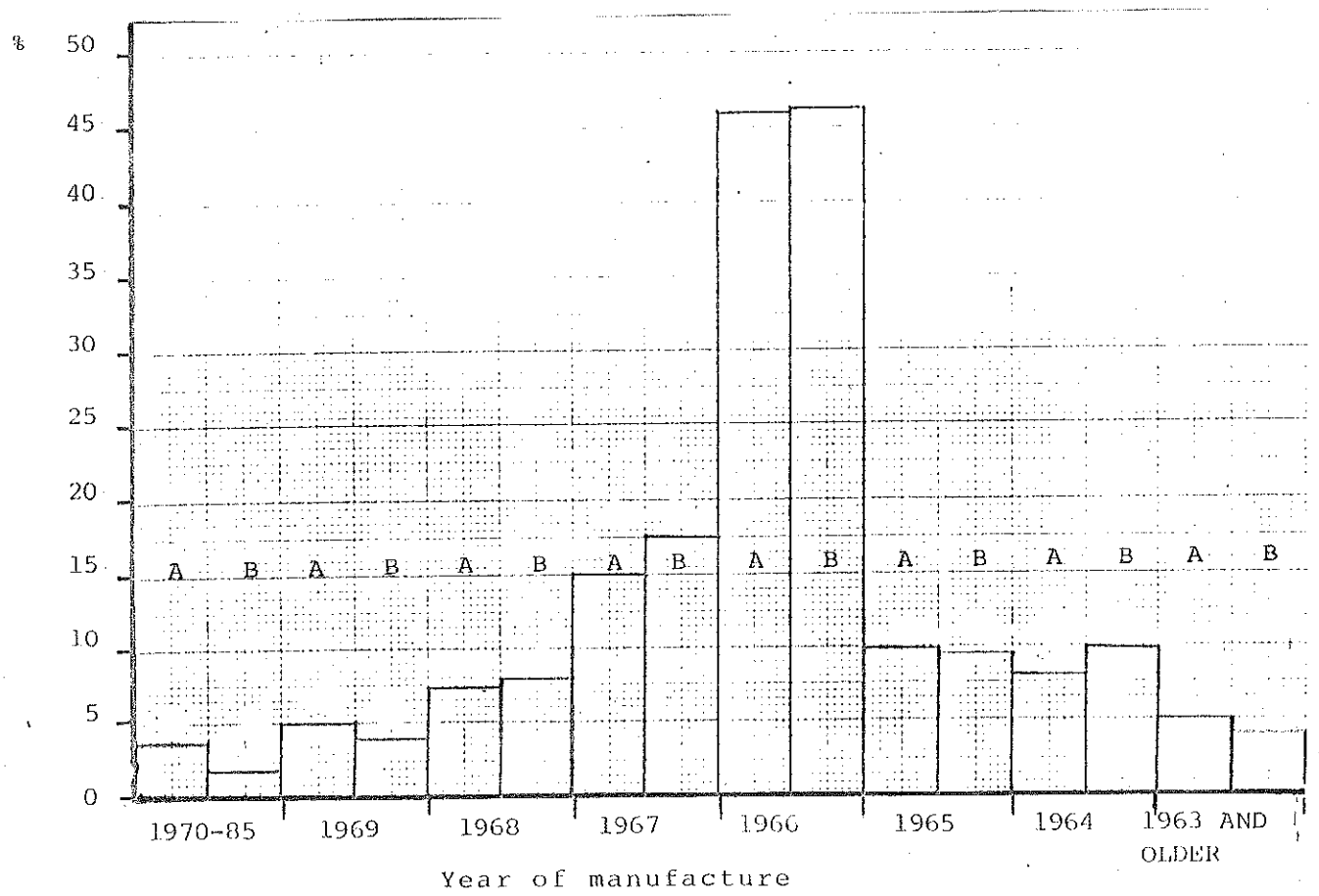
In the survey with passengers, a number of ancillary questions were put to the taxi drivers. Two of those related to the identity of the vehicle owner and to how the taxi was operated.



a) DATSUN

Figure 4.3

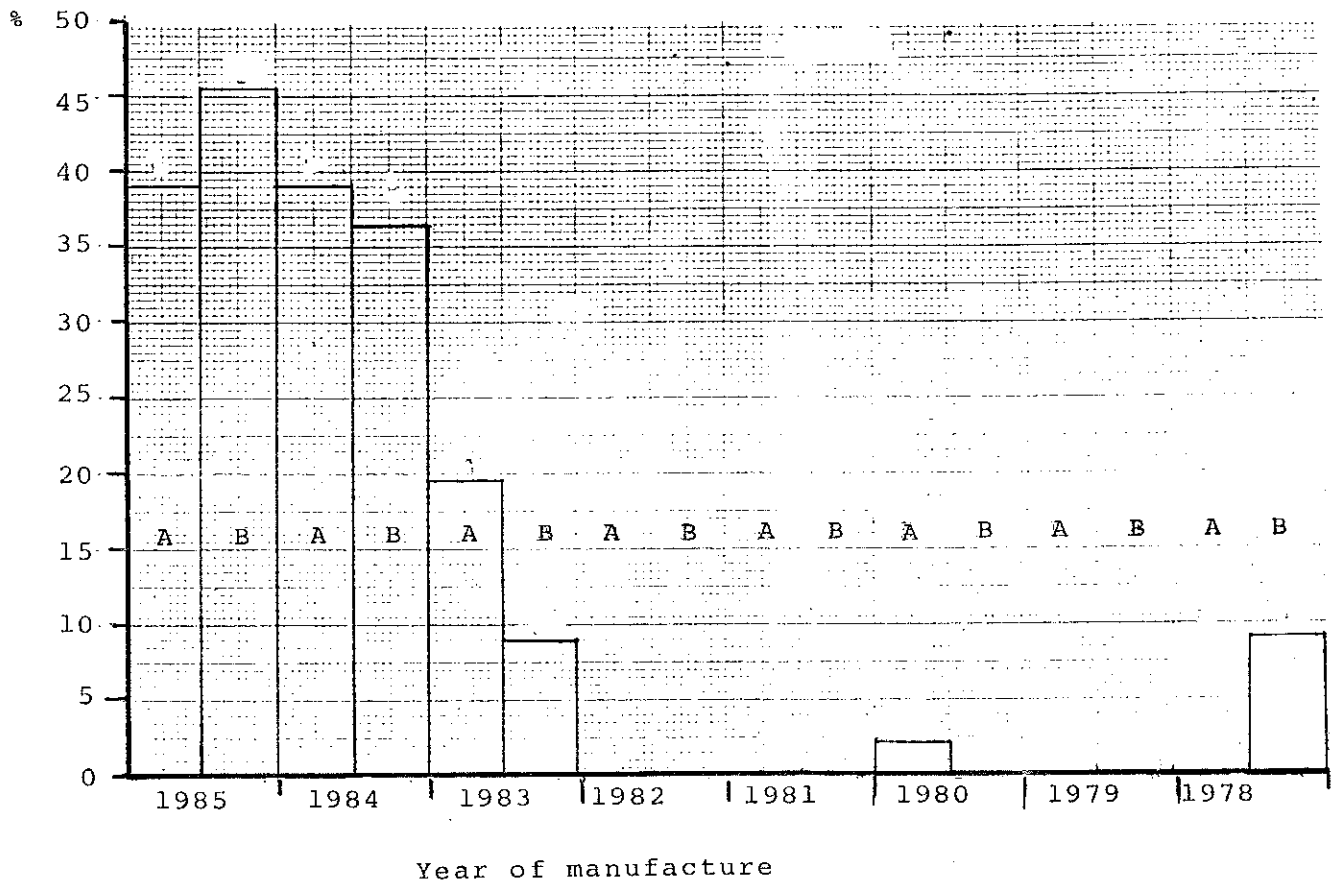
AGE DISTRIBUTION OF VEHICLES - FROM RANDOM SAMPLE (A) AND STRATIFIED SAMPLE (B)



b) MORRIS

Figure 4.3 (continued)

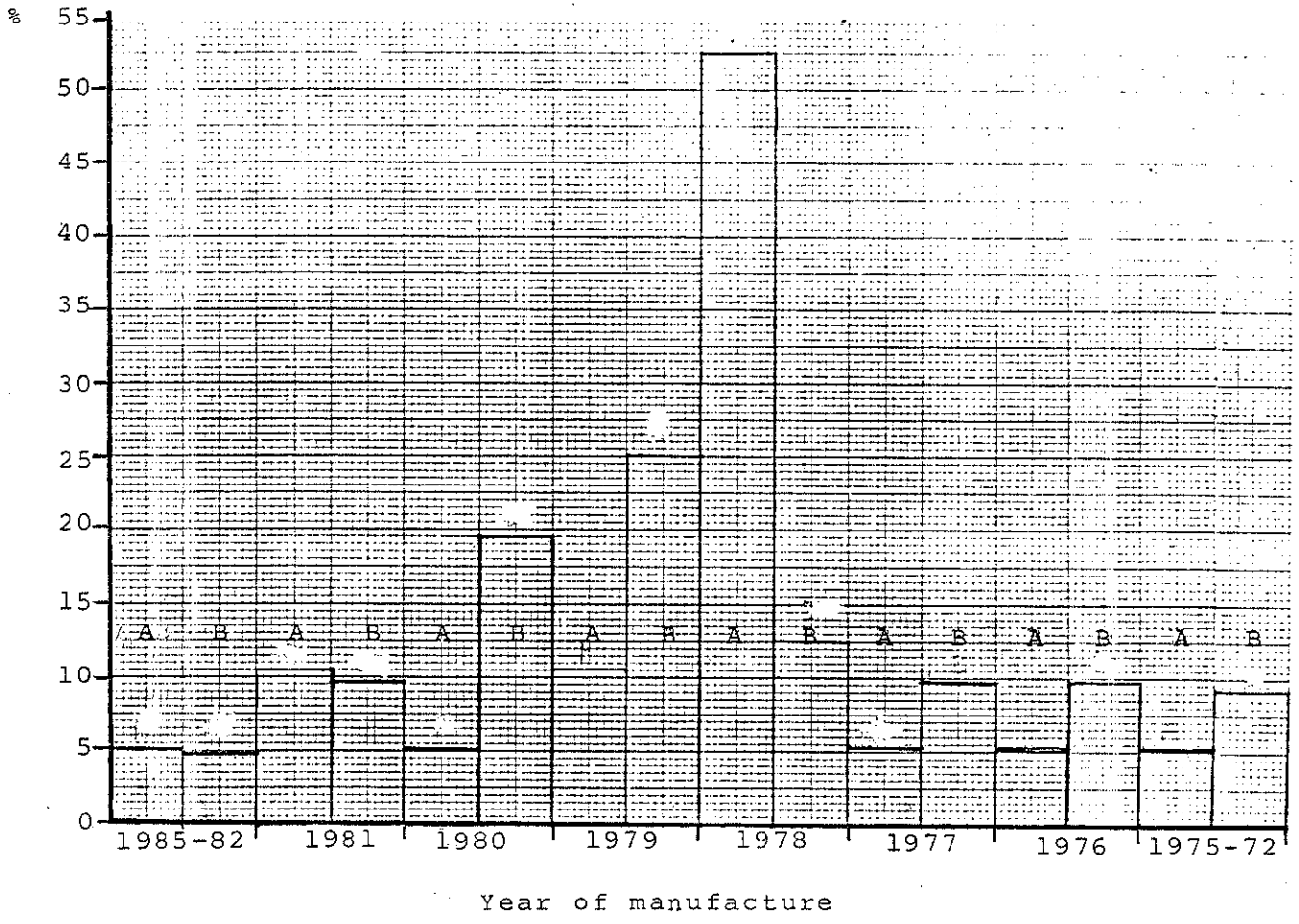
AGE DISTRIBUTION OF VEHICLES - FROM RANDOM SAMPLE (A) AND STRATIFIED SAMPLE (B)



c) SUZUKI

Figure 4.3 (continued)

AGE DISTRIBUTION OF VEHICLES - FROM RANDOM SAMPLE (A) AND STRATIFIED SAMPLE (B)



d) RICKSHAW

Figure 4.3 (continued)

AGE DISTRIBUTION OF VEHICLES - FROM RANDOM SAMPLE (A) AND STRATIFIED SAMPLE (B)

Four categories of operation were specified:

- a vehicle owned exclusively by the driver (owner driver)
- a vehicle owned by the driver and someone else (joint owner),
- a vehicle being driven by a regular driver who receives a regular monthly salary from the owner (employee),
- The driver is someone who has hired or contracted the vehicle from the owner, for either a fixed fee or on a commission basis (contractor).

The distribution of the number of operators falling within each of these four categories is shown in Figure 4.4. For the total vehicles covered in the first survey, it can be seen that there is a fiarly even divide between owner drivers on one hand and all other categories combined on the other.

During the course of this survey, however, it become evident that, despite the field testing of the questionnaire, we had not properly perceived the nature of the contractual relationship between drivers and owners, and that in fact the predominant practice was a hybrid from of arrangement whereby the driver both receives a minimal monthly wage and contracts to deliver a fixed amount from the fare revenue to the owner. The data in Figure 4.4 must then be interpreted in this light, and the distinction between employees and contractors therein ignored. For the second survey, categories were redefined and as Figure 4.5 shows, the number of true employees is a very small proportion of the sample; 2 out of 148 non-owner drivers.

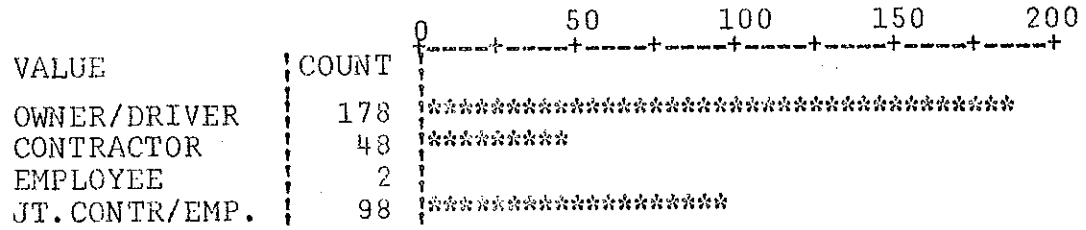


Figure 4.5
DISTRIBUTION OF MODE OF OPERATION OF TAXIS - SECOND SURVEY

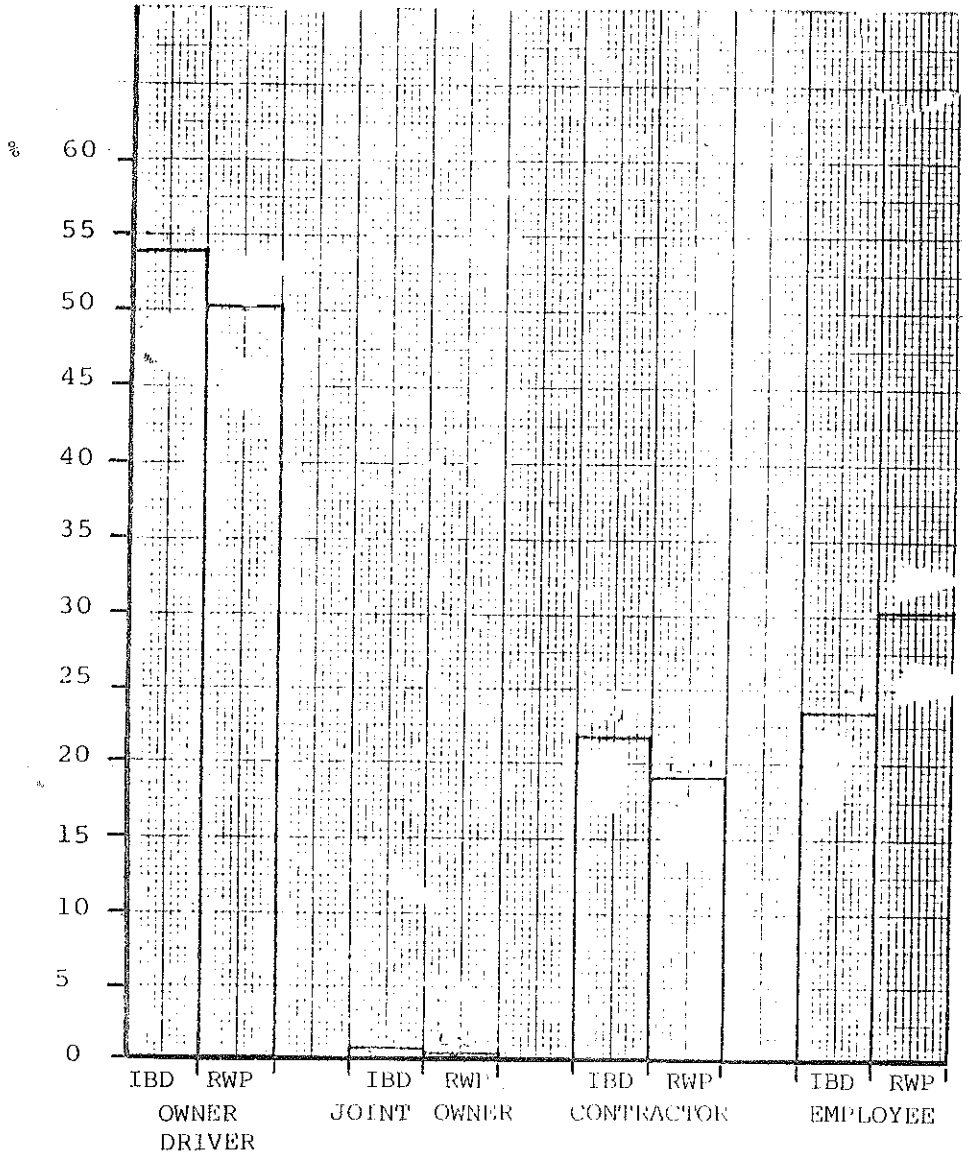


Figure 4.4

DISTRIBUTION OF MODE OF OPERATION OF TAXIS - FIRST SURVEY

The distribution of vehicle types amongst the different categories of owner is summarized in Figure 4.6 showing that there is little obvious preference exhibited by different categories of owners. For example 48.2% of Datsuns belong to owner drivers. A similar percentage is found for Rickshaws, whilst for the Morris and Suzukis, it is the owner drivers who own slightly more than half of these vehicles.

4.5 Vehicle provenance

One fairly obvious feature of the taxi industry in both Islamabad and Rawalpindi is the number of the vehicles to be seen with registration plates from other districts, or even from other Provinces of Pakistan. One hypothesis ventured during the early stages of the study was that operators from Lahore, Karachi and other big cities were being squeezed out by the growing number of rickshaws, and since there seems to be a policy of constraining rickshaw numbers in Rawalpindi; those operators had moved up to Rawalpindi/Islamabad.

Accordingly, a question was included in the survey with owners to this effect. However, it was established that none of the present owners of either taxi cabs or rickshaws had previously worked with the vehicle being covered in the survey elsewhere than Rawalpindi or Islamabad. Thus it appears that labour is not as footloose as imagined. It yet remains to be established whether the 'foreign' registered vehicles were in fact shipped to Rawalpindi for sale, or whether they were purchased in the place of their first registration, or in fact if they had actually been operated as taxicabs there.

One other aspect of interest concerning the provenance of vehicles used in the taxi trade was to establish if the vehicle had always been used as a taxi. The responses to this area of inquiry (Figure 4.7) show that overall some 17.4% of the vehicle sample had not previously been registered as taxis.

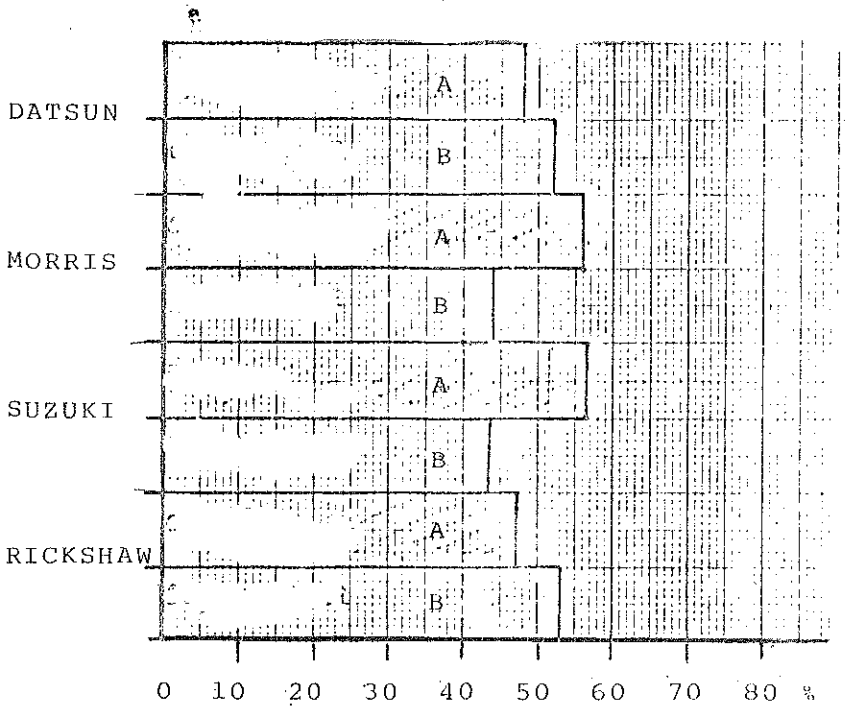
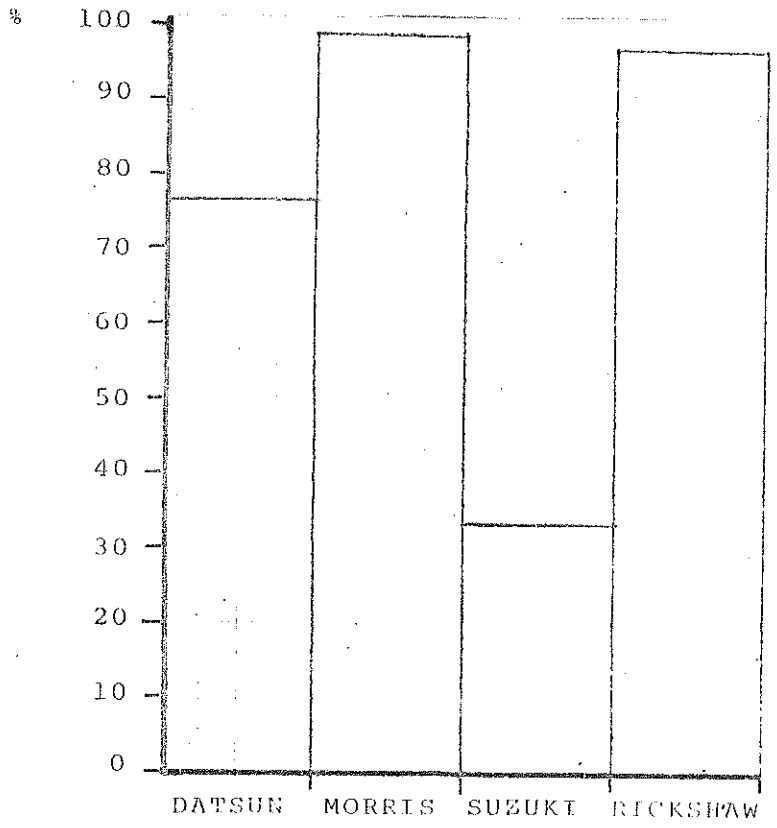


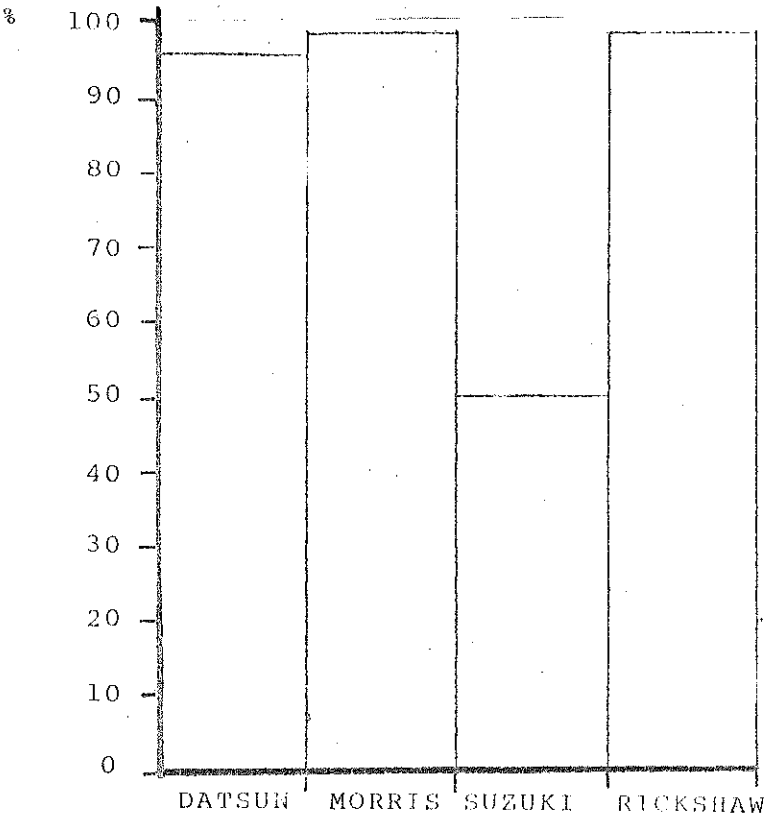
Figure 4.6

DISTRIBUTION OF VEHICLE TYPE BY MODE OF OPERATION

For Suzukis the percentage was 66%, but this is attributable to the fact that the majority of these were new vehicles when acquired by their present owners. What was unexpected was the relatively high figure of 24% for Datsuns not previously registered as taxis, especially in view of the values of 2-4% obtaining for the remainder of the fleet. It would be pertinent to examine whether these Datsuns coming into use as taxis for the first time represent a real increase in the fleet size, but to do this thoroughly would require a much more comprehensive study of vehicle acquisition and scrapping patterns than has been possible in this study.



a) OWNER DRIVERS



b) OTHER OWNERS

Figure 4.7

VEHICLES PREVIOUSLY REGISTERED AS TAXIS

5 TAXI OWNERS AND DRIVERS

5.1 Introduction

In this chapter we present those survey findings which relate to the organization and ownership structure of the industry, discussing such aspects as the number of vehicles owned by operators, the owner's views on the profitability of the undertaking, the nature of the contracts between drivers and owners and working practices and problems.

In most countries the most common forms of taxi operation are those of owner drivers working on their own account, or operation by entrepreneurs, owning anything between just one taxi and a fleet of hundreds, who either contract out their vehicles on a commission or hire basis or employ drivers on long term contract. In the case of Islamabad/Rawalpindi, there are only two modes of operation of any significance; the owner driver, and the contractor; each accounting for about 50% of the fleet.

5.2 Taxi owners: Number of vehicles owned and industry experience

Turning now to more specific aspects of ownership; Figure 5.1 clearly confirms the original impression of a highly fragmented industry. As would normally be expected, the owner-driver category has a high percentage of its members owning just a single vehicle, but what is remarkable (in comparison with other countries) is that almost 90% of other owners also own just a single vehicle, and that no one owns more than four vehicles (taxis or rickshaws).

One of the questions asked of all owners was how long they had been in the industry. The responses shown in Figure 5.2 reveal that overall 32.2% had been taxi owners for less than two years, and that only 40% had been in the industry as owners for four years or longer. Since we know that the number of taxis in operation four years ago was a great deal more than 40% of the existing number we can presume that there has in fact been a

a) TAXI CABS

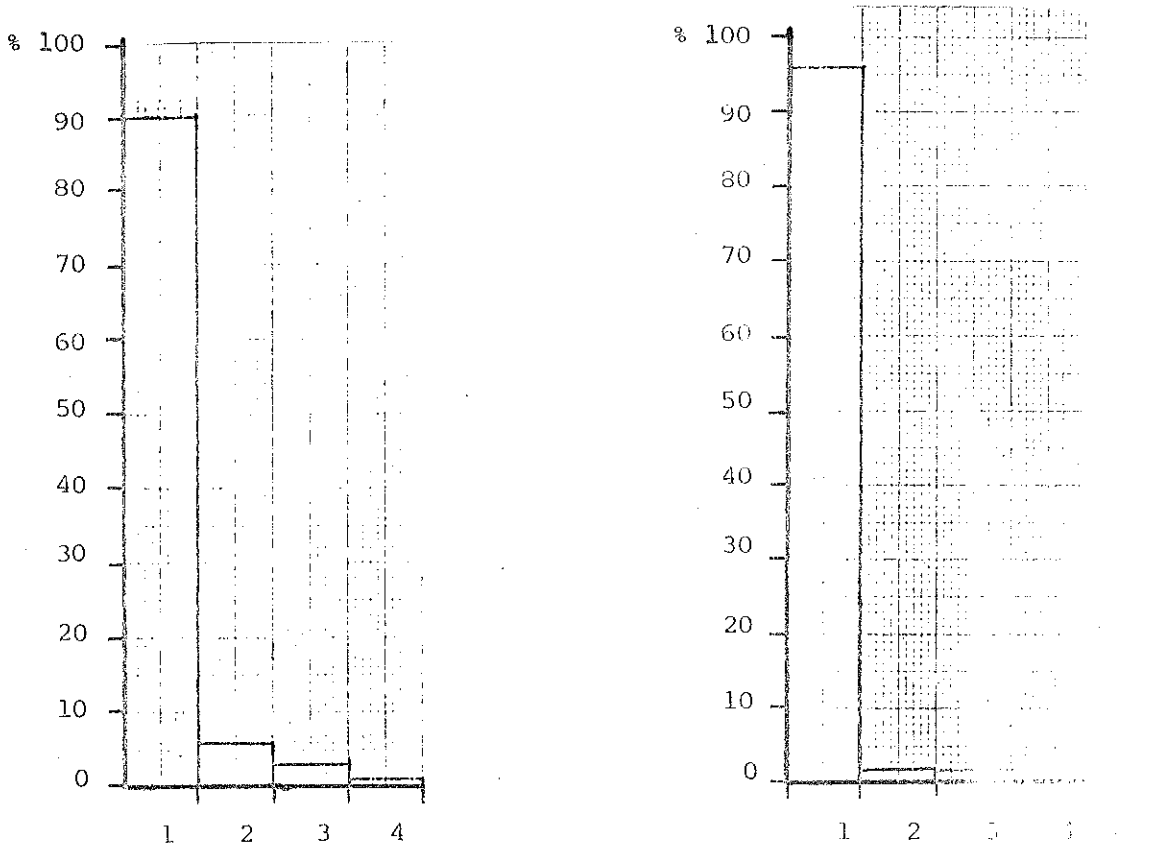
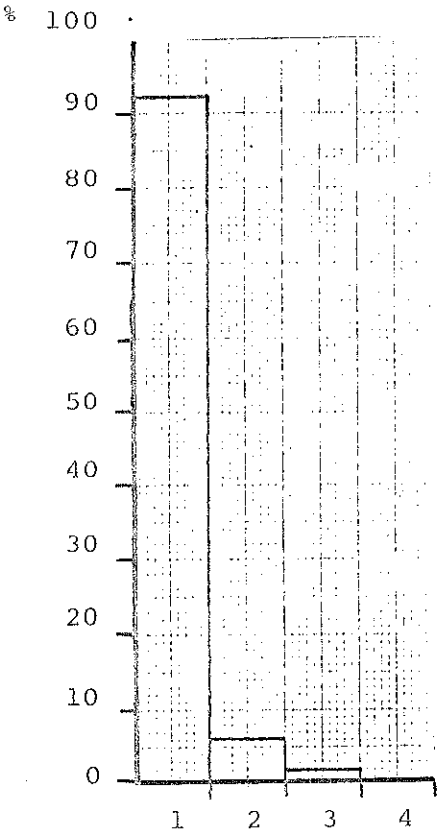


Figure 5.1

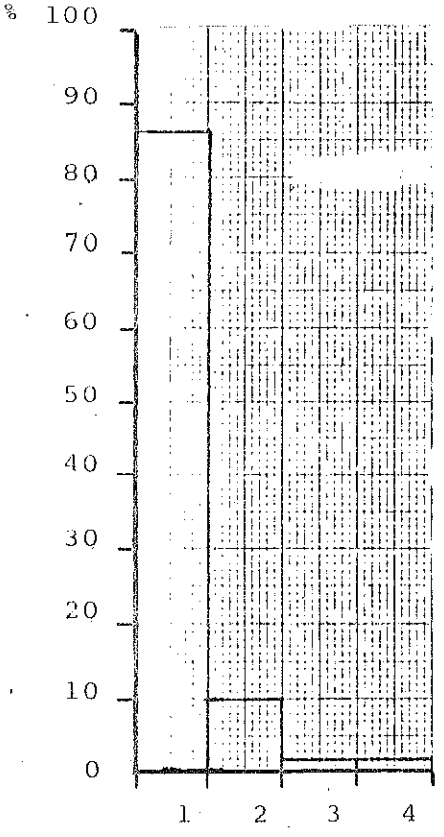
DISTRIBUTION OF NUMBER OF VEHICLES OWNED BY OWNERSHIP GROUP AND VEHICLE TYPE.

b) RICKSHAW



NUMBER OF VEHICLES OWNED

OWNER DRIVERS

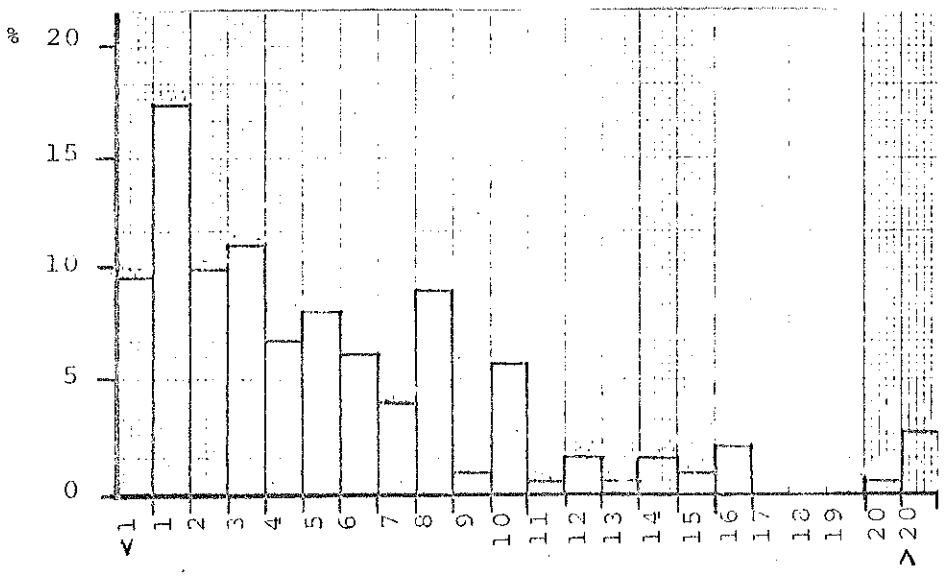


NUMBER OF VEHICLES OWNED

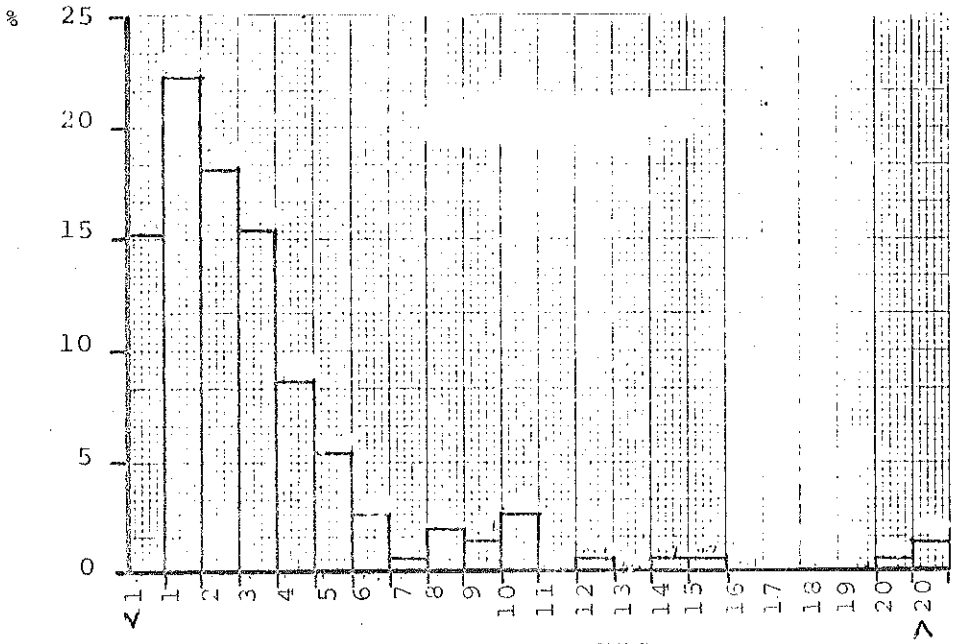
OTHER OWNERS

Figure 5.1 (continued)

DISTRIBUTION OF NUMBER OF VEHICLES OWNED BY OWNERSHIP GROUP AND VEHICLES TYPE.



a) OWNER DRIVERS



b) OTHER OWNERS

Figure 5.2

DISTRIBUTION OF PERIOD AS TAXI OWNERS.

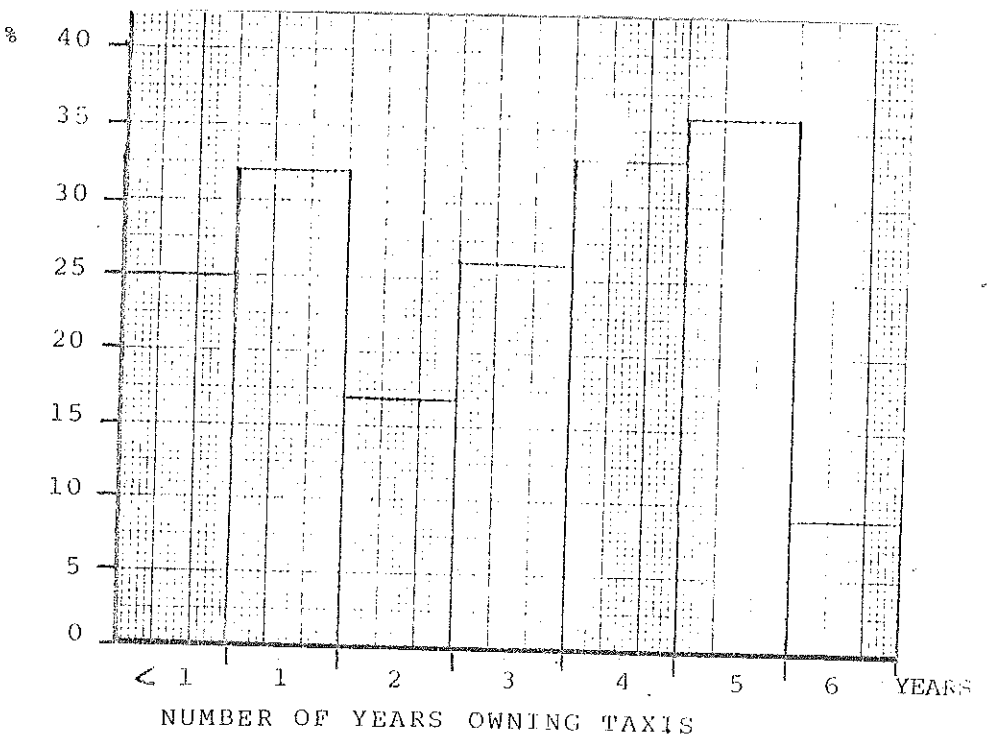
large turnover of owners entering and leaving the industry; a hypothesis which was suggested by the anecdotal evidence obtained by the field staff during the course of conducting the interviews. The difference in the shapes of the two distributions (owner drivers and other owners) suggests that owner-drivers have, collectively, the greater experience of owning and operating taxis.

5.3 Profitability of taxi ownership

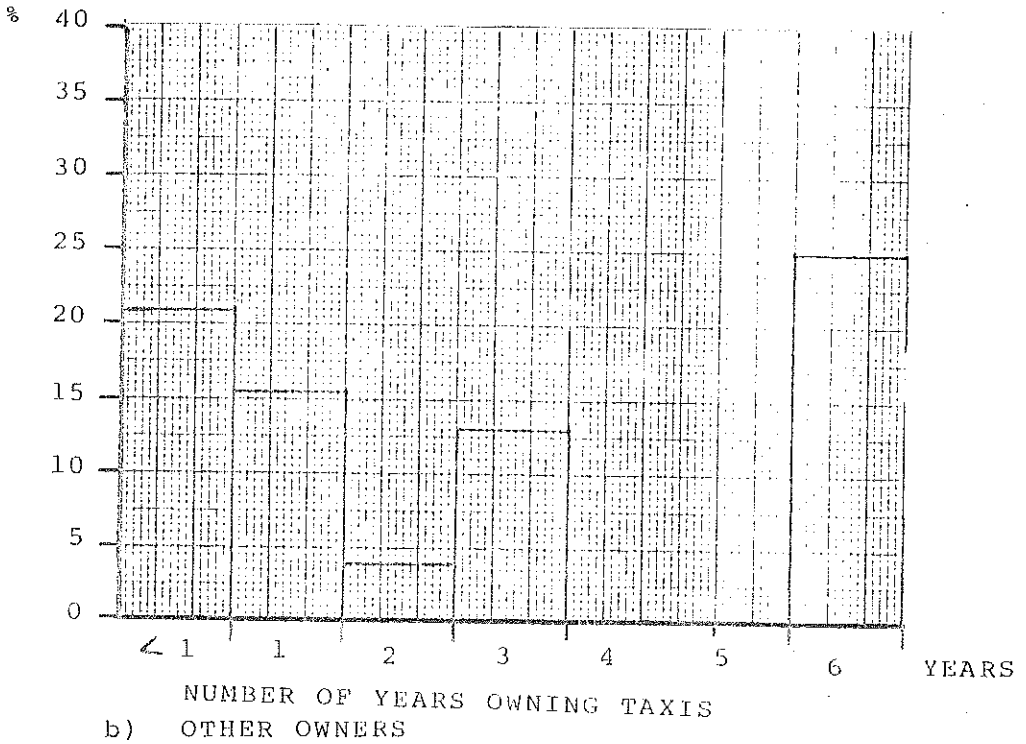
Judging by the dilapidated state of many taxis and the length of time they can spend waiting at taxi stands, the impression obtained is that taxi operation is not a particularly remunerative enterprise. On the other hand, the large number of vehicles involved in relation to the size of the urban area would suggest that it must be viewed as an attractive financial proposition by those involved. Whilst the data collected in the survey would provide us with the means to establish objectively just how profitable taxi operation was, we were also interested in obtaining the views of the operators themselves.

The suspicion that taxi operation may not be a particularly profitable enterprise (see below) is strengthened by the proportion of respondents who claimed that they did not wish to remain in the taxi business. Overall, this amounted to 19.5% of respondents, although there does not seem to be any clear correlation between intention to stay in the industry and experience of it. On the other hand, from a disaggregation of these data by ownership group (Figure 5.3), it can be inferred that for the group of other owners there is a higher propensity to want to leave the industry by the less experienced operators. Finally with respect to this issue, analysis of the same data; distinguishing between owners of taxicabs and rickshaws (Figure 5.4) reveals a lower percentage of rickshaw owners wishing to quit, but again no identifiable correlation with experience or years in the business.

Coupled with the question about remaining in the business, was another asking about the owner's financial performance. This was deliberately couched in non-quantitative terms, since it was felt



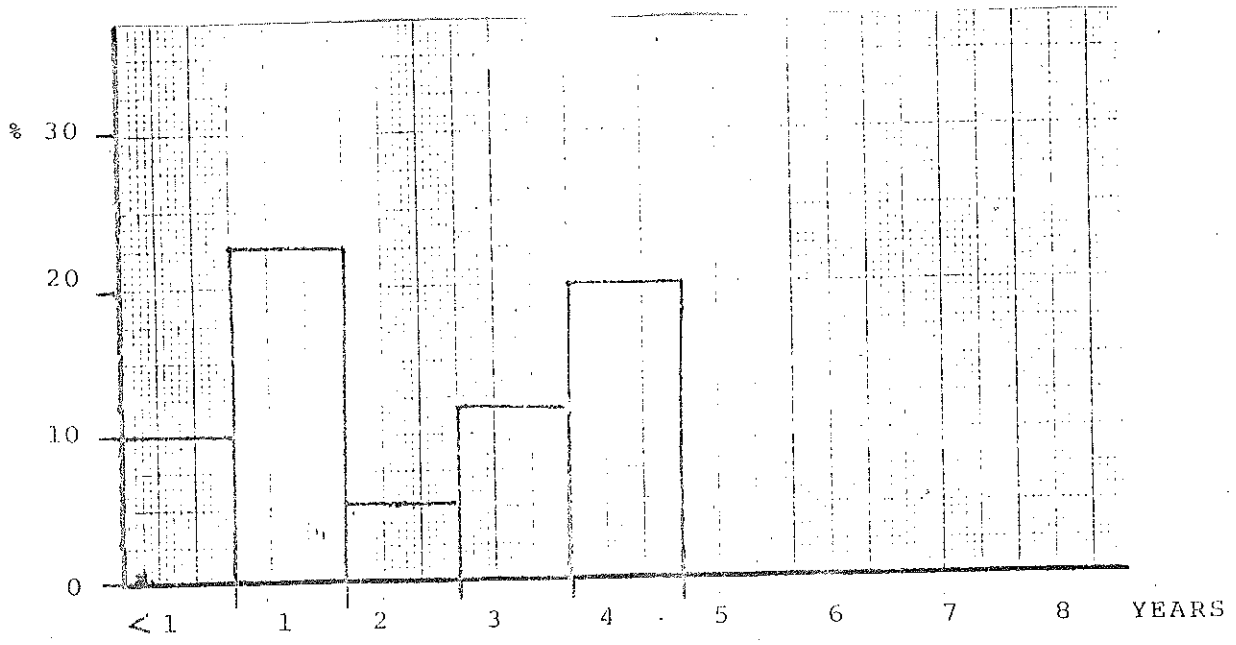
a) OWNER DRIVERS



b) OTHER OWNERS

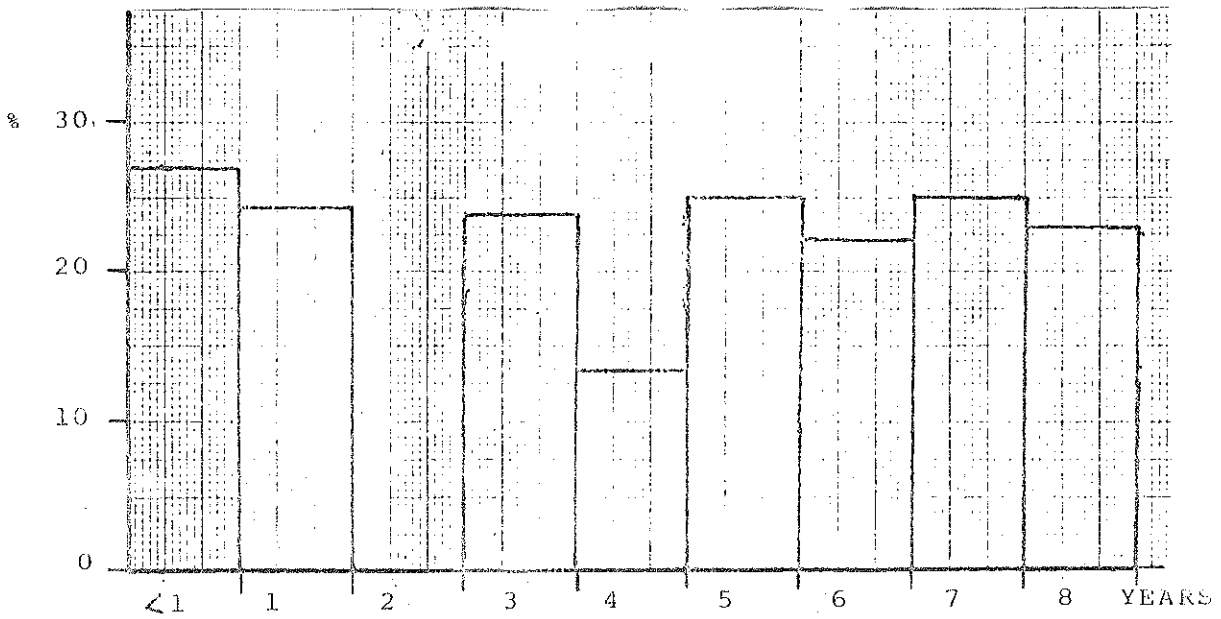
Figure 5.3

PERCENTAGE OF OWNERS WISHING TO LEAVE THE INDUSTRY AS A FUNCTION OF THE LENGTH OF TIME IN BUSINESS: VEHICLE CATEGORY



NUMBER OF YEARS OWNING TAXIS

a) RICKSHAW OWNERS



NUMBER OF YEARS OWNING TAXIS

b) TAXI CAB OWNERS

Figure 5.4

PERCENTAGE OF OWNERS WISHING TO LEAVE THE INDUSTRY AS A FUNCTION OF THE LENGTH OF TIME IN BUSINESS: VEHICLE TYPE

that asking about revenues or earnings directly would have given us misleading or evasive replies. The form of the question was to put profitability on a five-point semantic scale ranging from 'Makes a large profit' through a mid-point described as 'Just breaks even' to 'Makes a large loss' at the other extreme. Figure 5.5 shows the distribution of responses obtained.

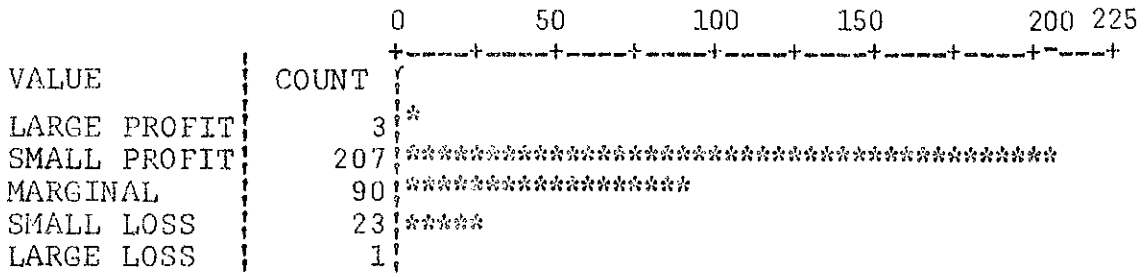


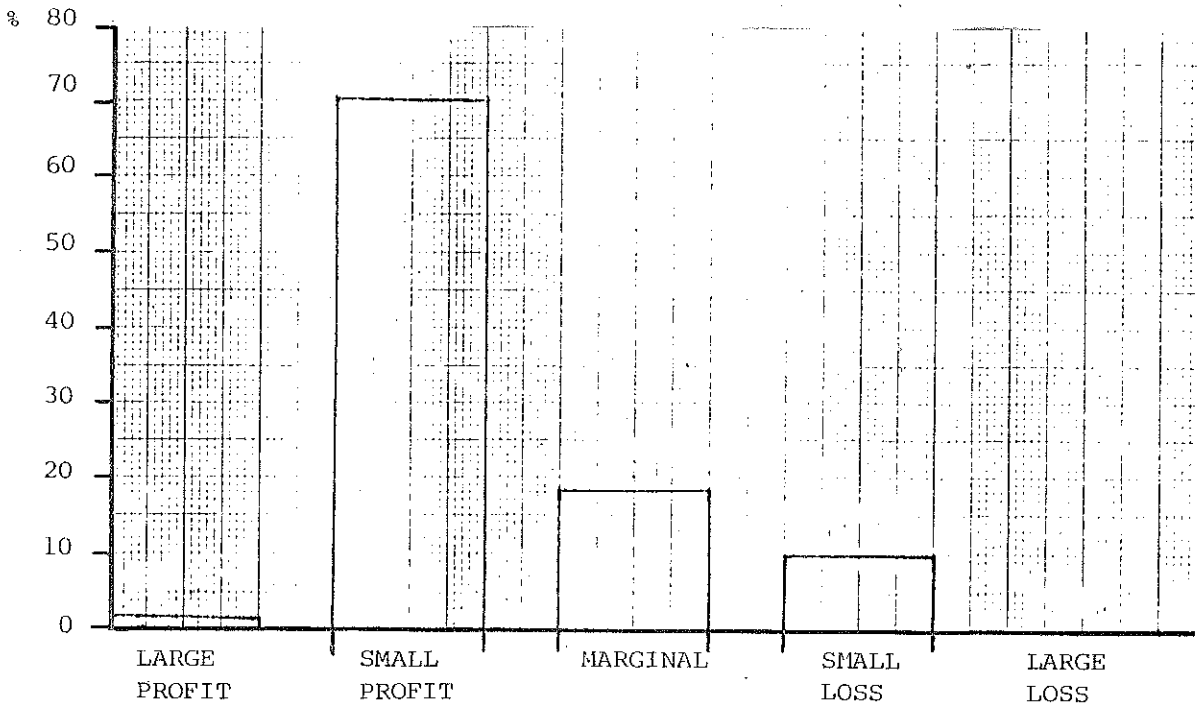
Figure 5.5

PROFITABILITY OF TAXI OPERATION

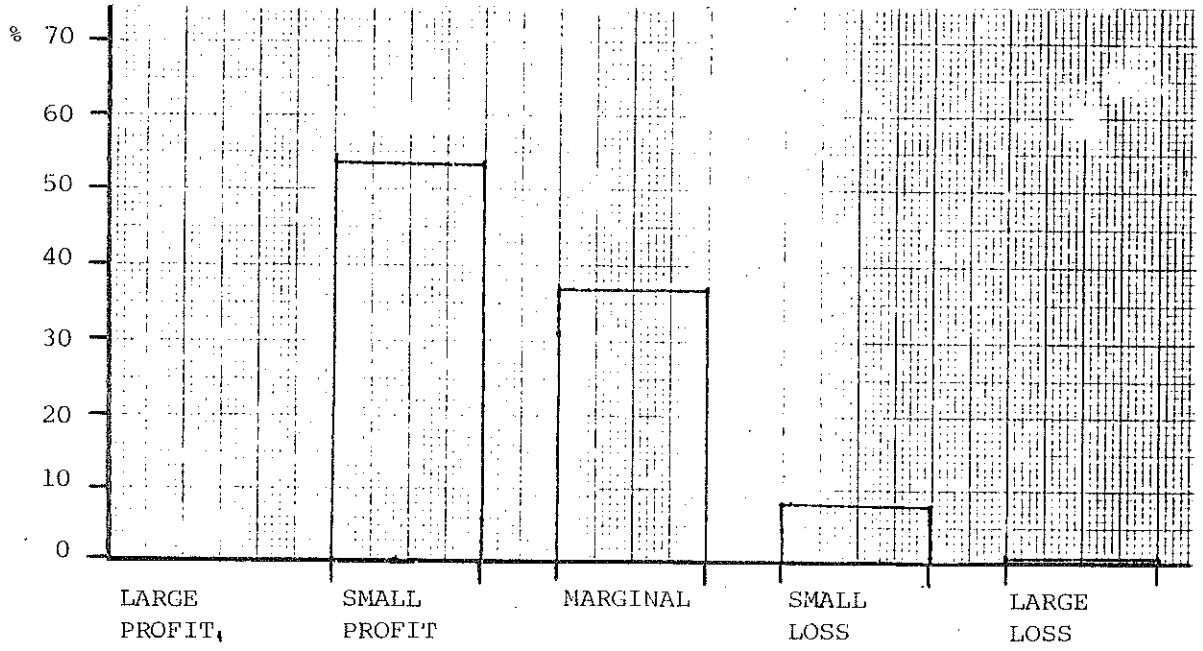
The overall response was to show that as many as over a third (36%) of all operators claim to either make a loss, or at best just break even.

Examining the replies in greater detail and disaggregating by ownership type and vehicle type (Figure 5.6,5.7), owner drivers in the taxi cab sector seem to more satisfied with their financial performance than other owners. (72% of owner drivers reporting some level of profit against 54.2% for other owners). However, it is difficult to vouchsafe at this stage whether this class really is more financially successful in operation, or whether they simply regard their own wages as 'profit'. For the rickshaw owning sector, there is no appreciable difference between owner drivers and those who contract out their vehicles, with 33.3% reporting that they either just break even or make a small loss.

In most cases where profit making is indicated the level of profit reported is low; just 1% of rickshaw owners and 0.9% of taxi-cab owners said that they made large profits.



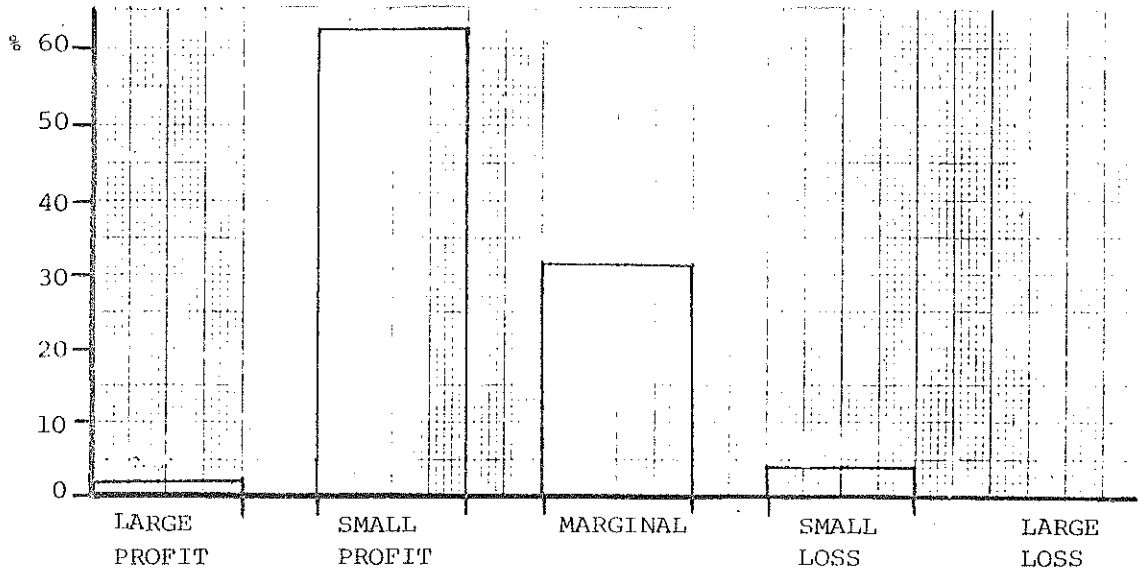
a) OWNER DRIVERS



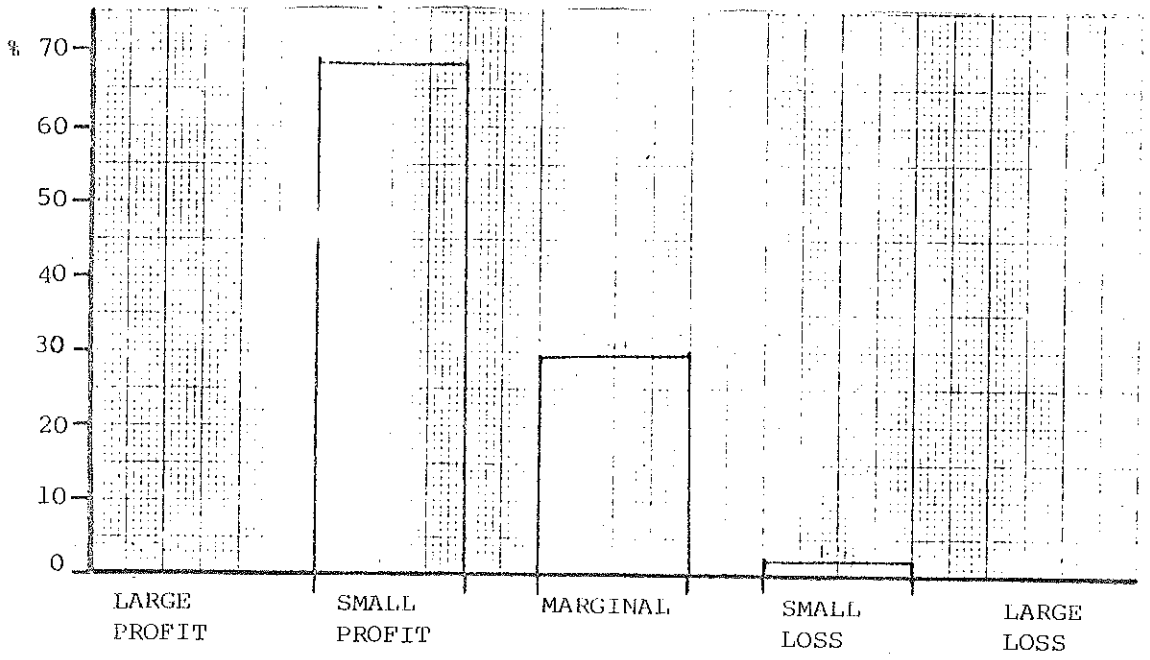
b) OTHER OWNERS

Figure 5.6

PROFITABILITY OF TAXI OPERATION - TAXI CABS



a) OWNER DRIVERS



b) OTHER OWNERS

Figure 5.7

PROFITABILITY OF TAXI OPERATION - RICKSHAW

Looking at reported profitability as a function of the period of time in business (Figure 5.8), there does appear to be a relationship in the immediate short-term between propensity to make a loss and number of years in business. Of those that had been operating for less than a year, 14.6% reported making a small loss, whilst the figure for those that had been operating for between one and 2 years was 9.6%, and only 4.4% for those who had been in business for between 2 and 3 years.

Finally one factor which could influence the financial performance of operation in the early years of the enterprise is the added burden of finance costs for those purchasing vehicles on installments. Figure 5.9 shows however, that there is little difference, and in fact, the revers seems to occur with only 5.3% of those buying on installments claiming to be running at a loss as against 10.5% for outright purchasers.

In the foregoing paragraphs we have reported that on average only two thirds of owners claim to make a profit from their operations. We have also seen that nearly 20% say that they would like to leave the industry, but at the same time a suprisingly large proportion have been in the business only a short time, and the number of operators seems to be increasing rather than declining.

For an explanation of this seemingly paradoxical situation we would have had to extend our inquiry into areas of sociological investigation. However, a number of relevant points can be contributed. The great majority (75%) of other owners also have other sources of income (Figure 5.10). In fact, the majority belong to one of four occupational groups:

a) Shopkeepers,

b) Motor repair workshop owners: this group being heavily represented in the ownership of rickshaws, where most of the owners seem to have workshops in the Glass factory district of Rawalpindi.

c) Public servants,

d) Retired public servants,

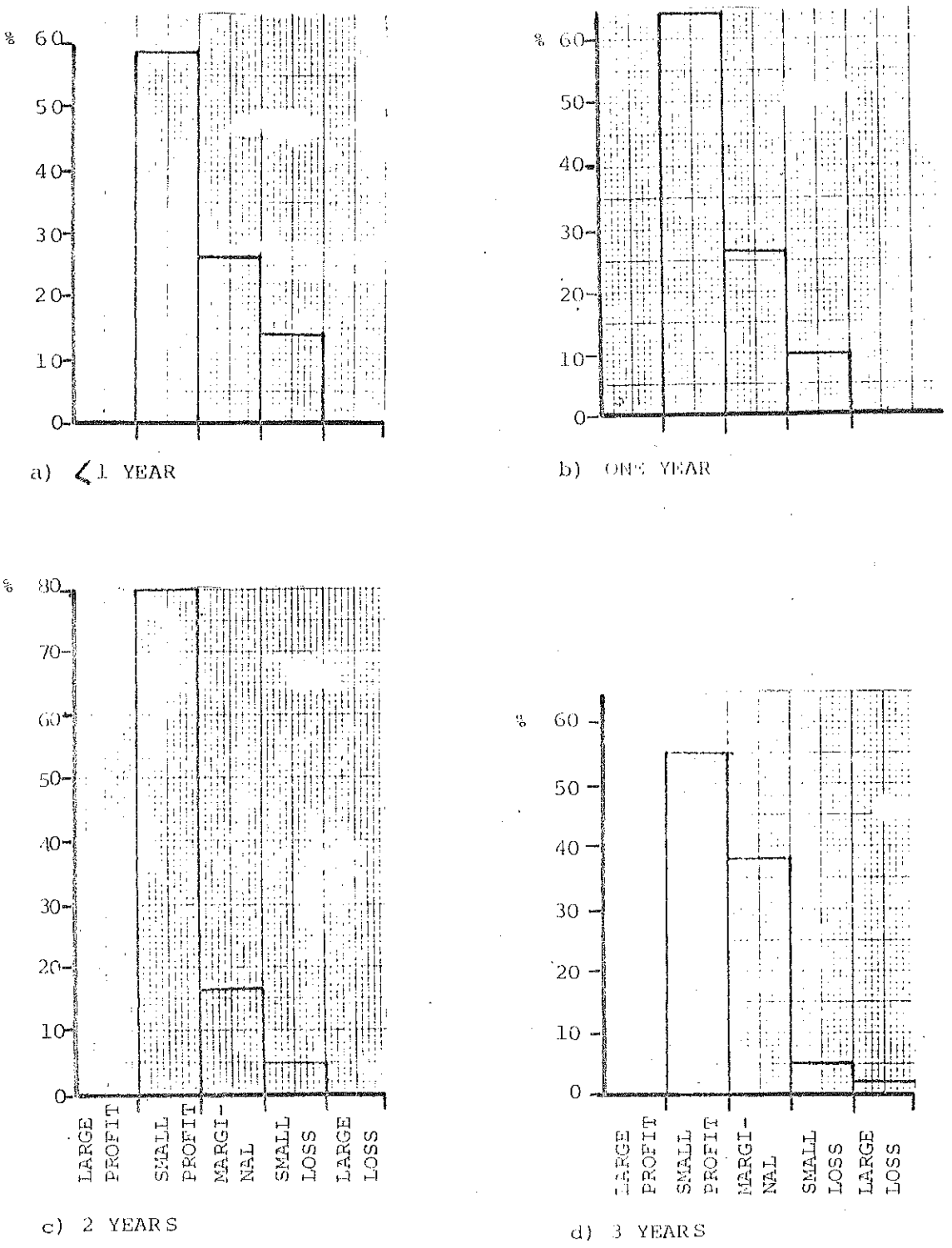
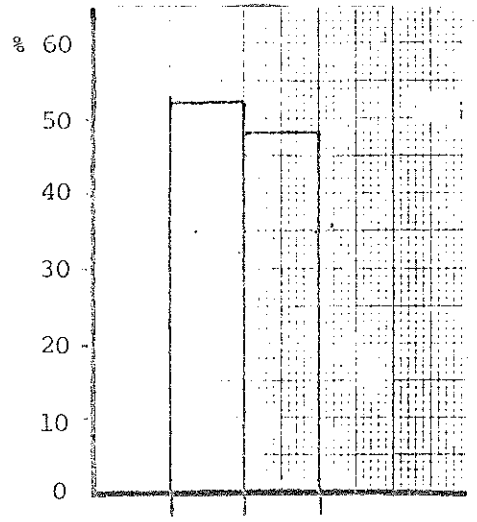
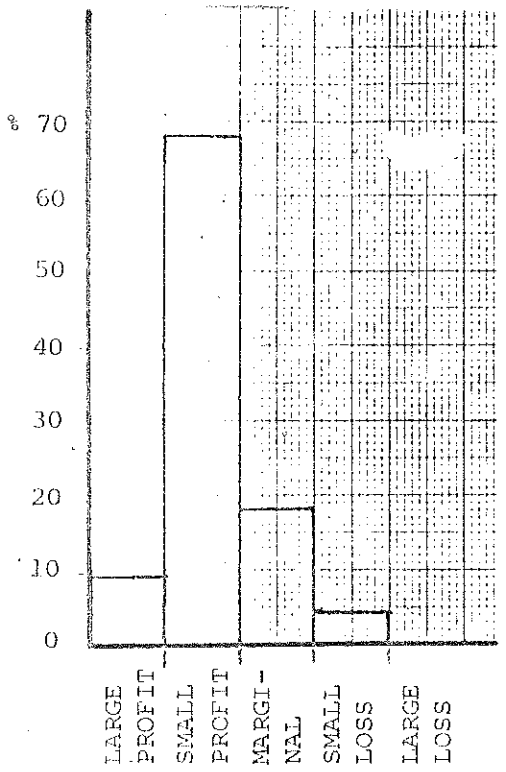


Figure 5.8

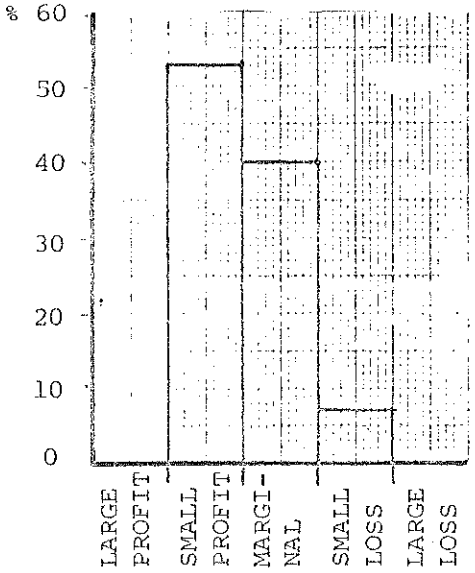
PROFITABILITY OF TAXI OPERATION AS A FUNCTION OF LENGTH OF PERIOD OWNING TAXIS.



e) 4 YEARS



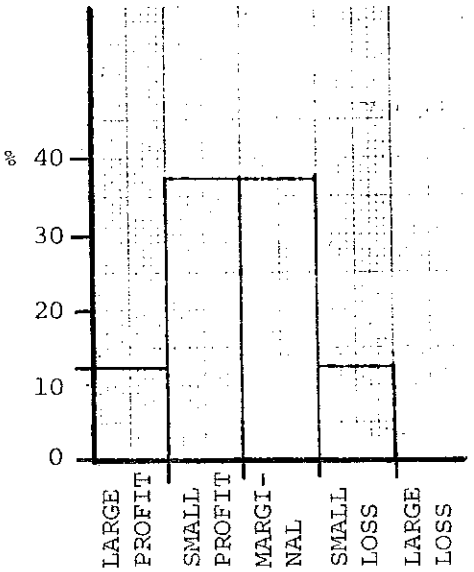
f) 5 YEARS



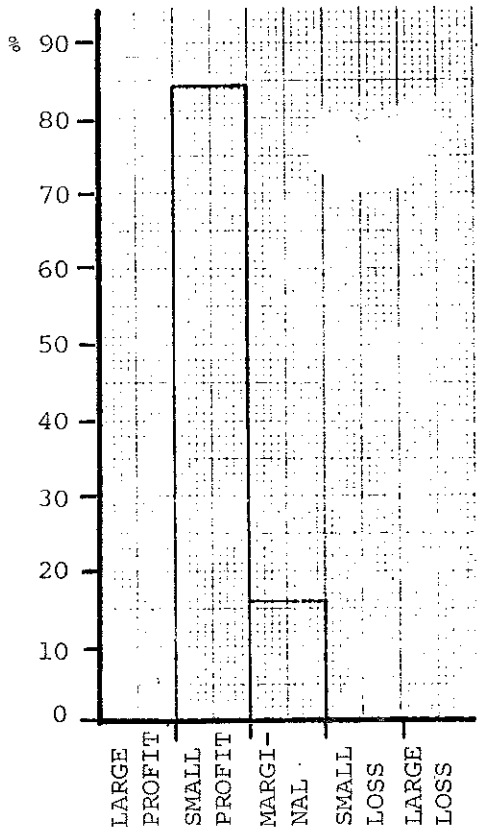
g) 6 YEARS

Figure 5.8 (continued)

PROFITABILITY OF TAXI OPERATION AS A FUNCTION OF LENGTH OF PERIOD OWNING TAXIS.



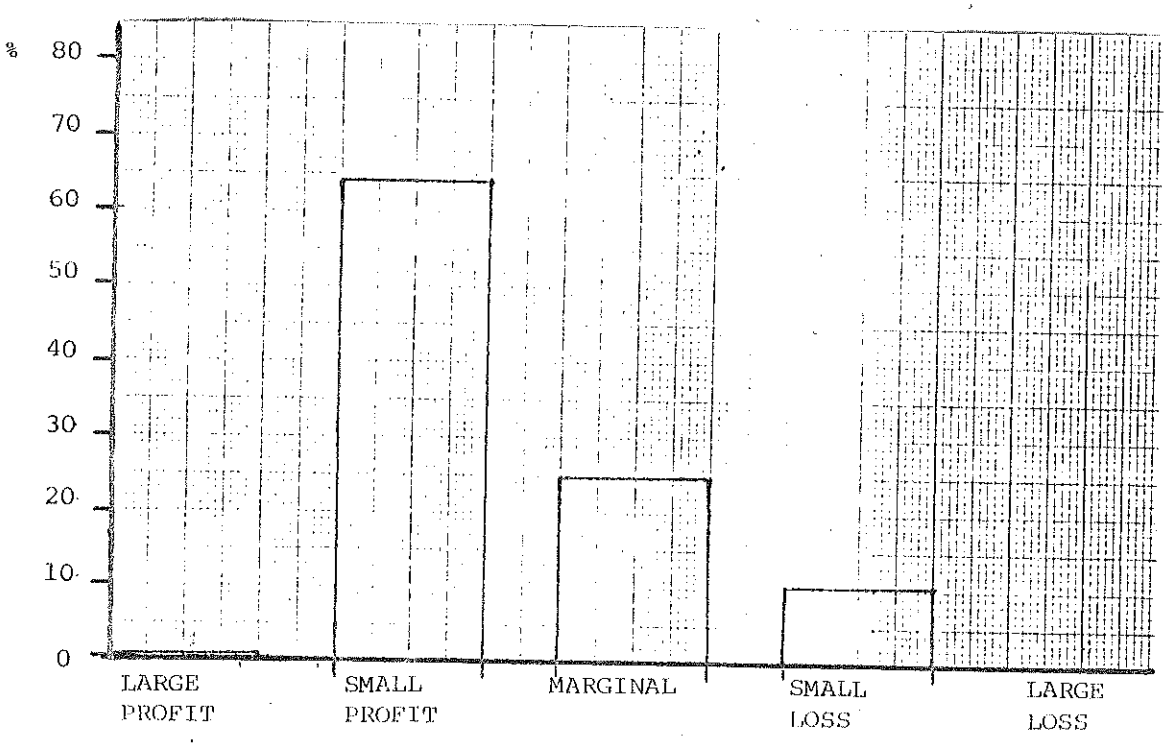
h) 7 YEARS



i) 8 YEARS

Figure 5.8 (continued)

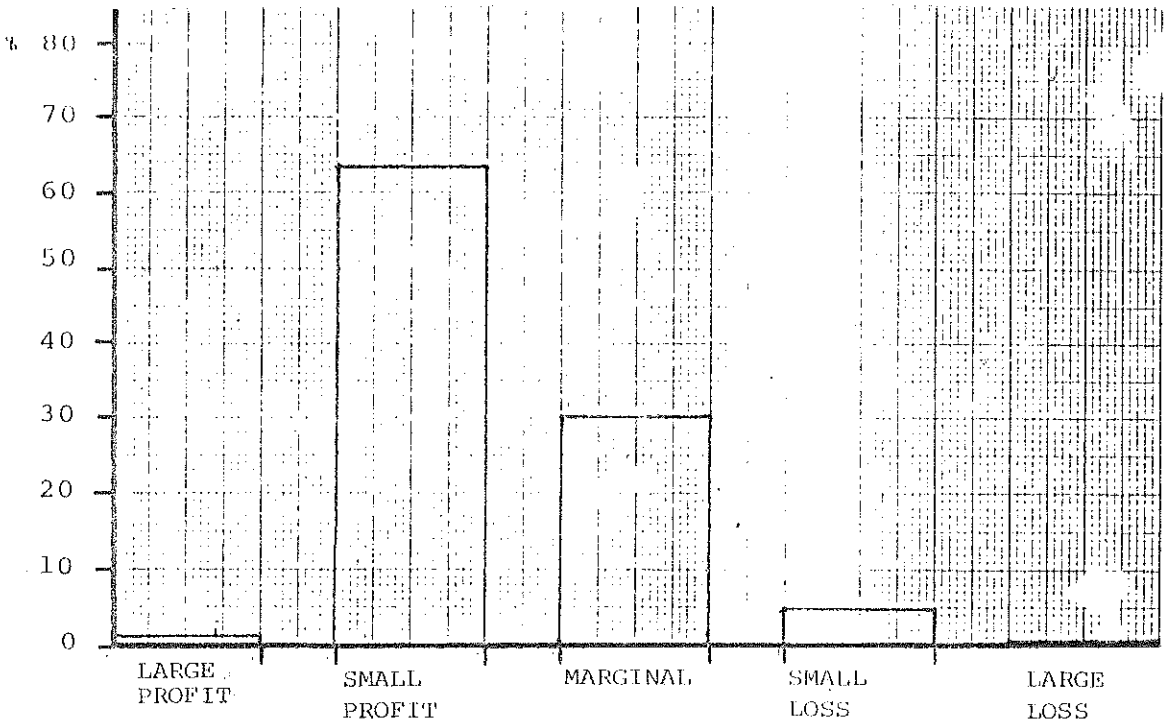
PROFITABILITY OF TAXI OPERATION AS A FUNCTION OF LENGTH OF PERIOD OWNING TAXIS.



a) VEHICLES PURCHASED OUTRIGHT

Figure 5.9

PROFITABILITY OF TAXI OPERATION AS A FUNCTION OF MODE OF VEHICLE PURCHASE.



b) BY HIRE PURCHASE

Figure 5.9 (continued)

PROFITABILITY OF TAXI OPERATION AS A FUNCTION OF MODE OF VEHICLE PURCHASE.

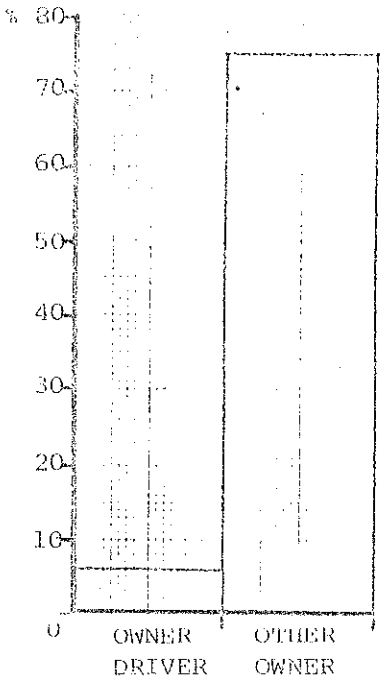


Figure 5.10

OTHER SOURCES OF INCOME

With respect to the third group it is worth pointing out that, contrary to popular belief, we found no evidence of police officers being heavily involved in the ownership of taxis. Our sample of 326 owners revealed only 2 policemen, each owning just one vehicle.

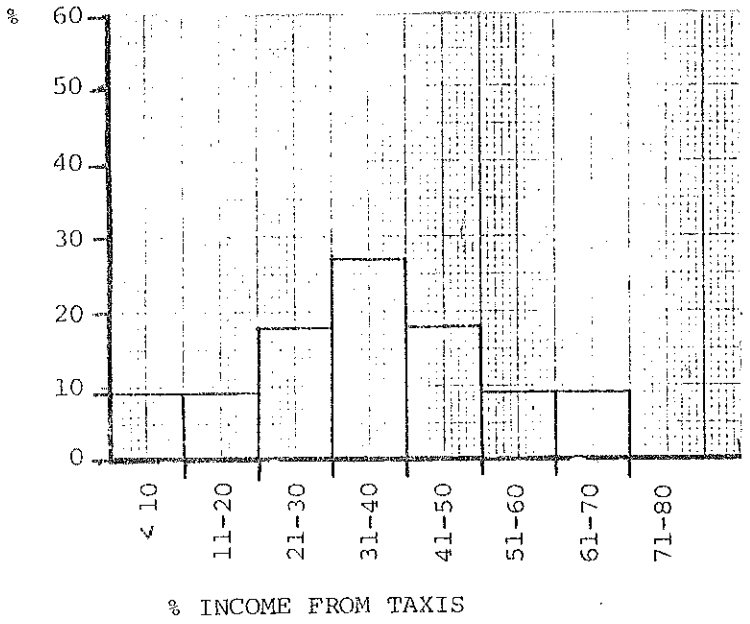
Figure 5.11 which shows data relating to the question on income derived from taxi operations as a proportion of total income, reveals that for the majority, taxi income makes only a small contribution to total income. Averaging over all ownership groups 69% of operators who have other income sources derive less than 20% of their total income from taxi operations.

For many owners, the taxi operation is an almost incidental consideration. Ownership of a taxi is partly a cultural/socio-economic phenomenon in that it provides tangible evidence of a certain level of affluence and status within society. For many of the owners interviewed who contract out their vehicles one of the important and perhaps prime functions of the taxi is to serve as the family car. It is used to serve family transport needs first, and is sent out out on hire only when not required at home. Some owners said that they were satisfied if income was sufficient to cover just daily running costs.

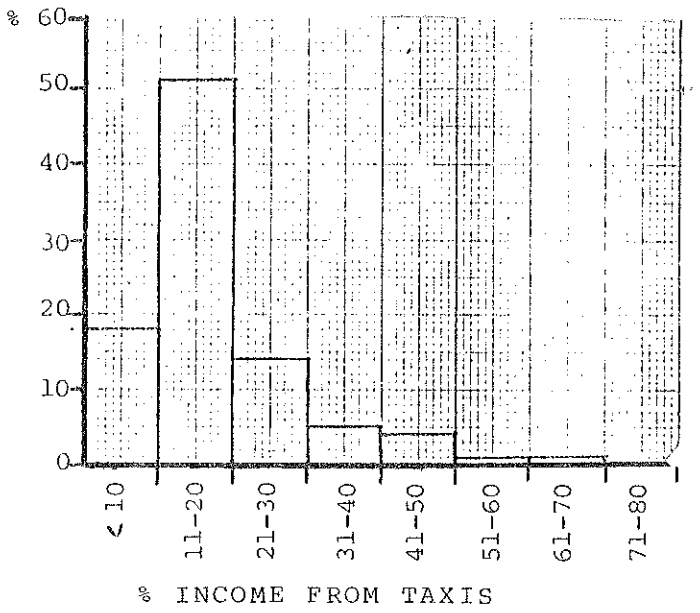
Thus the evidence is that for other owners, taxi ownership is almost incidential to their principal business activities, and since the overheads of maintaining a taxi are very similar to those of maintaining a private car, it is economically sounder to invest in a taxi than a vehicle which is simply a wasting asset. As we would suspect, this group of owners is visbly more wealthy than the owner drivers, for the majority of whom the taxi they drive is their sole asset and their only source of income. As would be expected, very few (6.2%) owner drivers reported other sources of income.

5.4 Taxi drivers

As mentioned earlier there are three types of arrangement under which non-owner drivers operate. The predominant practice



a) OWNER DRIVERS. (ONLY A SMALL % OF OWNER DRIVERS HAV OTHER INCOME).



b) OTHER OWNERS.

Figure 5.11

INCOME FROM TAXI OPERATION AS A PERCENTAGE OF TOTAL INCOME.

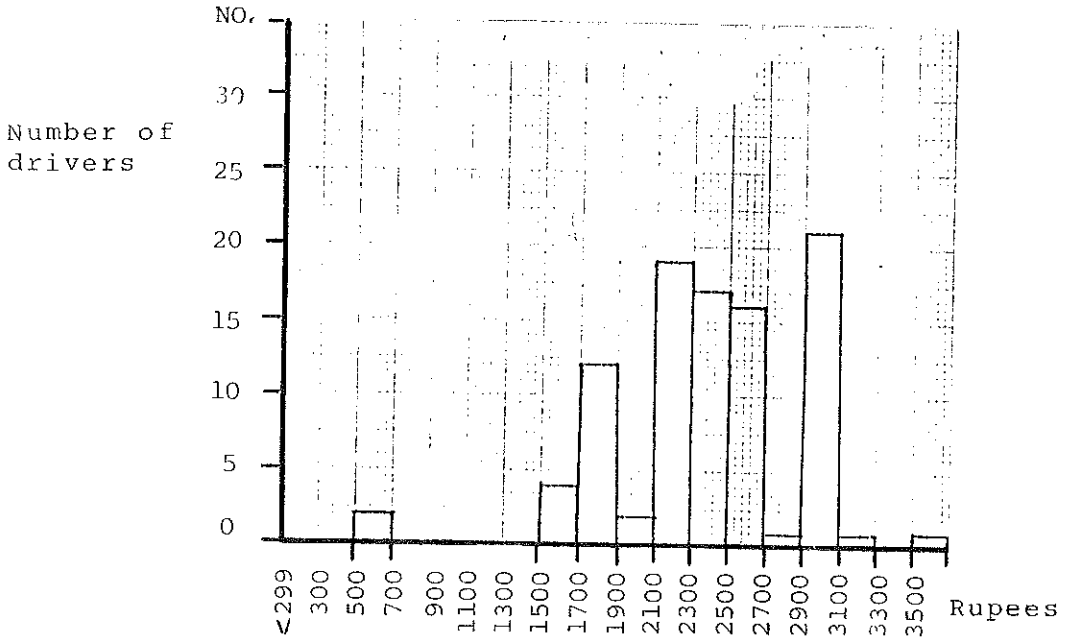
however is that of the hybrid employment/contract hire arrangement which cover 96% of all cases. Under this arrangement the driver is employed on a monthly basis and receives a small basic wage, but has to deliver an agreed sum to the owner at the end of every day, retaining the remainder of fare revenue for himself.

The individual agreements vary to quite a surprising extent across the industry. For example, Figure 5.12 shows that whilst 54% of the taxicab contract prices fall within the range of Rs.2100-2700 per month, we have to extend the range from Rs.1500-3100 per month to encompass 95% of the cases; a factor of two between the lowest and highest prices.

Figure 5.13 giving the driver's monthly wages also shows a wide variation ranging from as little as Rs.350 per month to Rs.1550 per month; but with the mode of the distribution at Rs.550 pm. However, in order to interpret these data correctly we need to look at wages and contract prices together. In Figure 5.14 we have constructed what can be termed the wage/contract price envelope, which shows the extent of different price combinations and the average trend. This type of construct shows that we can distinguish two distinct envelopes for the Datsun and Morris taxicabs. That for the Morris has an average wage/contract price at Rs.787/2084 per month (giving a net contract price of Rs.1297), whilst for the Datsun the figure is Rs.737/2790 giving a much higher net contract price of Rs.2053 per month.

The contractual arrangements can also vary in that the driver can be responsible for meeting some of the operating costs. For example, whilst all taxicab contractors have to pay for fuel costs, some 50% passed on to the owner the costs of payments to the police and fines. The rickshaw contractor/employees, who form a small minority of the contractors, were responsible for fuel, payments to the police, and in one case (25% of the cases is this category) also for fines.

Perhaps the simplest way to express the various forms of arrange-



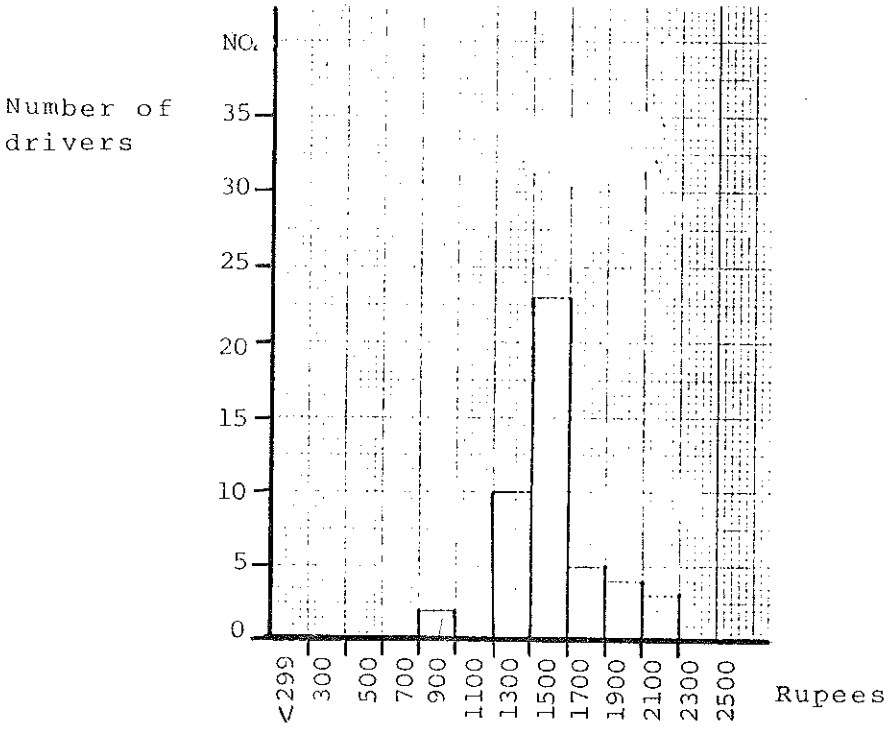


Figure 5.12

CONTRACT PRICES.

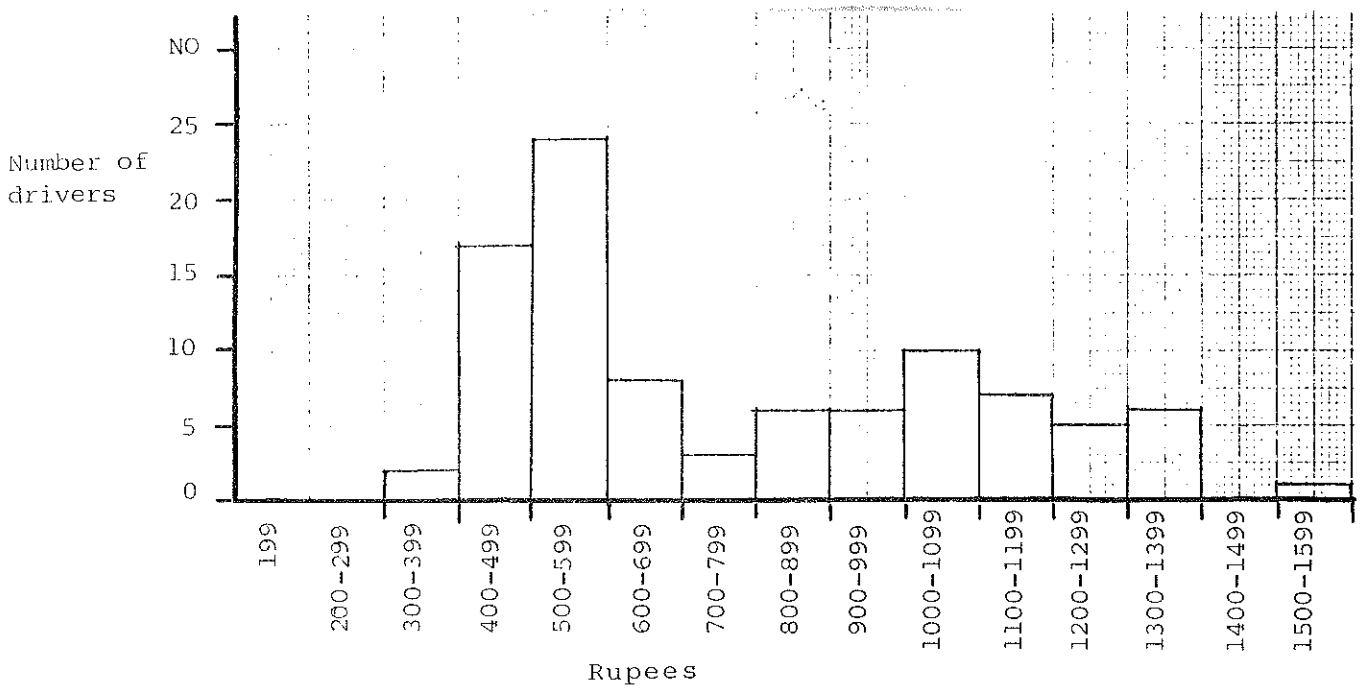


Figure 5.13

DRIVERS PAY.

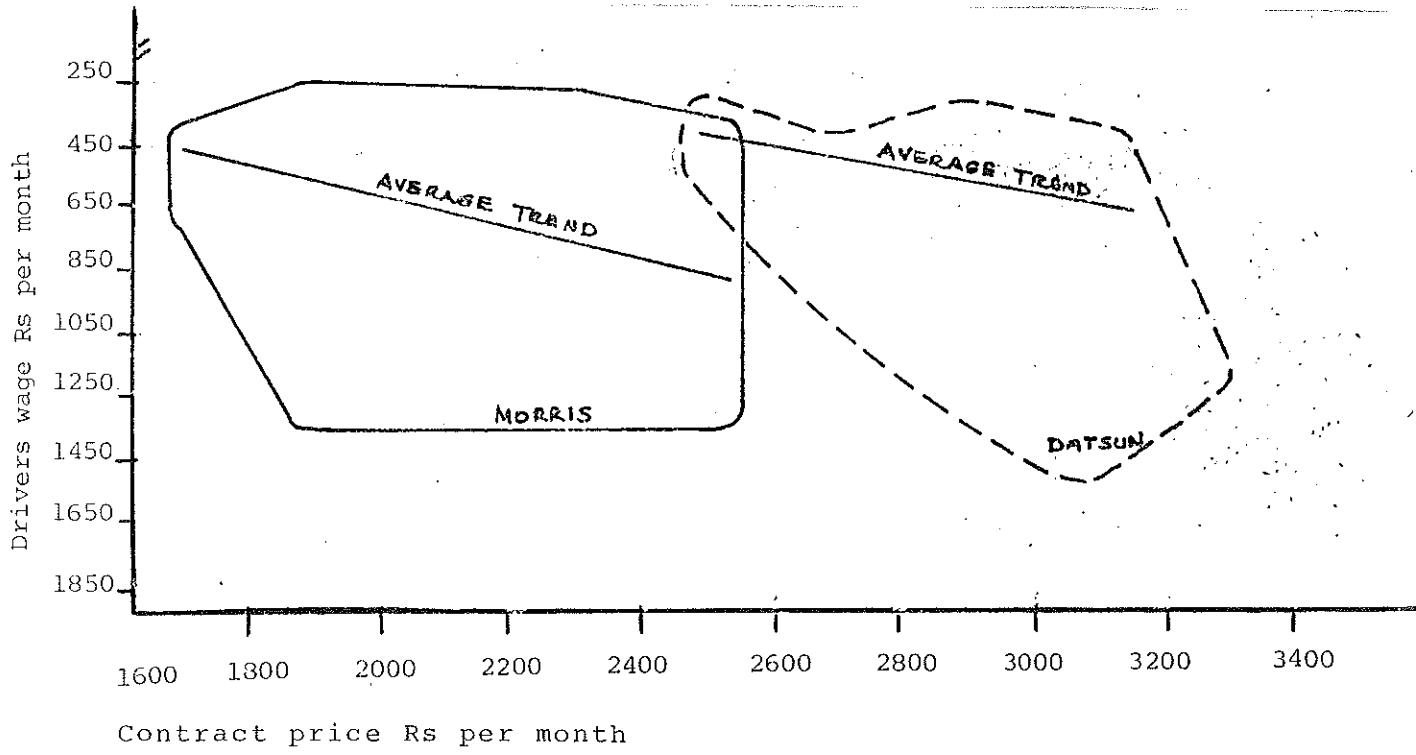


Figure 5.14

WAGE/CONTRACT ENVELOPES FOR TAXI CABS.

ments is diagramatically. Figure 5.15 shows the average values for wages and contract prices for the different types of contract and vehicle.

We can obtain a fairly clear idea of the scale of the financial problems as they affect the contracting driver from the figures given below.

Typically a driver's gross monthly expenditure could be made up as follows:

a)	Contract (net value)	Rs. 1600
b)	Fuel	Rs. 1800
c)	Police	Rs. 30
d)	Fines	Rs. 50

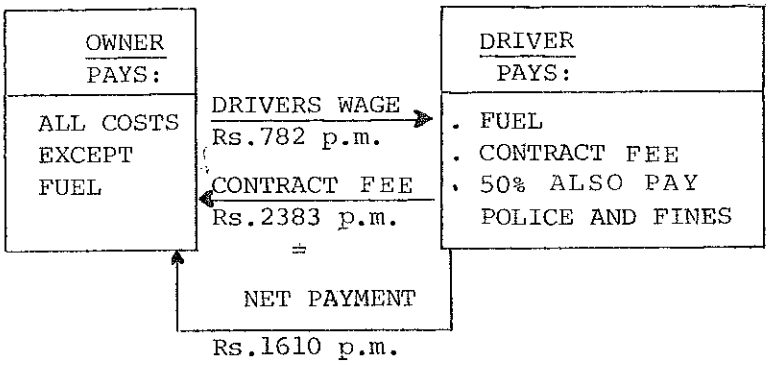
Adding to this small items such as puncture repairs, gives a monthly total in the region of Rs.3500. On average the expected fare revenue to be earned is not a great deal more than this - as a rough approximation we can take Rs.2.90 per kilometre multiplied by a monthly revenue kilometrage of 1500 kms., providing the driver with an income of less than Rs.1000 per month.

One of the major problems faced by this class of drivers is insecurity. Since taxi operation is essentially a random affair, there will be days when revenue is insufficient to pay the contract fee which is normally charged on a daily basis. This can lead to recriminations; a souring of the relationship between owner and driver, and possibly to loss of employment. This problem can be exacerbated when the vehicle is not kept in good repair and keeps breaking down, leading to a loss of revenue earning potential, and on those days when the activities of the police have been more pronounced.

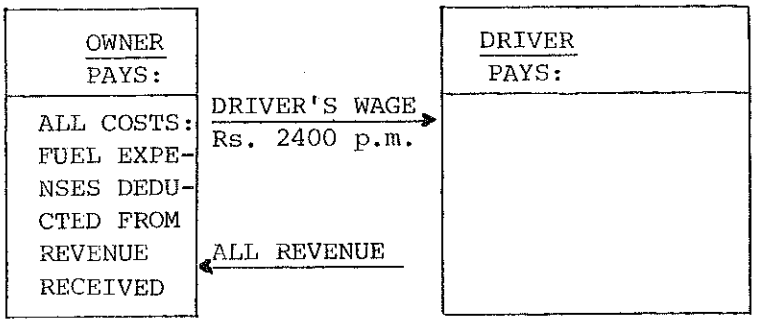
When a vehicle is off the road - for repairs or for servicing - there is no contract for the driver, and there are of course no provisions in the industry for such benefits as sickness pay, paid holidays, or retirement or disability pensions.

TAXI CABS.

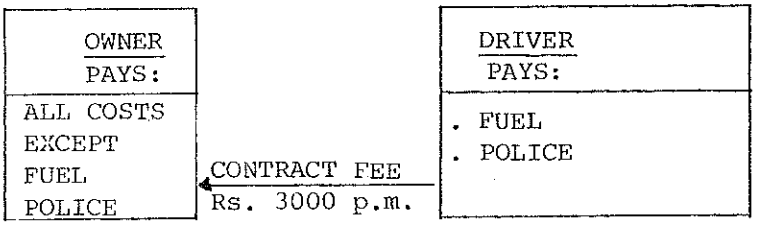
JOINT CONT-RACTOR/ EMPLOYEE



EMPLOYEE.

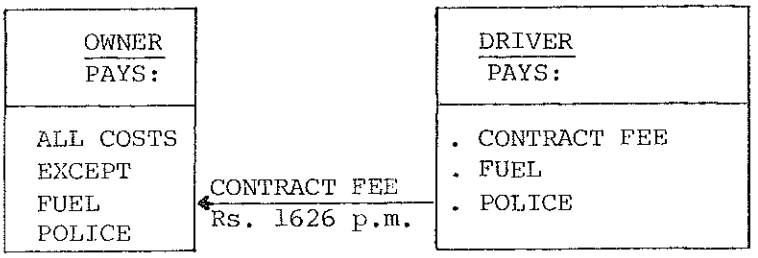


CONTRACTOR (ONE CASE ONLY)



RICKSHAW.

CONTRACTOR



JOINT CONT-RACTOR/ EMPLOYEE

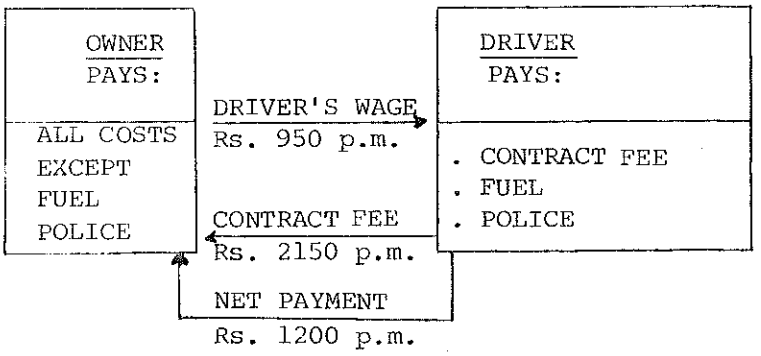


Figure 5.15

CONTRACT ARRANGEMENTS

The working regime of the driver is relatively arduous. Figures 5.16 and 5.17 show that the greater portion of the taxicab contract drivers are on duty for about 12 hours per day, but with some working upto 15 or 16 hours per day. The average time spent working for the rickshaw driver is slightly lower at just over 10 hours daily. Owner drivers appear to work marginally shorter hours. However, it should be remembered that only about 25% of the item is spent in actually driving.

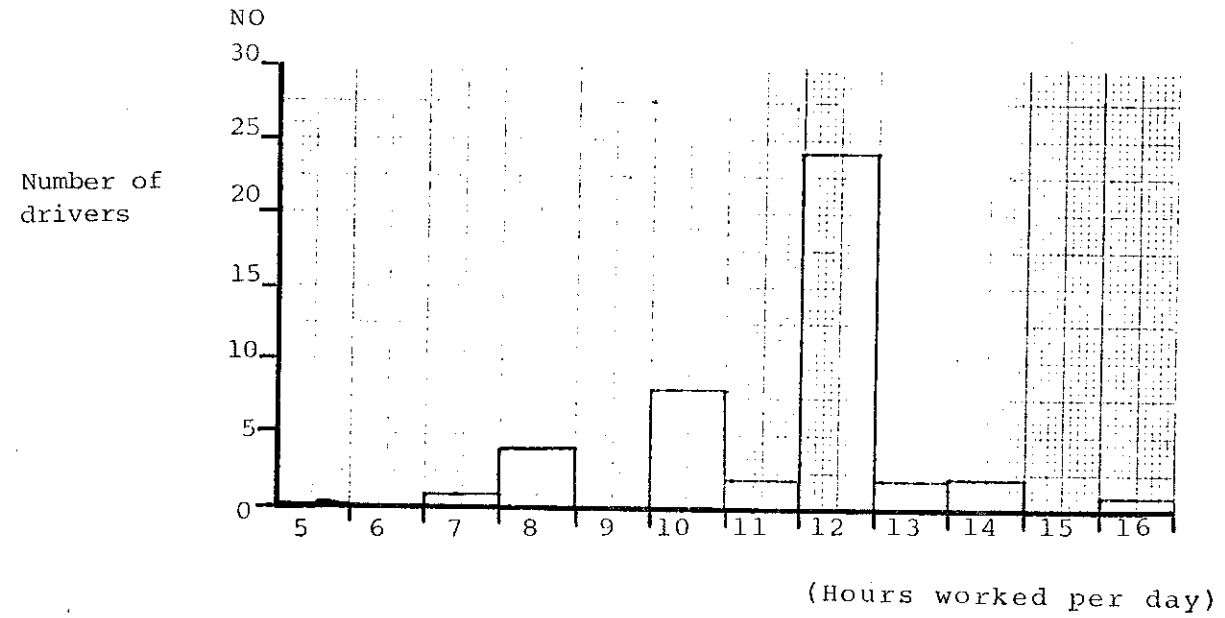
The majority work a 6 day week, but some work for 7 days, so that over the year we estimate that the drivers are working some 270-280 days, including periods deducted for sickness, enforced days off due to the vehicle being off the road etc. (Figure 5.18 and 5.19).

One final analysis with respect to the drivers, is the length of time they have spent in the taxi industry. Here we find that there is a greater length of service than was found for the owners (Figure 5.20). For example 45.8% of contractors and 51% of contractor/employees have been driving for more than 5 years, whereas only 6.3% of those owners who contract out their vehicles and 25.2% of those who use employee/contractor drivers have been in business for 5 years or longer. 22.2% of contracting drivers have been driving taxis for 10 years or more.

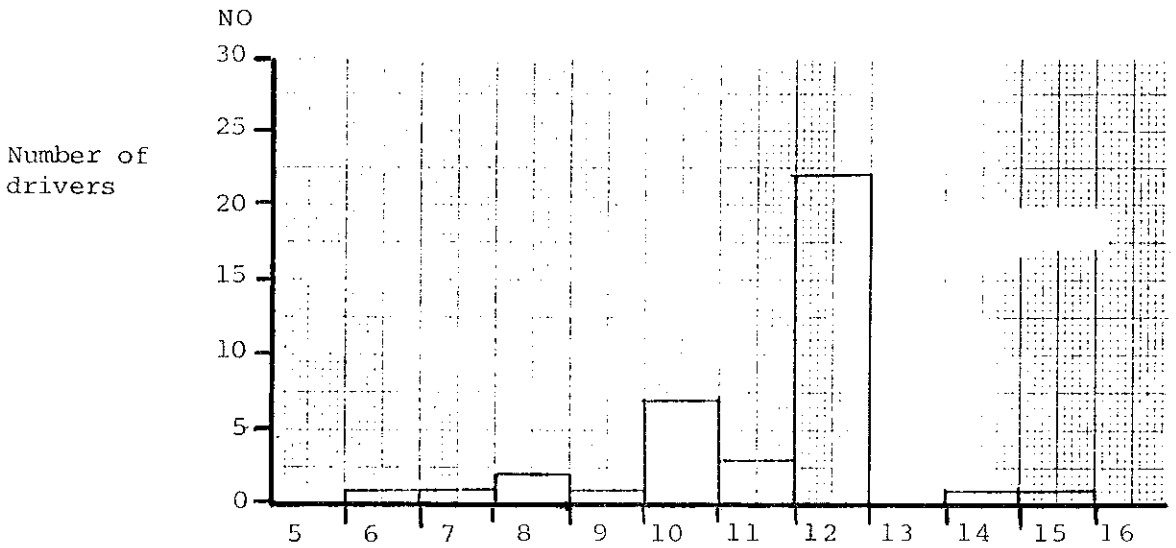
5.5 Operating problems

During the course of the interviews each taxi owner was asked what he considered to be the main problems encountered in the day to day operation of his vehicle. This was left as an open ended question, allowing the respondent total freedom of choice to cite whatever came to mind. The interviewers were instructed not to prompt or lead the respondent by suggesting possibilities.

In the analysis of the responses, that problem which was cited first was taken to be the most important, (problem 1) that which came second on the list to be the second most serious (problem 2) and so on. The responses were subsequently coded into 9 groups



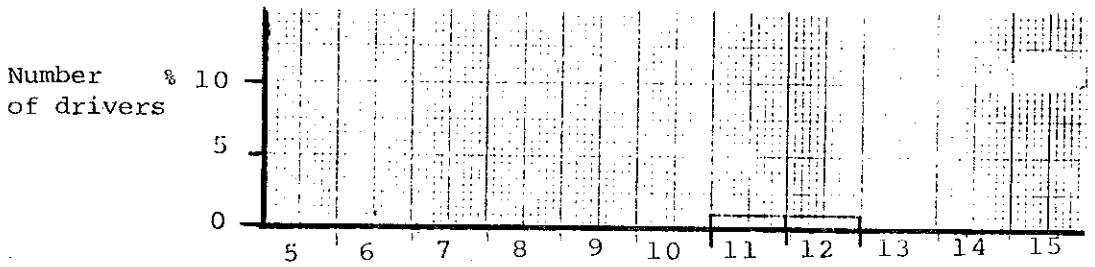
a) DATSUN.



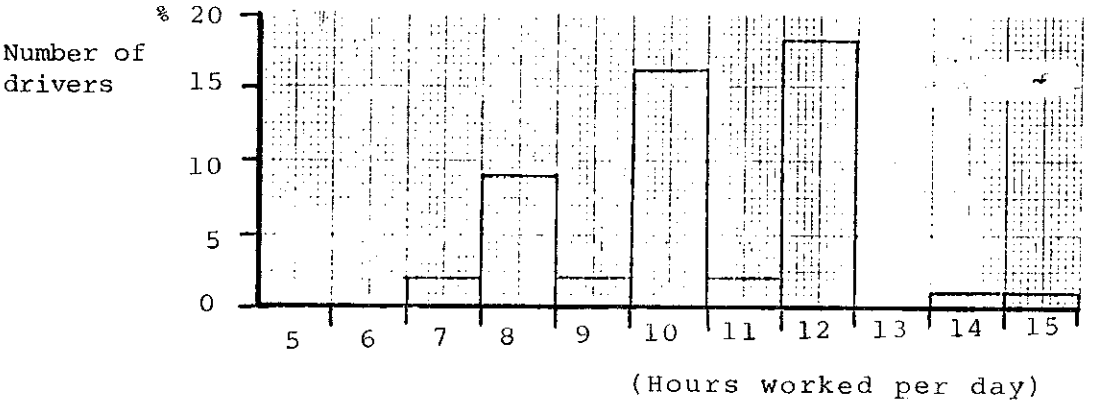
b) MORRIS

Figure 5.16

HOURS WORKED PER DAY - CONTRACT AND EMPLOYED DRIVERS.



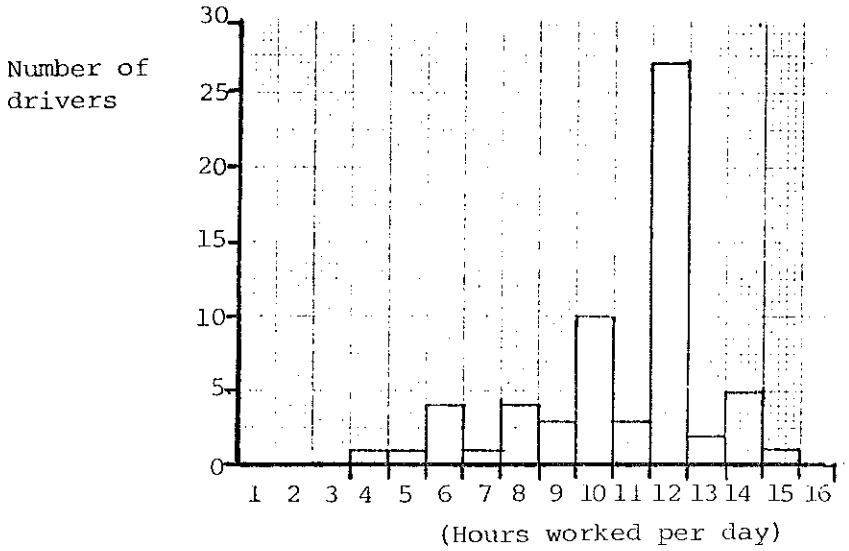
c) SUZUKI



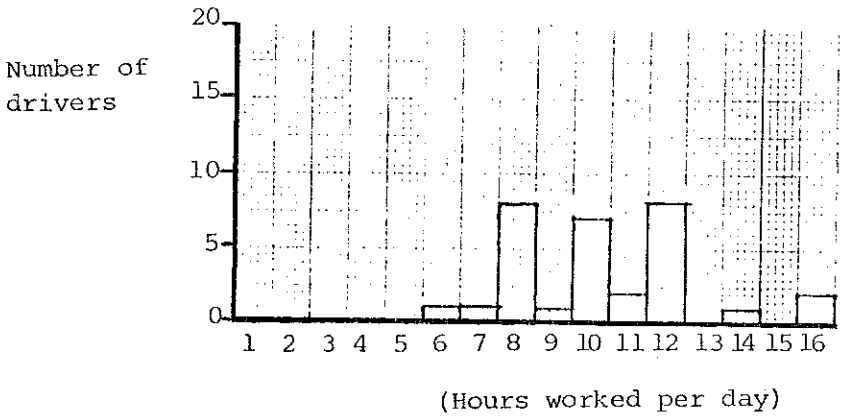
d) RICKSHAW

Figure 5.16 (continued)

HOURS WORKED PER DAY - CONTRACT AND EMPLOYED DRIVERS.



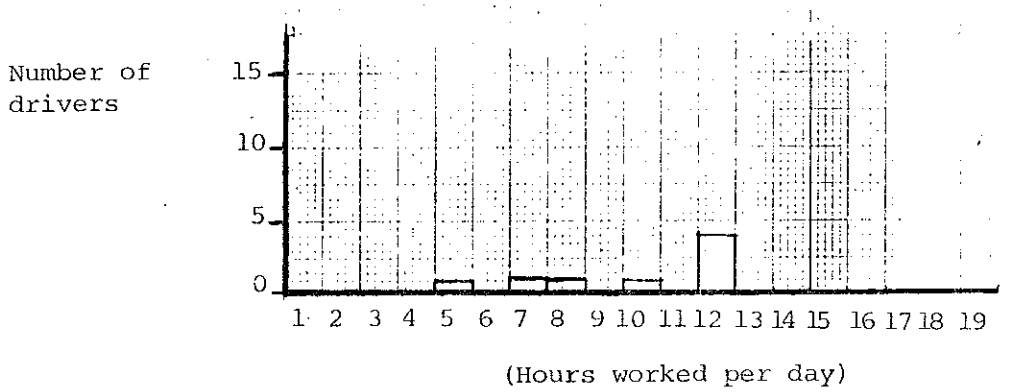
a) DATSUN



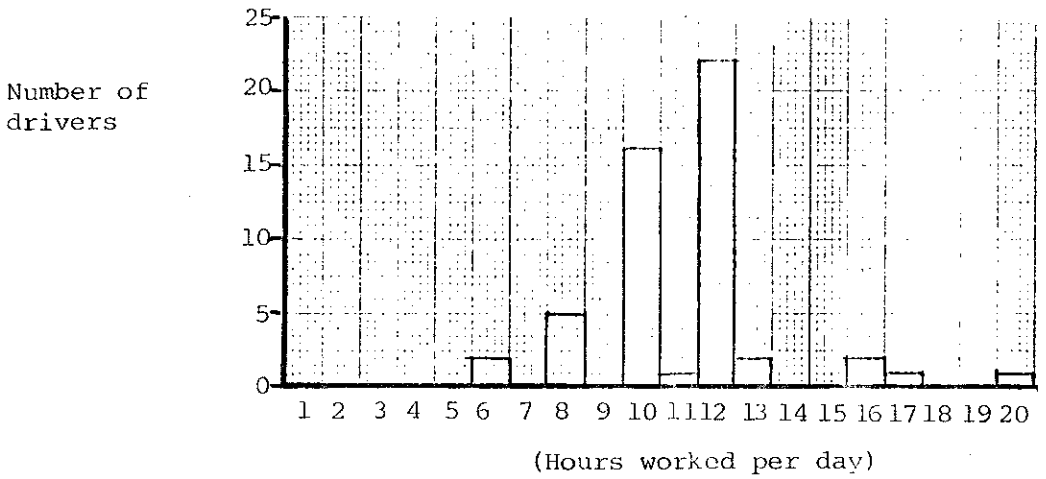
b) MORRIS

Figure 5.17

HOURS WORKED PER DAY - OWNER DRIVERS.



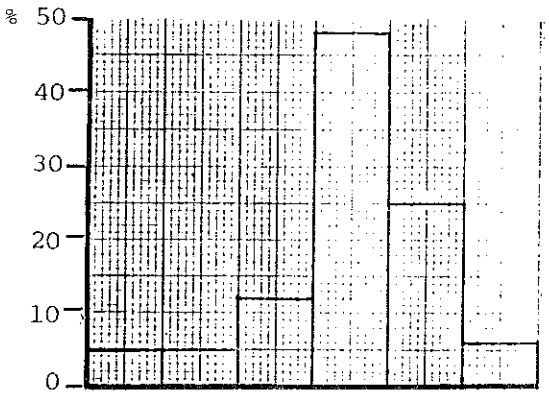
c) SUZUKI



d) RICKSHAW

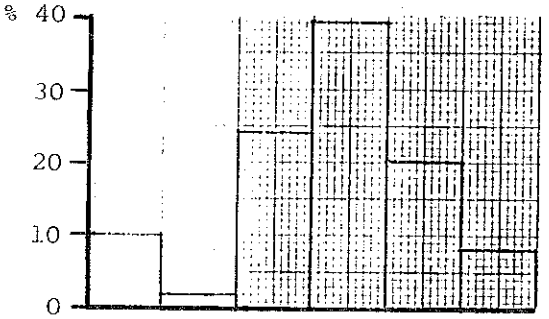
Figure 5.17 (continued)

HOURS WORKED PER DAY - OWNER DRIVERS.



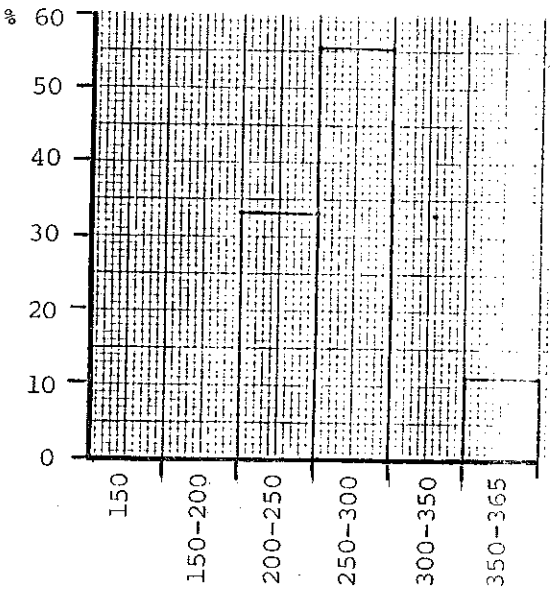
(Hours worked per annum)

a) DATSUN



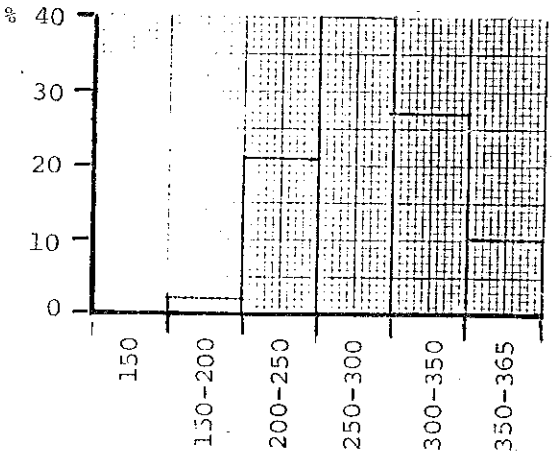
(Hours worked per annum)

b) MORRIS



(Hours worked per annum)

c) SUZUKI

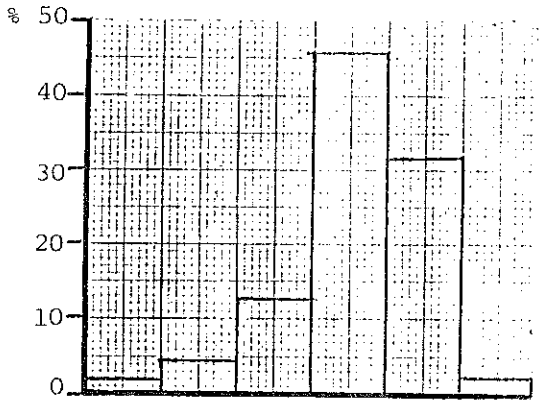


(Hours worked per annum)

d) RICKSHAW

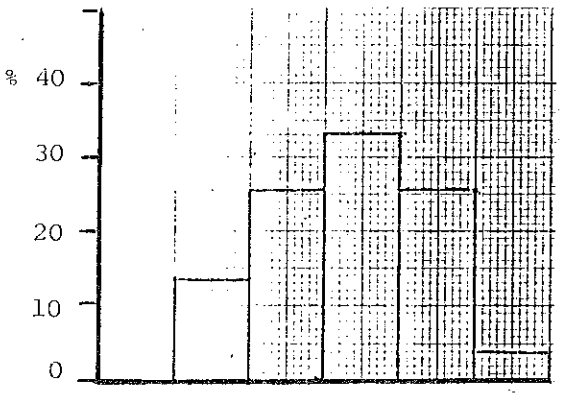
Figure 5.18

DAYS WORKED PER ANNUM - OWNER DRIVERS



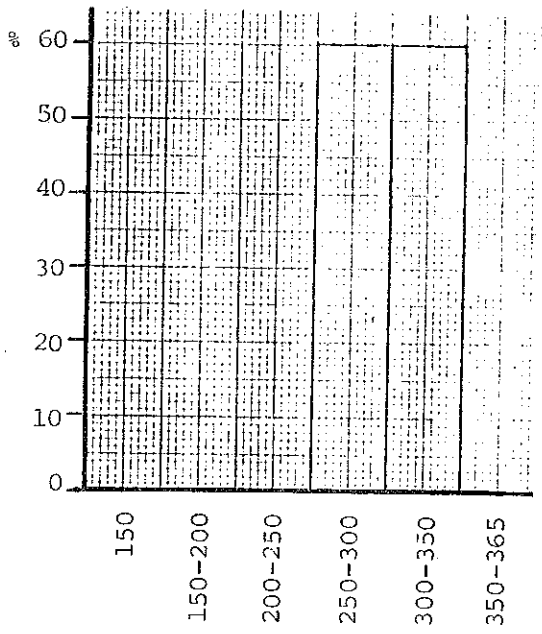
(Hours worked per annum)

a) DATSUN



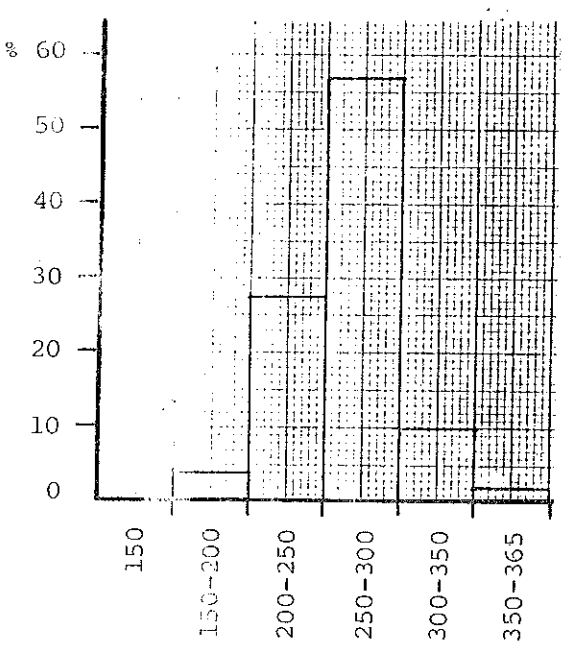
(Hours worked per annum)

b) MORRIS



(Hours worked per annum)

c) SUZUKI

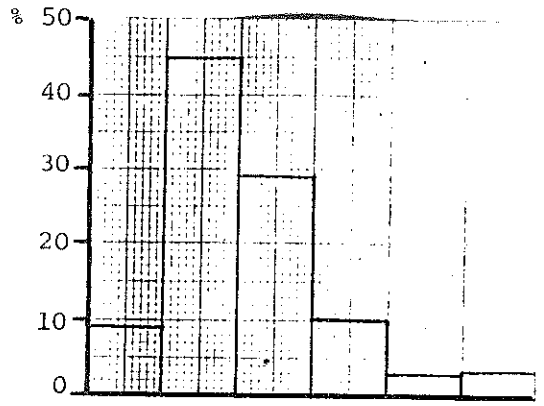


(Hours worked per annum)

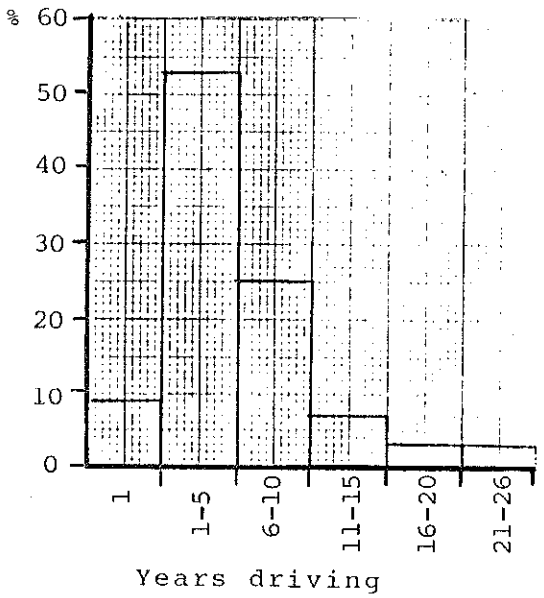
d) RICKSHAW

Figure 5.19

DAYS WORKED PER ANNUM - OTHER OWNERS



a) OWNER DRIVERS



b) OTHER OWNERS

Figure 5.20

YEARS DRIVING TAXIS

of related subjects. Of the 326 owners in the sample, 248 (76%) admitted to having problems. Of those that did admit to having problems clearly the most dominant factor was the traffic police; 58% identified the police as their main problem (Table 5.1).

Table 5.1

MAIN PROBLEMS FACING TAXI OWNERS

	1st Problem cited		2nd Problem cited		3rd Problem cited		Total over 3 citations	
	Number of responses	Column %	Number of responses	Column %	Number of responses	Column %	Number of respo-nses	Percentage of respon-dents with this problem
POLICE	145	58	42	31	2	6	189	76.2
PASSENGERS	56	23	9	7	4	12	69	27.8
METERS	17	7	21	15	5	15	42	16.9
SPARES	3	1	25	18	9	26	37	14.9
DRIVERS	15	6	7	5	3	9	25	10.1
ROADS/ TRAFFIC	8	3	13	9	3	9	24	9.7
RTA	2	1	9	7	2	6	13	5.2
STANDS	2	1	5	4	4	12	11	4.4
FUEL	0	0	6	4	2	6	8	3.2
TOTAL	248	100	137	100	34	100	419	-

Whilst altogether 76% of respondents to this question identified the police as a problem to some degree. The nature of the problem here alluded to is the predatory role that the traffic police play in extorting money from operators and drivers. This is a practice widespread throughout Pakistan and applied to all transport operators in the private sector. Other abuses of power were witnessed; the most prevalent being the practice of police officers appropriating vehicles for their own use without payment thereby adding to the operator's costs and depriving him of the opportunity of earning revenue.

The second highest scoring problem (aggregated across the 3 categories) was that labelled as 'Passengers'. Here the most frequent complaint was misbehaviour of passengers, and problems in collecting fares; a problem which also re-occured at number three in importance under the heading of 'meter', where drivers complained of the passenger's reluctance to agree to a fare being charged by the meter. In this respect the complaint is of somewhat dubious validity since a large proportion of taxis were observed to have defective meters and the passenger knows that there is no guarantee that the meter has not been tampered with in some way.

Of the remaining list of problems mentioned by the owners, the high cost of spares and the suspect quality of many of them took 4th place. The lack of honesty amongst drivers was 5th, with remarks on the cost and quality of fuel (gasoline being adulterated with kerosene), problems and cost of getting route permits from RTA, the lack of proper taxi stands, and the condition of the highways and congested traffic conditions making up the remainder of the list.

6 VEHICLE ACQUISITION AND MARKET VALUES

6.1 Introduction

In the determination of vehicle operating costs for transport operators it is necessary to take into account the capital value of the equipment owned, and to allow for the depreciation of those fixed assets. Obviously, the larger and more expensive the vehicles involved and the larger the sacle of the enterprise, the more important becomes the value of the fixed assets.

The fixed assets would normally include not only the vehicles, but any premises used in the administration of the enterprise including offices and space used for storage or repair of the vehicles, and equipment in workshops and offices. In our survey with vehicle owners, a special form (Form 2.1) was prepared to record the details of costs associated with premises and equipment (other than vehicles). It transpired however, that in no case were there any premises; neither offices, workshops nor private parking areas, used exclusively in connection with taxi operations.

Thus the computation of a value for the capital cost of the enterprise has been somewhat simplified to that of defining the interest foregone on the capital value of the asset at the begining of the accounting period of twelve months and making an allowance for its depreciation over the same period.

However, it has been a far from straight forward matter to determine appropriate values for both capital value and depreciation. The buying and selling of taxis does not make place within any recognizable formal Market. There are no second-hand dealers who keep stocks of vehicles and advertise prices, as one would expect to find in western countries. Sale agreements are made directly between buyer and seller, with only very occasionally the purchase being effected throught the inter-mediation of a commission agent. It would appear that 'word-of-mouth' is the only mechanism for putting potential buyers and sellers in touch with each other.

A second important point to observe is that due to the relatively low car ownership rates prevalent in Pakistan, the high duties levied on imported vehicles, and the limited production capacity of the domestic industry, virtually any vehicle independent of age or condition has a relatively high market value representing its residual scarcity.

In these circumstances it is well nigh impossible independently to establish the market price of different makes of vehicles of different ages.

Two different approaches to the problem were tried. The first, uses data from the vehicle owner's estimate as to the present market value of his vehicle: the second, analyses the prices actually paid, particularly in the preceding 12 months, for vehicles of different makes and age. The former we designate the 'market value' approach, the latter the 'transaction price' approach.

6.2 Market value

In asking the owner to estimate the market value of his vehicle, we recognize that the information thus obtained may be very imperfect. An owner will always want a higher price than the purchaser is prepared to pay, and if not actually wanting to sell at the time his valuation was asked for, he would naturally put a higher price on the vehicle than that which he might ultimately have to accept under circumstances of a forced sale. In the end, market value is determined by the price which a purchaser is prepared to pay. The data on market values of vehicles presented below will need to be interpreted with these reservations in mind.

Table 6.1

AVERAGE MARKET VALUES - ALL MODELS

(Rupees)

M A K E	OWNER DRIVERS	OTHER OWNERS	ALL OWNERS
Datsun	48,930	42,270	46,270
Morris	22,100	22,900	22,800
Suzuki	53,750	55,000	54,000
Rickshaw	36,440	35,800	36,100

The average market value of all vehicles of each make is given in Table 6.1. The data show that Datsuns are valued at over twice much as the Morris, and perhaps surprisingly only some 15% below the Suzuki despite the fact that they are on average older. Market value estimates for the rickshaws at Rs.36.000 are quite high for what is basically a very simple if not crude vehicle. Bearing in mind that the taxicab market is split almost evenly between the Datsuns and Morris, the value of the rickshaw is put marginally higher than the average value for all taxicabs (Rs.34.535).

One explanation put forward for this apparent anomaly is that the rickshaw drivers are to a large extent captive to operting with this type of vehicle. There is a strong socio-ethnic influene at work; the form a tight-knit group and many of the drivers do not have the necessary motor car driving licenses that would enable them to move out into the larger taxicab sector.

One other factor to account for the relatively high value of the rickshaw is the possibility that we are here witnessing the effects of the policy of quantity control being exercised by the local Administration. It is most likely that in the absence of the current policy of limiting the number of route permits granted to rickshaws in Islamabad and Rawalpindi - the numbers would rise in line with the proportions of rickshaws to taxis seen in the other major cities. With no new vehicles being granted route permits,

those already operating with valid permits are able to command a premium in the market place.

Looking at how the value of a vehicle varies with its age, Table 6.2 shows the average market value for each model (year of manufacture) by vehicle type. These averages belie a great variation in the values quoted for individual vehicles of the same model and it is apparent that the value of a particular vehicle is much more a function of its condition than its age. It can readily be seen that there is no straightforward correlation between age and value. A regression model fitted to the data set for Suzukis, with value as the dependent variable and age as the independent variable gave a correlation coefficient (r) of only 0.3 which failed to satisfy even a minimal significance criterion. With a good of the inherent variability removed by calculating an average value for each year of manufacture, an underlying trend is discernible with newer vehicles tending to have higher values than the older.

Table 6.2

AVERAGE MARKET VALUE BY VEHICLE MODEL AND TYPE.

(Rs)

MODEL (YEAR)	RICKSHAW	SUZUKI	DATSUN	MORRIS
1985	-	55,000	-	-
1984	-	56,250	-	-
1983	-	47,400	-	-
1982	52,500	-	-	-
1981	39,000	-	-	-
1980	44,000	-	-	-
1979	36,700	-	-	-
1978	30,576	47,500	-	-
1977	28,500	-	-	-
1976	27,500	-	52,500	-
1975	30,000	-	42,500	-
1974	30,000	-	22,500	-
1973	31,500	-	45,300	-
1972	-	-	50,909	-
1971	-	-	40,833	-
1970	-	-	32,500	27,500
1969	-	-	-	23,750
1968	-	-	27,500	33,750
1967	-	-	-	23,970
1966	-	-	-	21,542
1965	-	-	-	18,055
1964	-	-	-	22,000
1963	-	-	-	22,500
1962	-	-	-	17,500
1961	-	-	-	17,500
AVERAGE	36,127	54,000	46,273	22,797

When the data are disagregated by ownership category, (Table 6.1), the only significant difference found is for the Datsun, where owner drivers value their vehicles some Rs.6660 more than those of other owners although both sets of vehicles have similar age distributions. We are unable to explain whether this difference is due to the owner drivers tending to operate with better quality vehicles, or whether it is perhaps due to some peculiarity in the structure of the market for this type of vehicle. We can be reasonably confident however, that the difference has not arisen due to sampling error since the same tendency is exhibited in the transaction prices (see below).

6.3 Transaction prices

As well as being asked about the market value of their vehicles, owners were also asked for details of how and when the vehicles were purchased and how much was paid. Information on the more recent purchases (going back to 1980) are summarised in Table 6.3. It should be noted that these prices include the cost of renovations and repairs carried out to the vehicle immediately after purchase and before putting it on the road. Examination of these data reinforces the earlier finding (with respect to market value) that for individual vehicles there is little consistency between age and price paid. However, again it is possible to see some pattern in the average price paid each year. Vehicles of broadly the same age distribution come into the market each year. Hence there is some validity in a time series analysis. The six-year time series for the Datsun and Morris makes shows a small decrease in prices from 1980 to 1981, an upswing in prices in 1982, a fall of between 10-20% from 1982 to 1983 and marginal price increase for each of the subsequent years. An investigation of the causes of these market trends is clearly beyond the scope of this study as it would involve consideration of a whole set of macro-economic factors.

Comparing Tables 6.2 and 6.3 there appears to be not much disagreement between the two sets of figures. Taking the average prices paid in 1985 from Table 6.3 subtracting the sum spent on renovations, gives us an estimate of the current market value (Table 6.4) based on actual transactions.

Table 6.3

TAXI PURCHASE PRICES (PRICE INCLUDES RENOVATION COSTS)

a) DATSUN

(Rs. x 1000)

M O D E L	YEAR OF PURCHASE					
	1985	1984	1983	1982	1981	1980
1968	-	-	27.0 (1)	-	-	-
1970	30.0 (2)	48.0 (2)	30.0 (1)	-	39.0 (1)	-
1971	24.5 (1)	56.9 (2)	45.0 (1)	67.0 (1)	45.0 (1)	-
1972	60.9 (15)	51.9 (19)	52.37 (7)	72.0 (1)	-	-
1973	49.16 (16)	52.87 (20)	53.22 (9)	42.66 (3)	57.0 (1)	49.33 (3)
1974	-	-	29.0 (1)	-	-	-
1975	-	48.0 (1)	-	-	-	-
1976	-	-	50.0 (1)	-	-	-
AVERAGE	50.49	52.30	48.88	53.4	47.0	49.33

(Figure in parentheses are the numbers of observations in each category).

Table 6.3

TAXI PURCHASE PRICES (PRICE INCLUDES RENOVATION COSTS)

b) MORRIS

(Rs x 1000)

MODEL	YEAR OF PURCHASE					
	1985	1984	1983	1982	1981	1980
1960	-	18.0 (1)	-	-	-	-
1962	-	20.2 (1)	-	-	-	-
1963	-	22.0 (1)	25.0 (1)	-	-	-
1964	23.5 (4)	17.5 (2)	-	34.35 (2)	30.0 (1)	-
1965	21.33 (3)	29.33 (3)	15.0 (1)	-	15.0 (1)	-
1966	24.08 (13)	25.56 (16)	25.29 (7)	25.5 (2)	28.0 (2)	23.0 (2)
1967	40.5 (3)	29.87 (4)	29.33 (3)	30.8 (5)	42.0 (1)	22.0 (1)
1968	38.5 (4)	33.0 (2)	-	30.5 (1)	-	-
1969	42.5 (2)	27.0 (1)	-	-	-	43.0 (1)
1970	25.0 (1)	-	-	-	-	30.0 (1)
AVERAGE	27.28	25.96	25.42	31.92	28.6	29.5

Table 6.3

TAXI PURCHASE PRICES (PRICE INCLUDES RENOVATION COSTS)

c) SUZUKI

MODEL	YEAR OF PURCHASE				
	1985	1984	1983	1982	1981
1978	-	-	-	-	50.0 (1)
1983	-	48.0 (1)	-	-	-
1984	66.5 (2)	61.5 (2)	-	-	-
1985	68.33 (3)	52.5* (2)	-	-	-
AVERAGE	67.598	55.200	-	-	-

* The apparent anomaly between model year and year of purchase is explained by the large delay between date of purchase and data of delivery for new Suzukis of local manufacture.

Table 6.3

TAXI PURCHASE PRICES (PRICE INCLUDES RENOVATION COSTS)

d) RICKSHAW

(Rs x 1000)

MODEL	YEAR OF PURCHASE				
	1985	1984	1983	1982	1981
1973	37.5 (2)	23.5 (2)	-	-	-
1974	-	42.0 (1)	-	35.0 (1)	-
1975	-	32.0 (1)	25.0 (1)	-	-
1976	30.8 (7)	20.4 (1)	34.5 (2)	-	-
1977	37.0 (6)	24.0 (3)	30.6 (1)	-	-
1978	32.97 (6)	31.66 (3)	36.75 (2)	30.0 (2)	-
1979	42.75 (6)	39.94 (15)	37.33 (3)	26.0 (2)	-
1980	49.68 (7)	43.7 (10)	47.75 (2)	-	-
1981	53.0 (1)	44.0 (3)	39.83 (3)	42.0 (1)	30.0 (1)
1982	-	53.45 (4)	-	44.0 (1)	-
AVERAGE	39.076	39.309	37.506	33.286	30.0

Table 6.4

RENOVATION COSTS AND COMPARISONS BETWEEN ESTIMATED MARKET VALUE AND PRICES PAID DURING 1985

(Rs)

	DATSUN	MORRIS	SUZUKI	RICKSHAW
A) AVERAGE PRICE PAID IN 1985 (INCLUDING RENOVATION)	52,490	27,280	67,598	39,076
B) AVERAGE COST OF RENOVATION PER VEHICLE RENOVATED	5,291	4,117	7,875	6,011
C) AVERAGE RENOVATION COST FOR ALL VEHICLES SOLD IN 1985	2,352	2,745	1,969	4,342
D) AVERAGE PURCHASE PRICE 1985 (A-C)	50,138	24,535	65,629	34,734
E) AVERAGE MARKET VALUE (FROM TABLE 6.2)	46,273	22,797	54,000	36,127

The conclusion to be drawn from Table 6.4 is that despite what was argued earlier, estimation of market value appears to be lower than prices being realised except in the case of rickshaws. However with the exception of Suzukis, the differences are less than 10% (Datsun 92%, Suzuki 82%, Rickshaw 104%).

Moving to consider other aspects of the transaction price data, there are some significant variations between groups of owners (Table 6.5) with ranges much greater than those already observed for market value estimates.

Table 6.5

AVERAGE PURCHASE PRICE (INCLUDING RENOVATION COSTS) BY YEAR OF PURCHASE

(Rs)

		YEAR OF PURCHASE				
		1985	1984	1983	1982	1981
DATSUN	OWNER DRIVERS	55,382	55,452	47,606	-	-
	OTHER OWNERS	47,175	47,971	51,440	53,396	-
MORRIS	OWNER DRIVERS	24,604	26,622	25,000	36,000	22,500
	OTHER DRIVERS	28,347	25,038	25,833	30,926	31,500
SUZUKI	ALL OWNERS	67,598	55,200	-	-	-
RICKSHAW	OWNER DRIVERS	39,300	39,500	35,900	29,000	-
	OTHER DRIVERS	38,877	39,023	38,398	39,000	-

Variation may be due to erratic market behaviour or may be due to small sample size so values have been aggregated to get greater estimating reliability.

Again, there is no obvious explanation as to why these differences should occur, especially as there appears to be no regular pattern (owner drivers pay more for Datsuns and Rickshaw, but less for Morris and Suzuki).

Another set of variations identified in the average price paid is to be found in connection with how the vehicle was purchased. (Table 6.6).

Table 6.6

AVERAGE PURCHASE PRICE (EXCLUDING RENOVATION COSTS) BY MODE OF PURCHASE*

(Rs)

	DATSUN	MORRIS	SUZUKI	RICKSHAW
ALL PURCHASES	47,409	22,937	57,500	34,471
PURCHASED OUTRIGHT	48,906	25,833	58,750	37,083
PURCHASE ON INSTALMENTS	45,326	20,943	54,166	33,924

This time we see a general trend to lower prices reported for vehicles bought on installments. Perhaps we should not read too much significance into these differences, since these lower prices were not actually paid, being simply the reported price for which the vehicle could have been bought as a cash purchase.

* These figures are different from those in Table 6.4 since the data set here consists of prices paid in all transactions, some of which were made many years age.

6.4 Depreciation

Normally in a study of vehicle operating costs, an appropriate capital cost would be calculated by determining the vehicle's capital value when new, and depriciating this sum over its expected life, taking into account the present worth of any residual or scrap value. To do this requires 'a priori' knowledge of expected vehicle lives and residual values. In this study, not only do we not have the benefit of any 'a priori' knowledge but we have the added problem of estimating what is essentially a time-series phenomenon from cross-sectional data.

We have already comments on the high average age of many of the vehicles composing the taxi fleet and the fact that there is little regulaty in the relationship between either market value or price paid and vehicle model. However, several calculations have been made in order to arrive at an estimate for depreciation.

The first method was calculate for each vehicle, the difference between the total price paid (or the equivalent cash price for vehicles bought on installments,) and the estimated market value of that vehicle, and divide the resultant by the number of years that the vehicle had been owned.

The values for annual depreciation derived from this estimate (Figure 6.1) show extremely wide variations, ranging between very high negative and positive values, although the average values for each vehicle type give figures which at least appear plausible (Table 6.7). The average values for each vehicle type represent an annual depreciation rate of 5% - 10% of current market value, which in a western context we would regard as quite reasonable.

Another aproach to the dervation of depreciation obtained somewhat different results. Table 6.8 shows estimates derived only for those vehicles bought outright using data which had already been averaged over each price band.

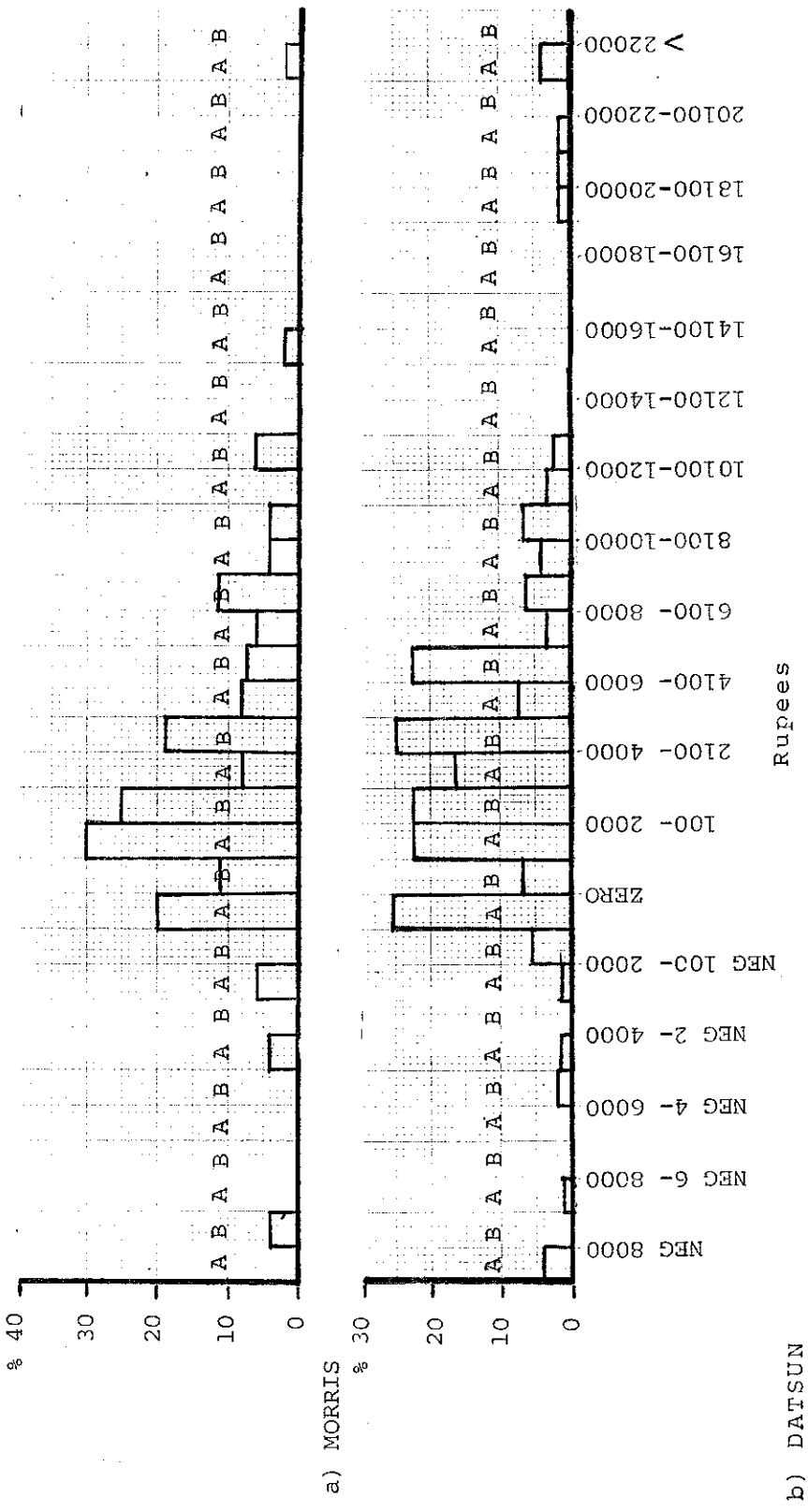
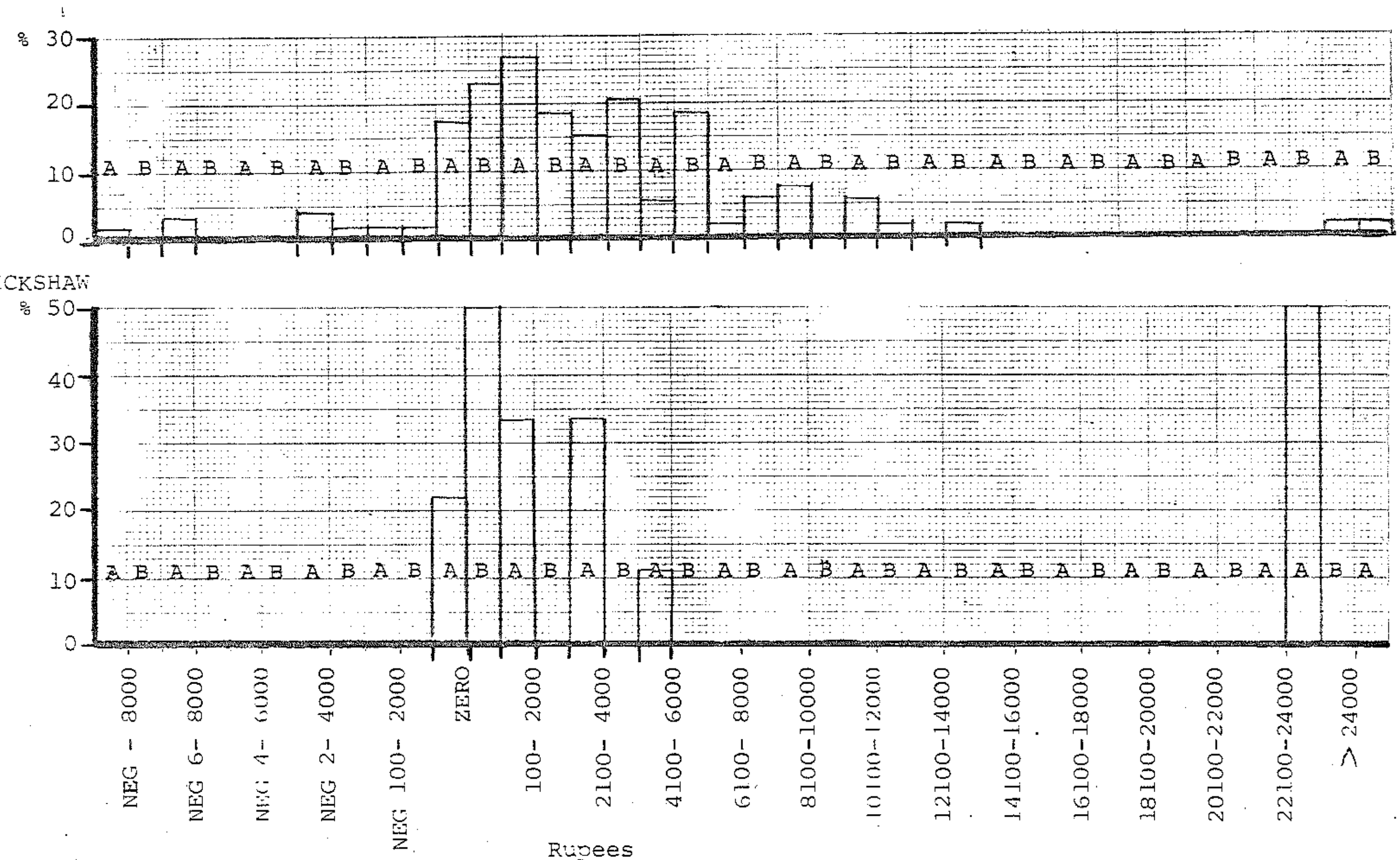


Figure 6.1

ANNUAL DEPRECIATION - AS A FUNCTION OF DIFFERENCE BETWEEN PURCHASE PRICE AND PRESENT MARKET VALUE.



d) SUZUKI

A) OWNER DRIVERS

B) OTHER OWNERS

Figure 6.1 (continued)

ANNUAL DEPRECIATION - AS A FUNCTION OF DIFFERENCE BETWEEN PURCHASE PRICE AND PRESENT MARKET VALUE.

Table 6.7

AVERAGE ANNUAL DEPRECIATION BY VEHICLE TYPE AND MODE OF OPERATION DERIVED FROM OWNER'S ESTIMATION OF MARKET VALUES

(Rs)

M A K E	OWNER DRIVERS	OTHER OWNERS	ALL OWNERS
DATSUN	3925	3295	3682
MORRIS	2400	2843	2366
SUZUKI	1888	11500	3636
RICKSHAW	3615	3437	3530

Table 6.8

AVERAGE ANNUAL DEPRECIATION BY VEHICLE TYPE AND MODE OF OPERATION - VEHICLES PURCHASED OUTRIGHT

(Rs)

	AVERAGE OWNER-SHIP PERIOD (YEARS)	OWNER DRIVERS	OTHER OWNERS	ALL OWNERS
DATSUN	1.8	2792	- 1009	1281
MORRIS	2.65	- 93	2098	1092
SUZUKI	1.0	4633	10050	5618
RICKSHAW	1.7	4014	1722	2868

These data show greater variability between groups, although lower overall averages except for Suzukis, which are higher than the comparable figure in Table 6.7.

In interpreting these data we must also be aware of the discrepencies between reported market values and transaction prices ($\pm$ 10%). If we now compare these two estimates with the time-series data on transaction prices reported in Table 6.3 we see some of the same apparent anomalies. For example, taking the differences in prices over the past two years for Datsuns, owner drivers have seen an appreciation of Rs. 7776 in the price of their vehicles whilst other owner have experienced a depreciation of Rs.4265. For

Morris owners however, the roles have been reversed, with other owners gaining from price appreciation,

Perhaps the most rational way to treat depreciation is to presume that has happened in the most recent past is still continuing and in the face of conflicting evidence, obtain a general trend from the data in which there is most confidence; that of the sales prices. Aggregating across both ownership categories, and obtaining the differences between 1983 and 1985 prices we obtain the values in Table 6.9, where we see that there has been a process of negative depreciation.

Table 6.9

DEPRECIATION BASED ON DIFFERENCE BETWEEN 1983 AND 1985 PRICES

	1985-83	ANNUAL DEPRECIATION	ANNUAL DEPRECIATION
	Rs	Rs	%
DATSUN	- 3610	- 1805	- 3.69
MORRIS	- 1860	- 930	- 3.66
SUZUKI	-	(1985-84) +12398	- 22.44
RICKSHAW	- 1570	- 785	- 2.09

A negative value for depreciation will hereafter in the text be referred to as appreciation.

The very high appreciation rate given for Suzuki vehicles is not unexpected. The limited supply and low price relative to imported vehicles means that demand for new vehicles is much higher than availability. In 1984, purchase was on the basis of ballot, with at least a 12 month delivery date. In the past 12 months there have also been sharp increases in the price of new vehicles, and prices of used vehicles are very close to the current price of new vehicles. A new Suzuki available for immediate delivery commands a very high premium over the authorized list price.

The correct interpretation of the appreciation in prices over the past 12 months must of course be set against the background of inflation within the domestic economy, and to a certain extent, the devaluation of the rupee against currencies such as the Japanese Yen, but again these issues are beyond the scale of this study.

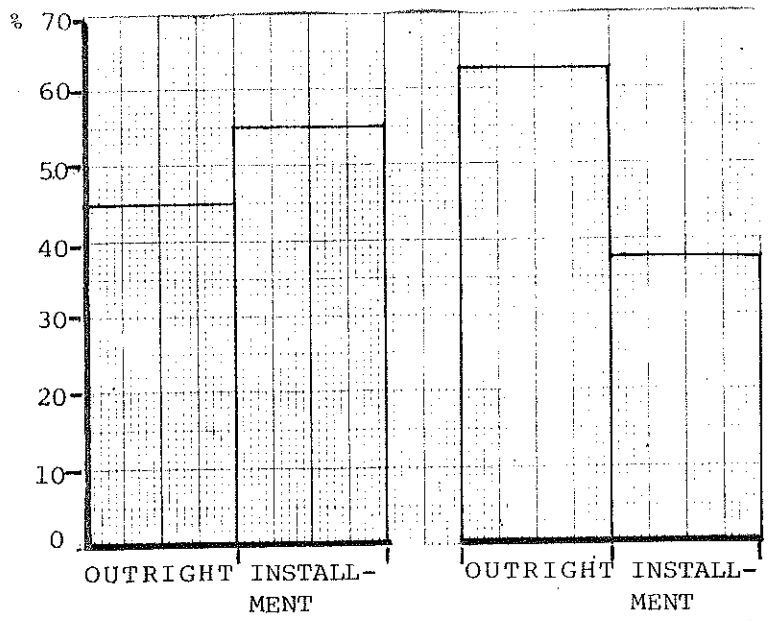
6.5 Financing/Mode of purchase

One of the criticisms frequently voiced by the private sector transporters in Pakistan is the difficulty experienced in financing vehicle purchases and the virtual impossibility of obtaining loans for this purpose from any financial institution or bank. Where financing is arranged, it is done on an informal basis usually at high rates of interest.

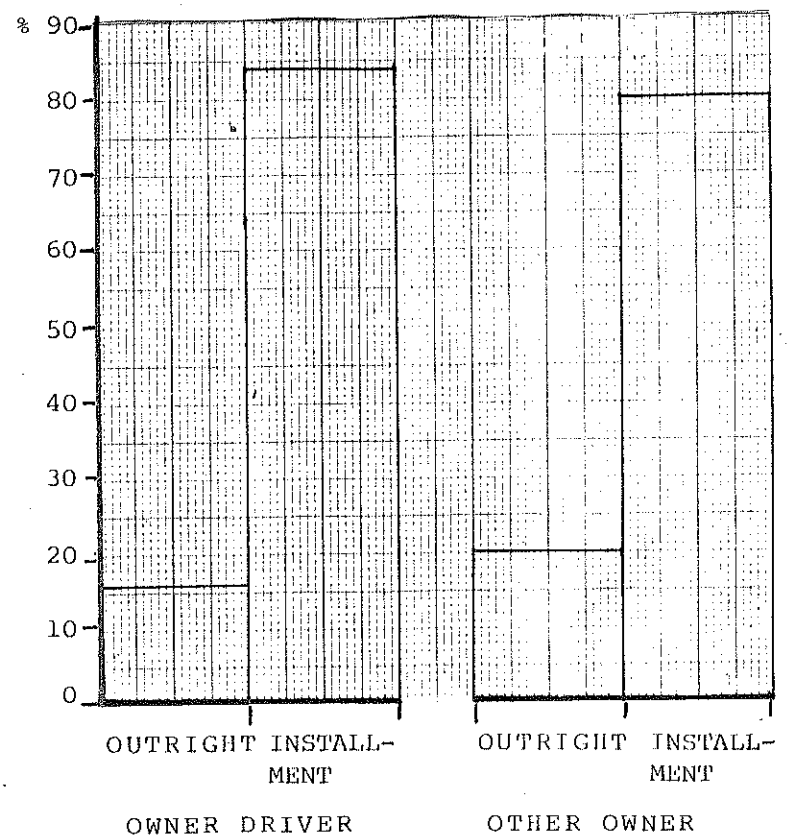
As far as the taxi sector is concerned Figure 6.2 shows that a high proportion of vehicle purchases are financed in this manner. In the taxicab sector 55% of owner drivers bought their vehicles on installments as against 37% of other owners. In the rickshaw sector the incidence of hire purchase was much higher with 84.3% of owner drivers and 80.4% of other owners involved in purchases by installments.

Examining the details of the hire purchase agreements, the terms and conditions varied widely from transaction to transaction but are dominated by two features: the very high interest rates charged and the high incidence of cases where the vendor of the vehicle is also the financing agent.

The average monthly interest effectively charged on loans was calculated by finding the interest rate at which the total sum of repayments over the life of the loan equalled the present value of the sum borrowed i.e. the declared equivalent cash price of the vehicle minus the initial deposit. The average monthly interest rates by vehicle type and ownership group are given in Table 6.10.



TAXICAB



RICKSHAW

Figure 6.2 MODE OF PURCHASE.

Table 6.10

AVERAGE MONTHLY INTEREST RATE ON HIRE PURCHASE LOANS

(%)

	OWNER DRIVERS	OTHER DRIVERS
DATSUN	6.7*	2.54
MORRIS	2.8	2.43
SUZUKI	2.97	-
RICKSHAW	1.8	1.3

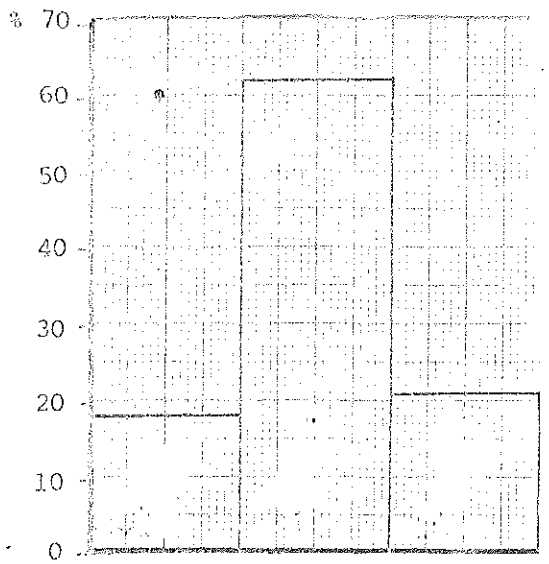
An indication of the variability involved, is obtained by noting that for the same category of owner/vehicle, two agreements were charging a monthly rate in excess of 9%, one at 8%, with only 6 of the 34 cases paying interest rates of less than 1% per month.

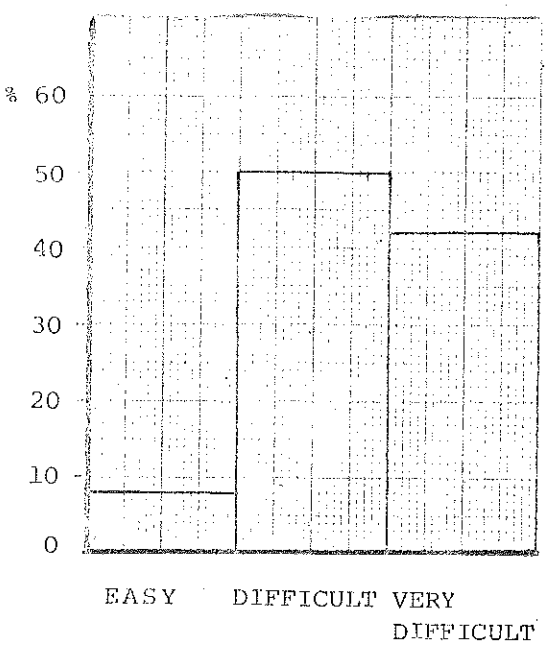
* The average value for Datsun owner drivers is inflated by the inclusion of a small number of very short term loans at very high interest rates. If these are excluded from the data set the average interest rate reduces to 3.02%.

It was clear from our discussions with the owners that the burden of finance charges was felt heavily; particularly by the owner drivers. Indeed a question included in the survey on the difficulties experienced in keeping up their repayment schedule, revealed that 86% owner drivers reported having some difficulties as against 72% for other owners (Figure 6.3). It is apparent that rickshaw owner drivers suffered particularly in this respect, with 95% reporting difficulties with repayments.

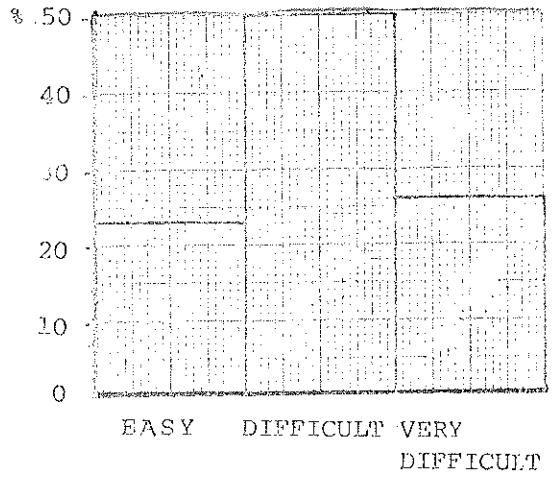
With so many (81%) of the finance agreements being directly between purchaser and seller (Figure 6.4) there is a great deal of instability and insecurity for both parties in such transactions, especially as vehicles are not insured. There were many stories recounted to the interviewers of cases of forcible repossesion of vehicles, of the hardships encountered when vehicles break down, resulting in an incapacity to earn revenue to either pay for repairs or keep up with repayments, and of cases where vehicles seriously damaged in accidents are simply returned to the seller with the purchaser unilaterally rescinding the agreement.

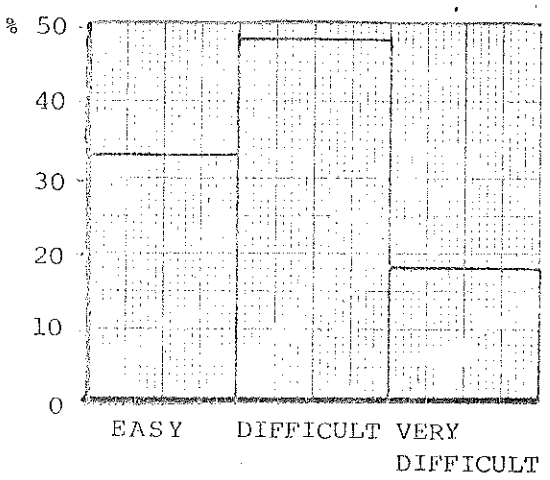
Average repayment periods were in the region of 20-25 months for the taxicabs and 38 months for the rickshaws. For loans on Morris vehicles, the monthly installment is typically Rs.1000, but for Datsuns the figure is generally Rs.2000 per month, with rickshaw repayment terms intermediate between the two. This level of monthly repayment is particularly onerous for the taxi owner who is in effect trying to put together the capital for the purchase of the vehicle out of his current earnings. Whilst we in this study are concerned with the economics of taxi ownership and operation and hence are not really concerned with the cash flow aspects of the business, or when and how the capital for vehicle aquisition was obtained, the data on net earnings shown later in this study show that on average it is not a feasible proposition to 'save' large sums out of net earnings in order to buy a vehicle. Even Rs.1000 per month must be too much for at least 50% of the operators.





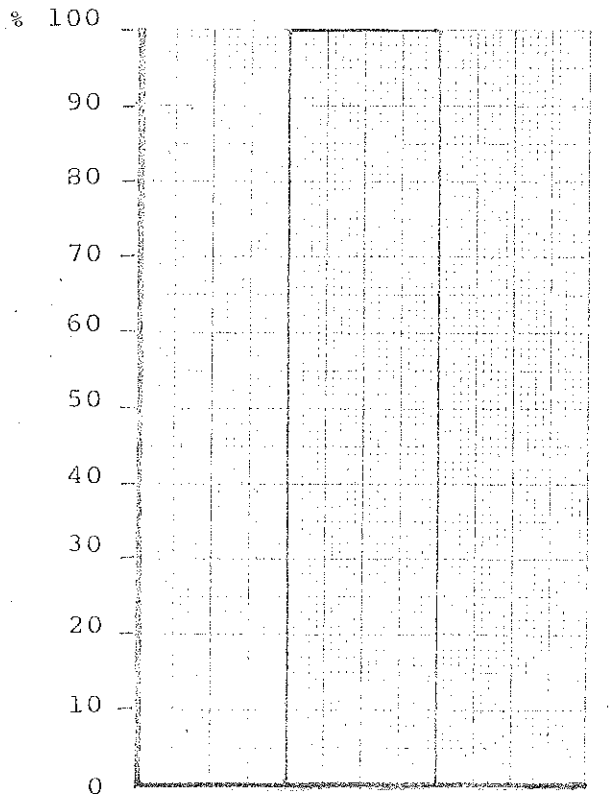
a) DATSUN



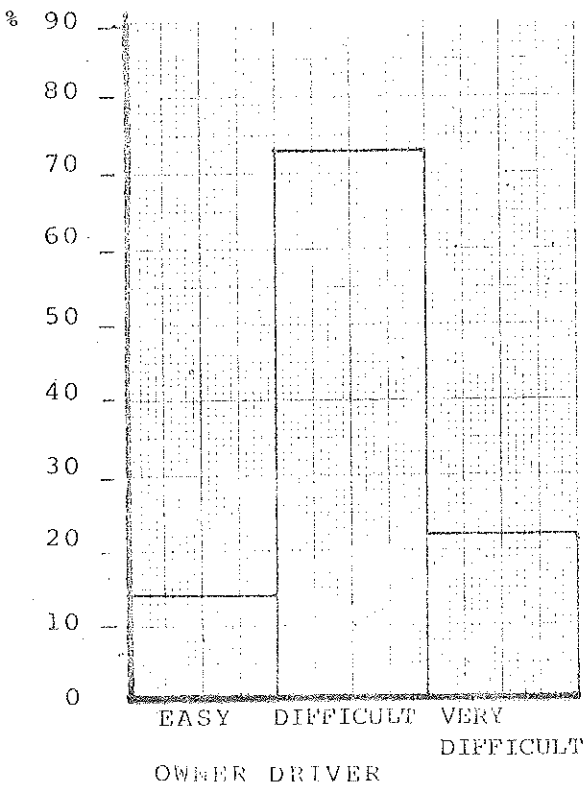


b) MORRIS

Figure 6.3 EASE OF REPAYMENT.



c) RICKSHAW



d) SUZUKI

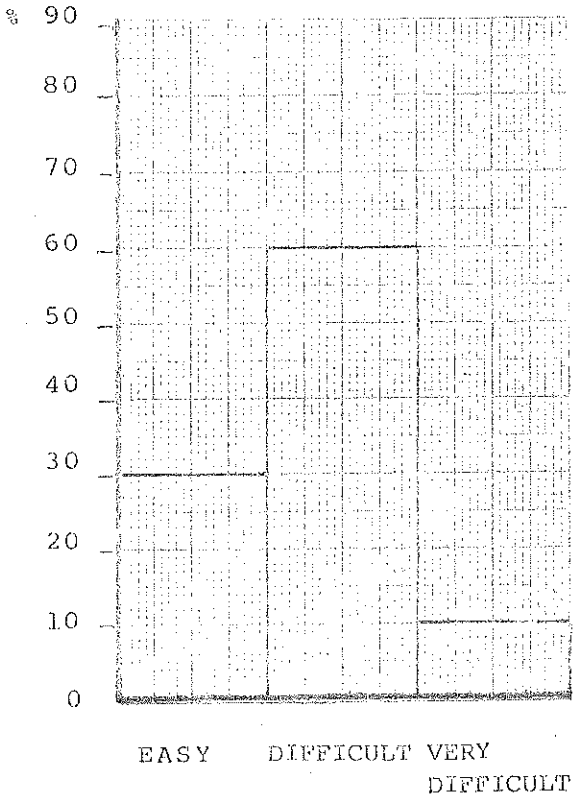
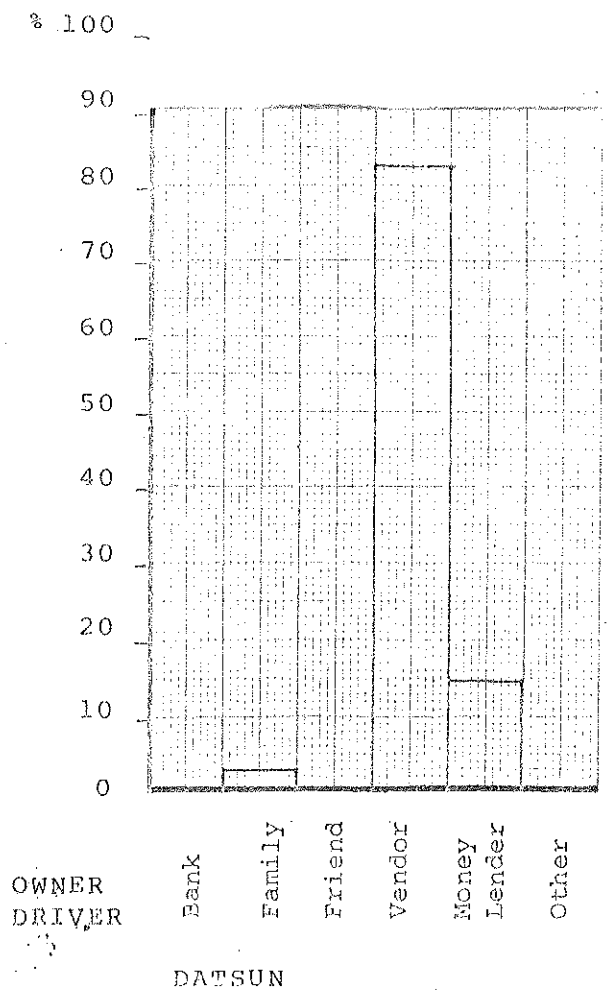
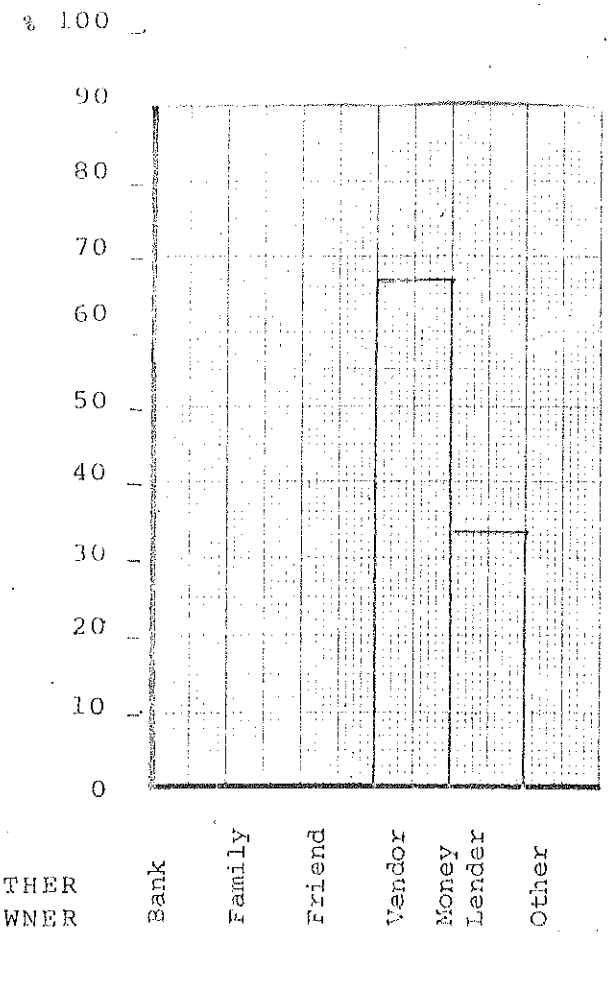
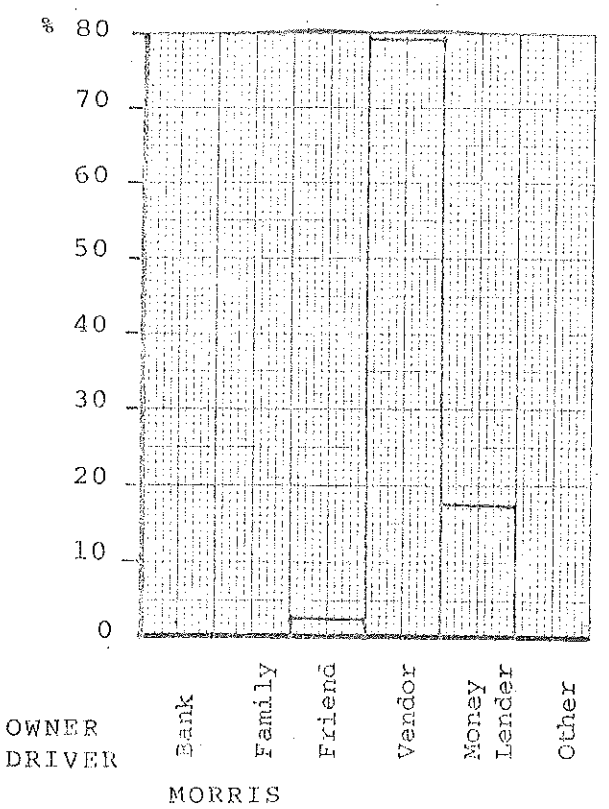


Figure 6.3 EASE OF REPAY''ENT (continued)







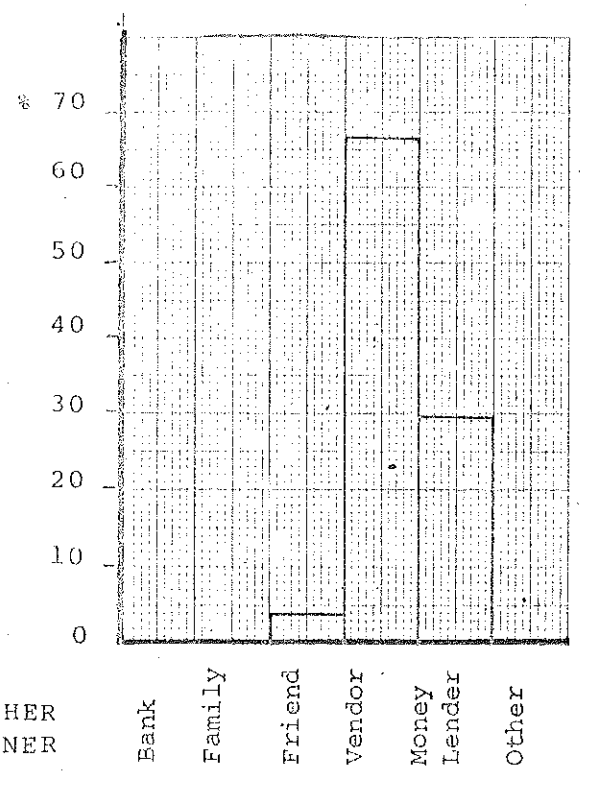
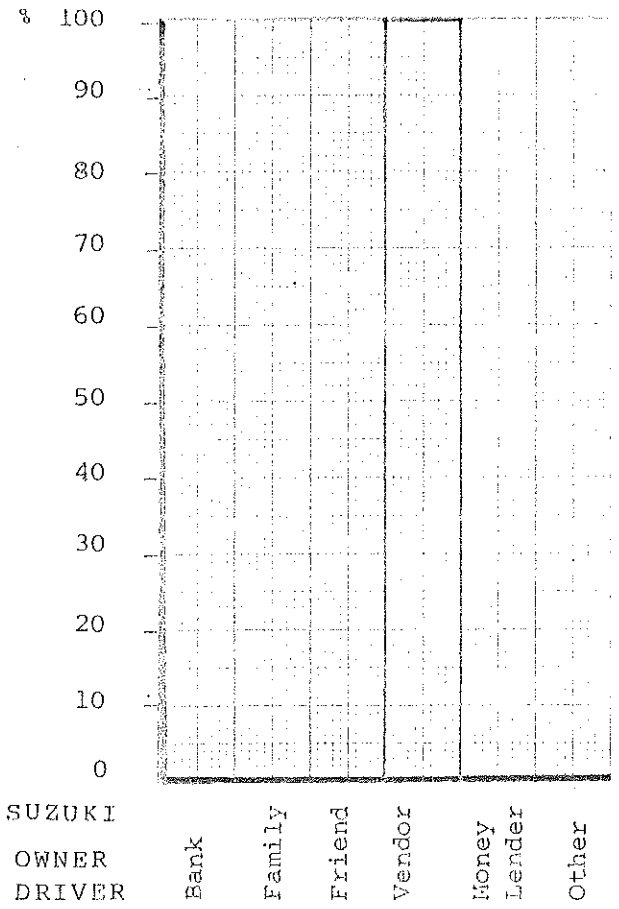
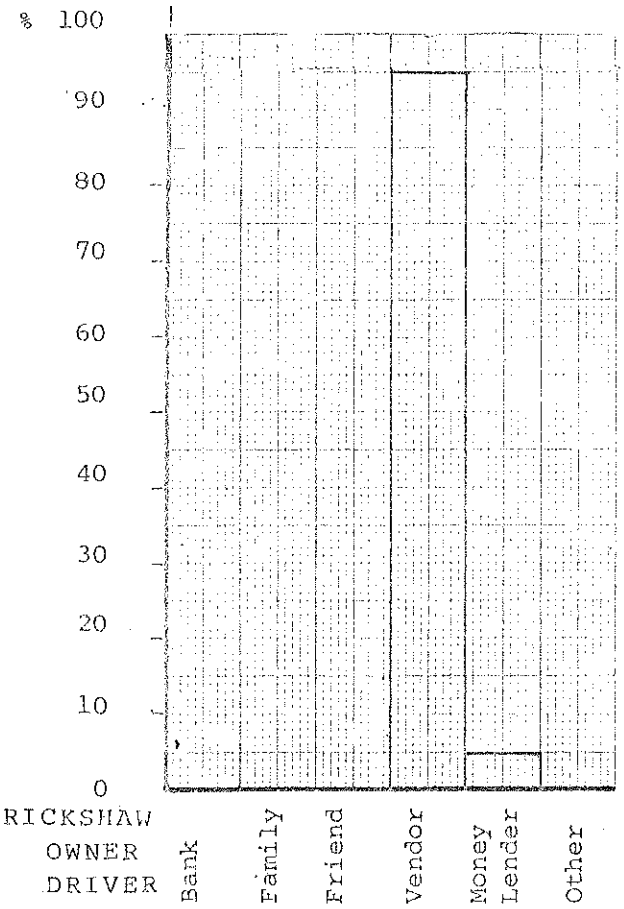


Figure 6.4

FINANCE AGENT





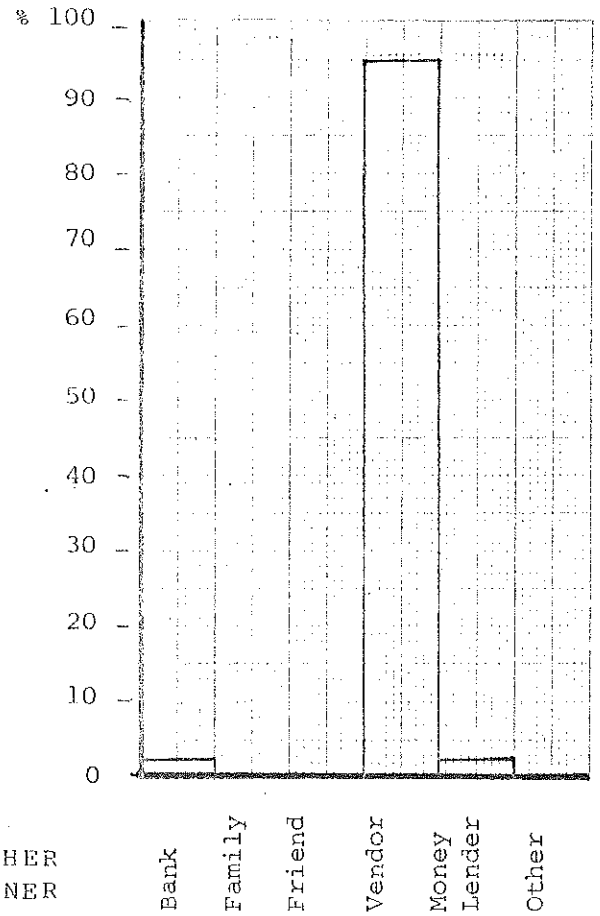
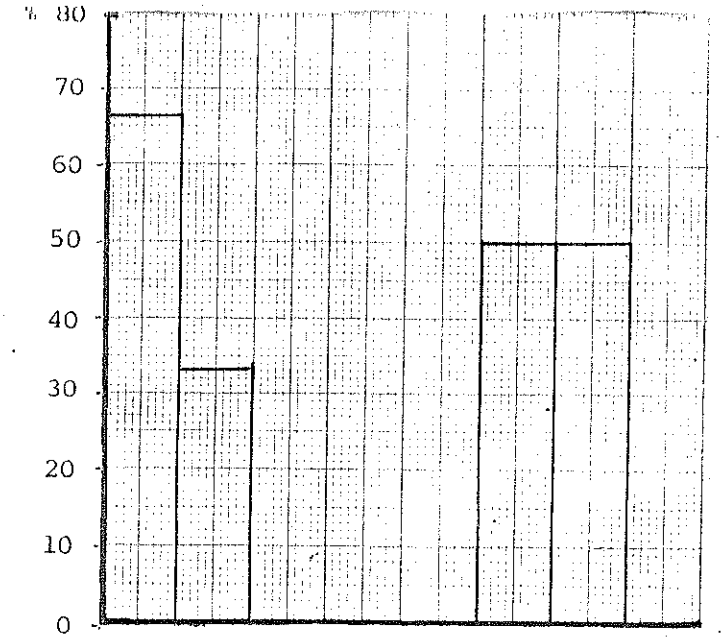
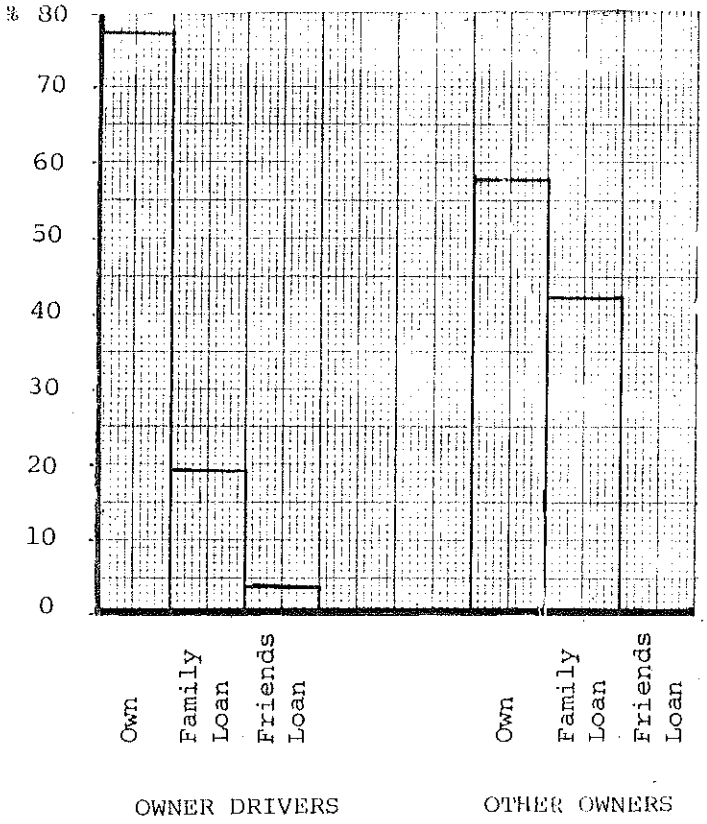


Figure 6.4 (continued)

FINANCE AGENT



a) RICKSHAW



b) TAXICAB

Figure 6.5

CAPITAL SOURCE